

**Green Peak II Density Management  
Environmental Assessment and  
Finding of No Significant Impact**

Environmental Assessment Number OR-080-08-14

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United States Department of the Interior  
Bureau of Land Management  
Oregon State Office  
Salem District  
Marys Peak Resource Area

Responsible Agency:           USDI – Bureau of Land Management

Responsible Official:         Trish Wilson, Field Manager  
Marys Peak Resource Area  
1717 Fabry Road SE  
Salem, OR 97306  
(503) 315-5968

For further information, contact: Cory Geisler, Project Lead  
Marys Peak Resource Area  
1717 Fabry Road SE  
Salem, OR 97306  
(503) 315-5949



Abstract: This EA (Environmental Assessment) discloses the predicted environmental effects of one project on federal land located in Township 14 South, Range 6 West, Section 7, Willamette Meridian and within the Benton Foothills and South Fork Alsea Watershed Analysis Areas.

Green Peak II Density Management is a proposal to increase structural diversity and implement the BLM (Bureau of Land Management) DMS (Density Management and Riparian Buffer Study). Forest stands on approximately 131 acres would undergo additional density management treatments within the 248 acres study area.

The actions would occur within Late Successional Reserve (LSR) and Riparian Reserve (RR) LUAs (Land Use Allocations).

As the Nation's principal conservation agency, the Department of 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.

**BLM/OR/WA/AE-07/075+1792**

## FINDING OF NO SIGNIFICANT IMPACT

### Introduction

The BLM (Bureau of Land Management) has conducted an environmental analysis (Environmental Assessment Number OR080-08-14) for a proposal to implement density management on approximately 131 acres of 70 year-old stands. The proposal would increase structural diversity and implement treatments for research purposes as part of the BLM DMS (Density Management and Riparian Buffer Study) in RR (Riparian Reserve) and LSR (Late Successional Reserve) LUA (Land Use Allocations) on BLM-managed land in Township 14 South, Range 6 West, Section 7, Willamette Meridian.

The analysis in this EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS). The proposed thinning activities have been designed to conform to the *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP) as amended and related documents which direct and provide the legal framework for management of BLM lands within the Salem District (*EA Section 1.3*). This project also meets the criteria for a transition project as described in the *Record of Decision and Resource Management Plan- Salem District*, December, 2008 (2008 ROD/RMP pp. 5-6).

The EA and FONSI will be available for public review at the Salem District office and on the internet at Salem BLM's website, <http://www.blm.gov/or/districts/salem/index.htm> (under Plans and Projects) from July 1, 2009 to July 31, 2009. The notice for public comment will be published in a legal notice by the *Gazette-Times* newspaper. Comments received by the Marys Peak Resource Area of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before July 31, 2009 will be considered in making the decisions for this project.

### Finding of No Significant Impact

Based upon review of the Green Peak II EA and supporting documents, I have determined the proposed action is not a major federal action and would not significantly affect the quality of the human environment, (individually or cumulatively) with other actions in the general area. No site-specific environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. Therefore, supplemental or additional information to the analysis done in the RMP/FEIS through a new environmental impact statement is not needed. The finding is based on the following information:

**Context:** Potential effects resulting from the implementation of the proposed action was analyzed within the context of the Marys River and Upper Alsea River Watersheds and the project area boundaries. The proposed actions would occur on approximately 131 acres of BLM LSR and RR LUAs, encompassing less than 0.1 percent of the forest cover within the Upper Alsea River Watershed and less than 0.2 percent of the forest cover within the Marys River Watershed [40 CFR 1508.27(a)].

### Intensity:

1. The effects of density management are unlikely to have significant adverse impacts on the affected elements of the environment [40 CFR 1508.27(b) (1)]. The affected elements in the project area are hydrology (water quality, wetland/riparian zones, and other water resources), soils, wildlife [T&E (Threatened/Endangered), special status species, and structural/habitat components], air quality and fire hazard/risk, botany (special status species, invasive/nonnative species), fisheries and aquatic habitat (T&E species).

Design features incorporated into the proposed action would reduce the risk of adverse effects to the above resources (EA sections 2.2.2). These proposed design features would meet the following objectives:

- To minimize soil productivity loss from soil compaction, slope stability or soil duff layer resulting from ground-based and skyline logging operations;
- To protect other components of hydrologic functions (channels, flows, water quality);
- To protect and enhance stand diversity and wildlife habitat components;
- To protect against expansion of invasive and non-native plant species;
- To protect the residual stand;
- To minimize disturbance to federal Threatened and Endangered Species;
- To protect BLM-managed Special Status plant and animal species;
- To reduce fire hazard risk and protect air quality;
- To protect cultural resources.

2. *The proposed action* would not affect:
  - ✓ Public health or safety [40 CFR 1508.27(b)(2)];
  - ✓ Unique characteristics of the geographic area [40 CFR 1508.27(b)(3)] because there are no historic or cultural resources, parklands, prime farmlands, wild and scenic rivers, wilderness, or ecologically critical areas located within the project areas (EA section 3.1);
  - ✓ Districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places, nor would the proposed action cause loss or destruction of significant scientific, cultural, or historical resources [40 CFR 1508.27(b)(8)] (EA section 3.1).
3. *The proposed action* is not unique or unusual. The BLM has experience implementing similar actions in similar areas without highly controversial [40 CFR 1508.27(b) (4)], highly uncertain, or unique or unknown risks [40 CFR 1508.27(b) (5)].
4. *The proposed action* does not set a precedent for future actions that may have significant effects, nor does it represent a decision in principle about a future consideration [40 CFR 1508.27(b) (6)]. The BLM has experience implementing similar actions in similar areas without setting a precedent for future actions.
5. The interdisciplinary team evaluated the *proposed action* in context of past, present and reasonably foreseeable actions [40 CFR 1508.27(b) (7)]. Potential cumulative effects are described in the attached EA. These effects are not likely to be significant because of the project's scope (effects are likely to be too small to be measurable), scale (project area totaling 248 acres, treatment area totaling 131 acres, encompassing less than 0.2 percent of the forest cover within either the South Fork Alsea River or Benton Foothills watershed assessment area), and duration (direct effects would occur over a maximum period of 4 to 10 years) (EA section 3.2).
6. The proposed action is not expected to adversely affect endangered or threatened species or habitat under the ESA (Endangered Species Act) of 1973 [40 CFR 1508.27(b) (9)].

**U. S. Fish and Wildlife Service (USFWS)**

To address concerns for effects to federally listed wildlife species and potential degradation of critical habitats, the proposed action has been consulted upon with the U.S. Fish and Wildlife Service, as required under Section 7 of the ESA. Consultation for this proposed action was facilitated by its inclusion within a programmatic Biological Assessment (BA) that analyzes all projects that may modify the habitat of listed wildlife species on federal lands within the Northern Oregon Coast Range during fiscal years 2009 and 2010. The resulting Letter of Concurrence (FWS Reference Number 13420-2008-I-0125, dated October 7, 2008) concurred with the BA, that this action was not likely to adversely affect spotted owl, marbled murrelets or their critical habitats. This proposed action has been designed to incorporate all appropriate design standards set forth in the BA which forms the basis for compliance with the Letter of Concurrence.

**National Oceanic Atmospheric Administration National Marine Fisheries Service**

Protection of EFH (Essential Fish Habitat) as described by the Magnuson/Stevens Fisheries Conservation and Management Act and consultation with NMFS (National Marine Fisheries Service) is required for all projects that may adversely affect EFH of Chinook salmon and coho salmon. The proposed Green Peak II project would not affect EFH due to distance of all activities associated with the projects from occupied habitat.

A determination has been made that this proposed project would have ‘no effect’ on UWR (Upper Willamette River) steelhead trout, UWR Chinook salmon, Oregon chub, and Oregon Coast coho salmon. Generally, the ‘no effect’ determination is based on the distance upstream of project activities (approximately 4 and 24 miles downstream) from ESA listed fish habitat and project design criteria that include no harvest activity within stream protection zones and post-project leave tree densities of 25-65 trees per acre.

- 7. The Proposed action does not violate any known Federal, State, or local law or requirement imposed for the protection of the environment [40 CFR 1508.27(b) (10)].

Prepared by: \_\_\_\_\_  
Cory Geisler, Team Lead Date

Reviewed by: \_\_\_\_\_  
Gary Humbard, NEPA Reviewer Date

Approved by: \_\_\_\_\_  
Trish Wilson, Field Manager Date  
Marys Peak Resource Area

## Glossary: Abbreviations, Acronyms, and Terms

ACEC	Area of Environmental Concern. Lands where special management attention is needed to protect and prevent irreparable damage to important values, resources or other natural systems or processes.
ACS	Aquatic Conservation Strategy. A set of objectives developed to restore and maintain the ecological health and aquatic habitat of watersheds.
ACS/FSEIS	Final Supplemental Environmental Impact Statement, Clarification of Language in the 1994 Record of Decision for the Northwest Forest Plan National Forests and Bureau of Land Management Districts Within the Range of the Northern Spotted Owl, October 2003.
Adaptive Management	The continuing process of implementing policy decisions as scientifically driven management experiments that test predictions and assumptions in management plans, and using the resulting information to improve the plans.
Alternative	Proposed project (plan, option, choice).
AMA	Adaptive Management Area. Landscape units designated for development and testing of technical and social approaches to achieving desired ecological, economic, and other social objectives.
Anadromous Fish	Species that migrate to oceans and return to freshwater to reproduce.
Basal Area (BA)	The cross section area of a tree measured in square feet.
BLM	Bureau of Land Management. Federal agency within the Department of Interior responsible for the management of 275 million acres.
BMP	Best Management Practice(s). Design features and mitigation measures to minimize environmental effects.
BO	Biological Opinion. The document resulting from formal consultation that states the opinion of the Fish and Wildlife Service or National Marine Fisheries Service as to whether or not a federal action is likely to jeopardize the continued existence of listed species or results in destruction or adverse modification of critical habitat.
Crown	The portion of a tree with live limbs.
Cumulative Effects	Past, present, and reasonably foreseeable effects added together (regardless of who or what has caused, is causing, and might cause those effects).
CWD	CWD refers to a tree (or portion of a tree) that has fallen or been cut and left in the woods. Usually refers to pieces at least 20 inches in diameter as described in Northwest Forest Plan.
DBHOB	Diameter at breast height outside bark and all.
Density Management	Reduction and composition of trees in a stand for purposes other than timber production.

DMS	The BLM's Western Oregon Density Management Study, a cooperative study of the effect of silvicultural practices on vegetation, microclimate and riparian systems.
EA	Environmental Assessment. A systematic analysis of site-specific activities used to determine whether such activities have a significant effect on the quality of the human environment.
EFH	Essential Fish Habitat. Anywhere Chinook or coho salmon could naturally occur.
EIS	Final Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines, January 2004.
ESA	Endangered Species Act. Federal legislation that ensures federal actions would not jeopardize or elevate the status of living plants and animals.
FEIS	Final Environmental Impact Statement
FSEIS	Final Supplemental Environmental Impact Statement
Fish and Wildlife Service	FWS. A division within the U.S. Department of the Interior
Fish-Bearing Stream	Any stream containing any species of fish for any period of time.
FONSI	Finding of No Significant Impact
Fuel Loading	The amount of combustible material present per unit of area, usually expressed in tons per acre (dry weight of burnable fuel).
Ground Base Yarding	Utilizing equipment operating on the surface of the ground to move trees or logs to a landing where they can be processed or loaded.
Interdisciplinary Team	IDT. A group of individuals assembled to solve a problem or perform a task.
Intermittent Stream	Any nonpermanent flowing drainage feature having a definable channel and evidence of scour or deposition. Includes ephemeral streams if they meet these two criteria.
Invasive Plant	Any plant species that is aggressive and difficult to manage.
Landing	Any designated place where logs are laid after being yarded and are awaiting subsequent handling, loading and hauling.
Late-Successional	Forest conditions consisting of larger trees and multiple canopy layers that support numerous plant and animal species.
LSR	Late-Successional Reserve (a NWFP designated land use allocation) Lands to be managed or maintained for older forest characteristics.
LSRA	Late-Successional Reserve Assessment for Oregon Coast Province – Southern Portion
LUA	Land Use Allocation. NWFP designated lands to be managed for specific objectives

LWD	Large Woody Debris. Woody material found within the bankfull width of the stream channel and is specifically of a size 23.6 inches diameter by 33 feet length (per ODFW - Key Pieces).
Native Plant	Species that historically occurred or currently occur in a particular ecosystem and were not introduced.
NEPA	National Environmental Policy Act (1969)
NMFS	National Marine Fisheries Service. Federal agency which is responsible for the regulation of anadromous fisheries in the U. S.
Non-Native Plant	Any plant species that historically does not occur in a particular ecosystem.
Non-Point	No specific site.
Noxious Weed	A plant species designated by federal or state law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or diseases; or non-native, new, or not common to the United States.
NWFP	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 Related Species within the Range of the Northern Spotted Owl (1994) (Northwest Forest Plan).
NWFP/FSEIS	Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl, February 1994
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife. Oregon State Agency responsible for the management and protection of fish and wildlife.
Oregon Smoke Management Plan	The State of Oregon's plan for implementing the National Clean Air Act in regards to burning of forest fuels.
ORGANON	A computer based program used to model projected tree growth, stand density and crown ratio using existing stand tree species and size.
PCT	Precommercial thinning. Removing some of the trees less than merchantable size from a stand so that the remaining trees grow faster.
Perennial Stream	A stream that typically has running water on a year-round basis.
RMA	Riparian Management Area (a 2008 RMP Land Use Allocation that provide for conservation of special status fish and aquatic species and maintain and restore water quality).
RMP	Salem District Record of Decision and Resource Management Plan (1995)
RMP/FEIS	Salem District Proposed Resource Management Plan / Final Environmental Impact Statement (1994).

Road Decommissioning	Road work that generally includes removal of culverts, re-establishment of natural drainage patterns, and blocking motorized access.
Road Reconstruction	Road work to restore a damaged or deteriorated road to a usable condition and possibly a new design standard.
Road Renovation	Road work that restores an existing road to its original design standard.
ROD	Record of Decision. Document that approves decisions to the analyses presented in the FEIS.
RR	Riparian Reserves (NWFP land use allocation). Lands on either side of streams or other water feature designated to maintain or restore aquatic habitat.
Rural Interface	BLM managed lands within ½-mile of private lands zoned for 1 to 20-acre lots. Areas zoned for 40 acres and larger with homes adjacent to or near BLM managed lands.
S&M FSEIS	Final Supplemental Environmental Impact Statement for Amendment to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines (2000).
S&M ROD	Record of Decision and Standards and Guidelines for Amendment to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines (2001).
Seral	One stage of a series of plant communities that succeed one another.
Silviculture	The manipulation of forest stands to achieve desired structure.
Skid Trails	Path through a stand of trees on which ground-based equipment operates.
Skyline Yarding	Moving trees or logs using a cable system to a landing where they can be processed or loaded. During the moving process, a minimum of one end of trees and logs are lifted clear of the ground
Snag	A dead, partially dead, or defective tree at least 10 inches DBHOB and 6 feet tall.
Soil Compaction	An increase in bulk density and a decrease in soil porosity resulting from applied loads, vibration, or pressure.
Soil Productivity	Capacity or suitability of a soil, for establishment and growth of a specified crop or plant species, primarily through nutrient availability.
SPZ	Stream Protection Zone is a buffer along streams and identified wet areas where no material would be removed and heavy machinery would not be allowed. The SPZ is measured to the slope break, change in vegetation, or 50 feet from the channel edge which ever is greater.
SSSP ROD	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, 2004

SSSP/SEIS	Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines, 2004
Standards and Guidelines	S&G. The primary instructions for land manager. Standards address mandatory actions, while guidelines are recommended actions necessary to a land management decision.
Succession	The stages a forest stand makes over time as vegetation competes and natural disturbances occur. The different stages in succession are often referred to as seral stages.
TMA	Timber Management Area (a 2008 RMP Land Use Allocation that consists of commercial forest lands with the main objective to achieve continuous timber production and to offer for sale the allowable sale quantity)
Topped	Completely severing the upper portion of a standing live tree. The typical purpose for this action is to enhance wildlife habitat by creating snags from standing live trees.
Turbidity	The cloudiness or haziness of a fluid caused by individual particles (suspended solids) that are generally invisible to the naked eye, similar to smoke in air. The measurement of turbidity is a key test of water quality. Turbidity can be influenced by multiple environmental sources.
USDI	United States Department of the Interior
USEPA	United States Environmental Protection Agency
Viewshed	The landscape that can be directly seen from a viewpoint or along a transportation corridor.
VRM	Visual Resource Management, all lands are classified from 1 to 4 based on visual quality ratings and the amount of modification allowed in the landscape.
Waterbars	A ridge of compacted soil or loose rock or gravel constructed across disturbed rights-of-way and similar sloping areas constructed to divert water drainage off the disturbed surface.
Watershed	The drainage basin contributing water, organic matter, dissolved nutrients, and sediments to a stream or lake.
Weed	A plant considered undesirable and that interferes with management objectives for a given area at a given point in time.
Wind Throw	Trees uprooted or blown over by natural events.
Yarding Corridors	Corridors cut through a stand of trees to facilitate Skyline yarding. Cables are strung in these corridors to transport logs from the woods to the landing.

**GREEN PEAK II DENSITY MANAGEMENT  
ENVIRONMENTAL ASSESSMENT**

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## 1.0 INTRODUCTION

### 1.1 Background

Green Peak II Density Management is a proposal to perform density management on approximately 131 acres of 70-year-old stands within LSR (Late Successional Reserve) and RR (Riparian Management Area) LUAs (Land Use Allocations). The density management would occur within the approximately 258 acre study area that is part of the DMS [The BLM (Bureau of Land Management) Western Oregon Density Management and Riparian Buffer Study] conducted in cooperation with OSU (Oregon State University) College of Forestry and USDA (United States Department of Agriculture) Forest Service PNW (Pacific Northwest Research Station).

The BLM, PNW, OSU and US Geological Survey (USGS) established the DMS in 1994 to demonstrate and test options for young stand management to meet Northwest Forest Plan objectives in Western Oregon. The primary objectives of the DMS are to:

- Evaluate the effects of alternative forest density management treatments in young stands on the development of important late-successional forest habitat attributes, and
- To assess the combined effects of density management and alternative riparian buffer widths on riparian and aquatic ecosystems.
- Determine treatment effects on selected plant and animal taxa.
- Use the DMS sites to develop new operational approaches and monitoring methods and to share results.

The DMS consists of three integrated studies: initial thinning, re-thinning, and riparian buffer. Green Peak is one of the initial thinning study sites, which was installed in 50–80-year-old stands that had never been commercially thinned. Four stand treatments of 30–60 acres each were established at each of seven study sites: 1) unthinned control, 2) high density retention (120 trees per acre (TPA), 3) moderate density retention (80 TPA), and 4) variable density retention (40-120 TPA). Small (1/4 to 1 acre in size) leave islands were included in all treatments except the control, and small patch cuts (1/4 to 1 acre in size) were included in the moderate and variable density treatments. The initial thinning study was designed to gain information about development of late-successional habitat not available from previous studies of even-aged Douglas-fir silviculture.

The riparian buffer study was nested within the moderate density retention treatment at each of the initial thinning study sites. The study focuses on the interactive effect of the upland density management treatments and the riparian buffers, the effects of buffers on microclimate and on aquatic and riparian dependant species. Four alternative riparian buffer widths are studied: 1) streamside retention (one tree canopy width, or 20–25 ft; and retained all trees contributing to bank stability), 2) variable width (follows topographic and vegetative breaks, 50 ft slope distance minimum), 3) one full site-potential tree height (approximately 220 ft), and 4) two full tree heights (approximately 440 ft).

This EA covers the continuation of the Green Peak Density Management and Riparian Buffer Study research project. The current project includes re-thinning, initial thinning, and coarse woody debris creation.

## 1.2 Purpose of and Need for Action

### Purpose

The purpose of the proposed project is to continue the implementation of the DMS that began under the original Green Peak Density Management Project EA (#OR-080-97-25) dated December 8, 1997, according to the specific implementation schedule set forth in IM OR-2005-83. The first set of research treatments occurred in fall and winter of 1999. The next phase of treatments are scheduled to occur in 2011. The research project is designed to test critical assumptions of the Northwest Forest Plan's Standards and Guidelines, and produce results important for late-successional habitat development.

The purpose for the project is to accelerate the development of late-seral/old-growth forest conditions in order to enhance terrestrial wildlife and aquatic habitats, including mid-seral enhancement of forest stands to meet the future needs of marbled murrelet, northern spotted owl, and other species dependent upon late-seral/old-growth forest habitats; and for improvement to the watershed and road system.

- ✓ **Objectives of the Density Management Study include:**
  - Evaluate effects of alternative forest density management treatments on important stand and habitat attributes;
  - Determine treatment effects on selected plant and animal taxa;
  - Assess the combined effects of density management and alternative Stream Protection Zone (SPZ) widths on aquatic and riparian ecosystems;
  - Use DMS sites to share results of on-the-ground practices and findings with land managers, regulatory agencies, policy makers, and the public;
  - Use results from DMS research to conduct a long-term adaptive management process where management implications and policy changes are regularly evaluated and changed as needed.
  - Provide for research to support the management of lands and resources administered by the BLM in western Oregon (RMP p. 60).
  
- ✓ **Manage mid-seral stands in RR LUA (RMP pp. 9-15) to:**
  - Accelerate the growth of trees to restore large conifers to Riparian Reserves (RMP p.7).
  - Enhance or restore habitat (e.g. CWD, snag habitat, in-stream large wood) for populations of native riparian-dependent plants, invertebrates, and vertebrate species (RMP p.7).
  - Improve structural and spatial stand diversity on a site-specific and landscape level in the long-term (RMP p. 11, 26, D-6).
  
- ✓ **Maintain and develop a safe, efficient and environmentally sound road system (RMP p. 62) to:**
  - Provide appropriate access for timber harvest and silvicultural practices used to meet the objectives above.
  - Provide for fire vehicle and other management access.
  - Reduce environmental effects associated with identified existing roads within the project area.

The project would be implemented through the sale of a timber sale.

## Need for Action

A second round of density management manipulations is now planned for implementation beginning in 2010. Stem density would be reduced in the high, moderate, and variable density treatments. Remeasurement, data management, and analysis are ongoing for three long-term, core components of the DMS: vegetation, microclimate, and aquatic vertebrates. In addition, several short-term collaborative studies were completed and additional collaborative studies are likely.

The DMS Establishment Report (DMS study plan, 2006 – abstract) states that “the primary objectives of the DMS are to evaluate the effects of alternative forest density management treatments in young stands on the development of important late-successional forest habitat attributes and to assess the combined effects of density management and alternative riparian buffer widths on aquatic and riparian ecosystems.”

The roads lack adequate rock to prevent environmental degradation during timber haul use. Existing roads within the project area need renovation work to assure all aspects of the roadway are functioning and in order to minimize impacts to the riparian zones and hydrologic flows. Renovation may include road and ditch blading for proper drainage, brush cutting for visibility and enhanced drainage, cleaning culverts, and rock surface application to maintain water shedding capabilities during timber haul use.

There is a need to:

- Continue implementation of the research projects under research project guidelines such as using the same yarding methods in the study areas as in the past;
- Implement density management to meet the schedule of the DMS (IM OR-2005-83). Harvest would be implemented within an 18-month period commencing in October 2010.
- Renovate roads;

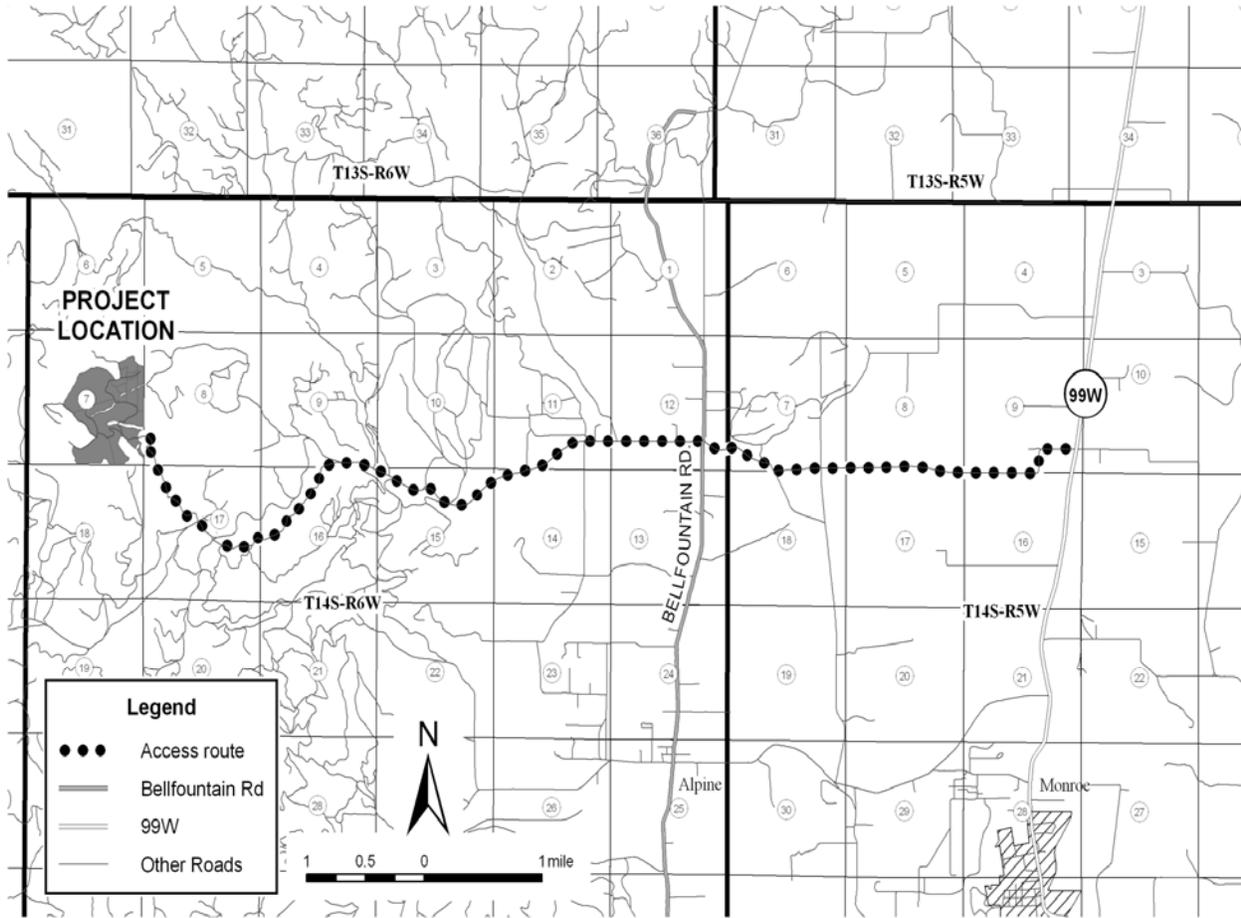
### **1.3 Project Area Location**

The project area is located approximately 12 air miles southwest of Corvallis, Oregon, in Benton County on forested land managed by the Marys Peak RA (Resource Area), Salem District BLM. They are within Township 14 South, Range 6 West, Section 7, Willamette Meridian (see Map 1).

# Map 1. Green Peak II location

July 14, 2008

United States Department of the Interior  
BUREAU OF LAND MANAGEMENT  
GREEN PEAK II LOCATION MAP  
T. 14 S., R. 6 W. - SALEM DISTRICT - OREGON



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

The proposed density management activities in the project area have been designed to conform to the following documents, which direct and provide the legal framework for management of BLM lands within the Salem District:

1. *Salem District Record of Decision and Resource Management Plan*, May 1995 as amended (RMP): The RMP has been reviewed and it has been determined that the proposed thinning activities conform to the land use plan terms and conditions (e.g. complies with management goals, objectives, direction, standards and guidelines) as required by 43 CFR 1610.5 (BLM Handbook H1790-1). Implementing the RMP is the reason for doing these activities (RMP p.1-3);
2. *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 (the Northwest Forest Plan, or NWFP);
3. *Record of Decision to Remove the Survey and Manage Mitigation Measure Standards and Guidelines from Forest Service National Forests and Bureau of Land Management Districts Within the Range of the Northern Spotted Owl* (2007 SM ROD), July 2007.

The analysis in the Green Peak II EA is site-specific, and supplements and tiers to analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS). The RMP/FEIS includes the analysis from the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl*, February 1994 (NWFP/FSEIS). The RMP/FEIS is amended by the *Final Supplement to the 2004 Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines*, June 2007.

This proposal is in conformance with the Salem District's 2008 Record of Decision and Resource Management Plan (2008 ROD/RMP).

Revision of a resource management plan necessarily involves a transition from the application of the old resource management plan to the application of the new resource management plan. A transition from the old resource management plan to the new resource management plan avoids disruption of the management of BLM-administered lands and allows the BLM to utilize work already begun on the planning and analysis of projects.

The 2008 ROD allowed for such projects to be implemented consistent with the management direction of either the 1995 resource management plan (1995 RMP) or the 2008 RMP, at the discretion of the decision maker.

This project meets the requirements designated in the 2008 ROD for such transition projects:

1. A decision was not signed prior to the effective date of the 2008 ROD.
2. Preparation of National Environmental Policy Act documentation began prior to the effective date of the 2008 ROD with a scoping letter on September 16, 2008 and the start of the EA comment period on July 1, 2009.
3. A decision on the project would be signed within two years of the effective date of the 2008 ROD.

4. Regeneration harvest would not occur in a late-successional management area or any harvest would not occur in deferred timber management area.
5. There would be no destruction or adverse modification of critical habitat designated for species listed as endangered or threatened under the Endangered Species Act.

Since the planning and design for this project was initiated prior to the 2008 ROD, it contains certain project design features that are not consistent with the management direction contained in the 2008 RMP.

The design features for this project that are consistent with the 1995 RMP but not consistent with the 2008 RMP include:

Design Feature	Green Peak II Density Management	2008 RMP
Width of the Riparian Reserve or Riparian Management Area LUA on fish bearing streams <sup>1</sup>	Two site-potential trees or 420 feet	One site-potential tree height or 210 feet
Width of the Riparian Reserve Land use allocation on non fish bearing intermittent streams <sup>1</sup>	One site-potential tree height or 220 feet	Half of one site-potential tree height or 110 feet
Stream protection zone on intermittent streams <sup>1</sup>	20 feet (EA p. 9)	35 feet (ROD p 38)
Stream protection zone on perennial streams <sup>1</sup>	20 feet (EA p. 9)	60 feet (ROD p 38)
Land Use Allocation	Late Successional Reserve/Riparian Reserve	Timber Management Area/Riparian Management Area

<sup>1</sup> Distance on each side of stream

The 2008 ROD anticipated these inconsistencies and projected they would not alter the analysis of effects in the associated final environmental impact statement. The 2008 ROD anticipated that the primary inconsistency with the 2008 RMP Plan would be the retention of merchantable material in regeneration harvest units for green tree retention, snags, and CWD where the management direction in 2008 RMP would direct the removal of all merchantable material. This type of inconsistency would result in less change to the current condition of the affected environment described in the 2008 EIS than if the project was consistent with the management direction in the 2008 RMP.

The implementation of this project would not have significant environmental effects beyond those already identified in the Final EIS/Proposed RMP. The proposed action does not constitute a major federal action having significant effects on the human environment; therefore, an environmental impact statement would not be prepared.

The project area is partially within the coastal zone as defined by the Oregon Coastal Management Program. This proposal is consistent with the objectives of the program, and the State planning goals which form the foundation for compliance with the requirements of the Coastal Zone Act. Management actions/directions found in the RMP were determined to be consistent with the Oregon Coastal Management Program.

The following documents provided additional direction in the development of the Green Peak II Density Management project:

- IM OR-2005-083, dated August 12, 2005, that directs the Districts with established study sites to implement the next phase of the DMS. The Green Peak study site (see Map 2) is one of twelve sites referenced in the IM and scheduled for implementation in 2011.

- *Late-Successional Reserve Assessment Oregon Coast Province- Southern Portion* (LSRA, see USDA-FS and USDI-BLM 1997);
- *South Fork Alsea River Watershed Analysis* (SFAWA), USDI BLM, 1995 and *3/ Benton Foothills Watershed Analysis* (BFWA), USDI BLM 1997.

The above documents, along with the Green Peak II IDT (interdisciplinary team) reports (EA section 7.1.1), are hereby incorporated by reference in the Green Peak II EA and available for review in the Salem District Office. Additional information about the proposed projects is available in the NEPA file (Green Peak II Density Management NEPA/EA File), also available at the Salem District Office.

### **Aquatic Conservation Strategy Update**

On March 30, 2007, the District Court, Western District of Washington, ruled adverse to the US Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA-Fisheries) and USFS and BLM (Agencies) in *Pacific Coast Fed. of Fishermen's Assn. et al v. Natl. Marine Fisheries Service, et al and American Forest Resource Council*, Civ. No. 04-1299RSM (W.D. Wash)(PCFFA IV). Based on violations of the Endangered Species Act (ESA) and the National Environmental Policy Act (NEPA), the Court set aside:

- the USFWS Biological Opinion (March 18, 2004 ),
- the NOAA-Fisheries Biological Opinion for the ACS Amendment (March 19, 2004),
- the ACS Amendment Final Supplemental Environmental Impact Statement (FSEIS) (October 2003), and the
- ACS Amendment adopted by the Record of Decision dated March 22, 2004.

Previously, in *Pacific Coast Fed. Of Fishermen's Assn. v. Natl. Marine Fisheries Service*, 265 F.3d 1028 (9th Cir. 2001)(*PCFFA II*), the United States Court of Appeals for the Ninth Circuit ruled that because the evaluation of a project's consistency with the long-term, watershed level ACS objectives could overlook short-term, site-scale effects that could have serious consequences to a listed species, these short-term, site-scale effects must be considered.

*EA section 4* shows how the Green Peak II Density Management project meets the Aquatic Conservation Strategy in the context of the PCFFA cases.

### **1.5 Decision Criteria/Project Objectives**

The Marys Peak RA Field Manager would use the following criteria/objectives in selecting the alternative to be implemented. The field manager would select the alternative that would best meet these criteria. The selected action would:

- Meet the purpose and need of the proposed action (EA section 1.2).
- Implement the next phase of the DMS project as described in the *BLM Density Management and Riparian Buffer Study: Establishment Report and Study Plan, 2006* (DMS Study Plan);
- Would not have significant impact on the affected elements of the environment beyond those already anticipated and addressed in the Final EIS.

## **1.6 Results of Scoping**

A scoping letter, dated September 16, 2008, was sent to thirty-one potentially affected and/or interested individuals, groups, and agencies. One response was received during the scoping period.

### **Oregon Wild**

Oregon Wild provided the following statements or requests:

- We are interested in a detailed description of the research project, its intended outcomes, and its environmental impacts.
- We would like to see some results and analysis from that included in the Green Peak II EA to help inform the public about the study.
- Although this area is part of a study and so you may be pursuing different goals than usual, we still believe that LSR and RR objectives must be met for this area. Please describe how the thinning study in these LUAs still meet objectives for wildlife habitat, canopy closure, and other natural resource guidelines.
- Special status species surveys must be completed prior to developing NEPA alternatives and before the decision is determined.
- The project analysis should separately discuss each of the Aquatic Conservation Strategy objectives (under the Northwest Forest Plan), and describe how the proposed action is consistent with these objectives.
- The agency must consider and disclose cumulative impacts from the proposed action.
- The Alsea Stewardship Group –would certainly be interested in learning about this project.

## **2.0 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 were identified. No alternatives were identified that would meet the purpose and need of the project and have meaningful differences in environmental effects from the Proposed Action. Therefore, this EA will analyze the effects of the Alternative 1 (No Action) and Alternative 2 (Proposed Action).

### **2.1 Alternative 1 (No Action)**

The BLM would not implement any of the action alternatives at this time. This alternative serves to set the environmental baseline for comparing effects to the proposed action. Continued implementation of the DMS would not occur in Green Peak.

### **2.2 Alternative 2 (Proposed Action)**

The proposed action is to implement a suite of treatments developed by scientists from OSU and the USDA Forest Service PNW, in consultation with BLM managers and resource specialists. This project consists of density management on approximately 131 acres of 70-year-old stands within LSR and RR LUAs, and maintaining an unharvested “no-treatment/control area” to be kept intact indefinitely to determine the effectiveness of the thinning treatments. The same 131 acres initially thinned in 1999-

2000, of now 70-year-old mixed-conifer stands would now be re-thinned with a proportional thinning design (trees retained from all diameter classes). Target residual density would be of 20 to 60 TPA (see table 1 below). Seven additional TPA would be left for creation of CWD (2 TPA) immediately following density management and for creation of snags (5 TPA) 10 years later. The existing leave islands, riparian buffers and patch cuts would be unchanged. The treatments would be implemented through a timber sale to be offered in 2010 (Green Peak II, Map 2). Trees would be skyline yarded on approximately 115 acres and ground-based yarded on approximately 16 acres. Road renovation and CWD creation are also a part of the Proposed Action. Component studies initiated prior to the 1999-2000 harvest would continue, including data collection prior to and following treatment and periodic intervals set forth in the DMS Study Plan. The component studies include vegetation response, aquatic habitats and vertebrate diversity, microclimates and microhabitats of riparian and adjacent upland areas. In addition, collaborative studies on a range of species and ecosystem functions will be continued or initiated.

**Previous Treatment** The project area received an initial thinning treatment in 1999-2000, divided into high, moderate and variable density treatments. Nested within these treatment areas were unharvested leave islands (1/4 to 1 acre in size) and riparian buffers (SPZ) testing three separate design widths for comparison (riparian buffer study component of DMS). Cleared patch openings (1/4 to 1 acre in size) were created in the moderate and variable density treatments.

**Table 1: Summary of Proposed Action**

Parameter		Quantity (Approx.)	
Study Area (Acres)		Control area: 57 acres	
		Density management: 131 acres	
		Patch openings: 12 acres	
		Leave islands: 17 acres	
		Riparian buffers: 31 acres	
		TOTAL: 248 acres	
Stand Age in 2010 (years)		70	
Tree Species Composition (%)		Douglas-fir: 94%	
		Western hemlock 2.5%	
		Western red cedar: less than 1%	
		Hardwood: 2.5% (alder, maple, chinquapin)	
Total Acres Density Management		131 acres	
CWD enhancement (2 TPA)		131 acres	
Potential snag enhancement (5 per acre) by 2022		131 acres	
Road Renovation (miles)		3.5	
Study Area (Treatment Residual Density)		Previous Treatment	Proposed Action *
Trees per Acre (TPA)  <i>(Does not include: hardwood trees and trees less than 9" DBH reserved, nor 5 TPA for snags and 2 TPA for coarse wood in Proposed Action).</i>	High Density Area (approx. 27 acres)	120 TPA	60 TPA
	Moderate Density Area (approx. 70 acres)	80 TPA	30 TPA
	Variable Density Area (Combination of 3 densities, total approx. 34 acres)	High density (approx. 13 ac.) 120 TPA	60 TPA
		Mod. density (approx. 14 ac) 80 TPA	30 TPA
		Low density (approx. 7 ac) 40 TPA	20 TPA

\*See BLM Density Management and Riparian Buffer Study: Establishment Report and Study Plan, 2006 (DMS Study Plan) for treatment design rationale.

**2.2.1 Connected Actions**

**1.2. Road Work:** Road renovation of approximately 3.5 miles would occur. Drain dips would be installed where cross drainage is necessary. Within existing roads spot rock application may occur. Roads R1 and R2 constructed and decommissioned in the first treatment (completed 2000) would be reconstructed.

2.2.1

2.2.1

2.2.1

2.2.1

2.2.1

## 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 described in EA section 3.1.

### General

All logging activities would utilize the Best Management Practices (BMPs) required by the Federal Clean Water Act (as amended by the Water Quality Act of 1987) (1995 RMP Appendix C pp. C-1 through C-10).

**Table 2: Season of Operation/ Operating Conditions**

Season of Operation or Operating Conditions	Applies to Operation	Objective
During periods of low precipitation, generally May 1 to October 31	Road Reconstruction/Renovation	Minimize soil erosion
During periods of low soil moisture, generally June 15 to October 31	Ground-based yarding (Harvester/Forwarder and hydraulic loader)	Minimize soil erosion/compaction
During periods of low soil moisture, generally July 15 to October 15	Ground-based yarding (Tractor)	Minimize soil erosion/compaction
During periods of low tree sap flow, generally July 15 to April 15	Yarding outside of road right of ways (Skyline)	Protecting the bark and cambium of residual trees
All year, generally January 1 to December 31	Log hauling on rock surfaced roads	Minimize soil erosion
Time period beginning two hours after sunrise and ending two hours before sunset (April 1 through September 15)	Operation of power equipment	Minimize noise disturbance (marbled murrelet)

### Project Design Features by 1995 RMP Objectives

#### **To minimize soil erosion as a source of sedimentation to streams and to minimize soil productivity loss from soil compaction, loss of slope stability or loss of soil duff layer:**

- Ground based yarding would take place generally on slopes less than 35 percent.
- Waterbars would be constructed where they are determined to be necessary by the contract administrator.
- Skid and harvest roads would be blocked where they access main vehicular roads following completion of ground-based yarding.
- In the skyline yarding area, one end suspension of logs would be required over as much of the area as possible to minimize soil compaction, damage to reserve trees, and disturbance. Yarding corridors would average approximately 150 feet apart where they intersect boundaries and be 15 feet or less in width. Lateral yarding up to 75 feet from the skyline using an energized locking carriage would be required.

- During periods of rainfall when water is flowing off road surfaces, the contract administrator may restrict log hauling to minimize water quality impacts, and/or require the purchaser to install silt fences, bark bags, or apply additional road surface rock.
- All large areas of exposed mineral soil (roads to be renovated, cat/skid trails, landings), as determined by the contracting administrator would be grass seeded with Oregon Certified (blue tagged) red fescue (*Festuca rubra*), applied at a rate equal to 40 pounds per acre or sown/planted with other native species as approved by the resource area botanist. Prior to applying seed, the contractor would supply the BLM with the seed certification (blue tag) and seed label.
- Landings should be kept to the minimum size needed to accomplish the job and use existing road surfaces as much as possible.
- Place additional boulders and increase ditch angles (steepened) to prevent access around the existing gate at the origin of the 14-6-7.1 road from all-terrain vehicles.

**To contain and/or reduce noxious weed infestations on BLM-managed lands using an integrated pest management approach:**

- All soil disrupting equipment would be required to be clean of dirt and vegetation as directed by the contract administrator.

**To meet the objectives of the “Aquatic Conservation Strategy (ACS)” Riparian Reserves (ACS Component #1):**

- Streamside Protection Zones (SPZs) would be applied at the same width as the initial harvest that was completed in 2000. The widths established under the riparian buffer study are one site-potential tree height (approximately 220 feet, both sides), “variable” width (about 50 feet, both sides), and “streamside retention” (about 20 feet, both sides), see map 2.
- To protect water quality, all trees within one tree height of all SPZs would be felled away from streams. Where a cut tree does fall within a SPZ, the portion of the tree within the SPZ would remain in place. No skyline or ground-based yarding would be permitted in or through SPZs.

**To protect and enhance stand diversity and wildlife habitat components:**

- Tree selection for removal would be based on Marking Guidelines (Appendix 2). Tree selection would be designed to leave a full range of diameter distribution, maintain or increase the proportion of minor species, and retain legacy and wildlife tree structure while meeting target densities. Residual tree densities range from 25 to 65 TPA.
- Thinning would occur primarily to Douglas-fir trees. Minor conifer species would be retained to maintain species diversity (except where they form dense patches, occur in yarding corridors, or skid trails). All hardwoods would be retained except where they occur in yarding corridors or skid trails.
- Any tree found to have a stick or ball nest would be left.
- Retain plus tree (selected conifer for the genetics program) #13-31-5 found in the variable density treatment area and study plot center trees.
- All existing snags and CWD would be reserved. Additional trees would be reserved around snags to protect them from logging operations and reduce the likelihood of their removal for worker safety reasons. Any snags felled or logs moved for these purposes would remain on site as close to the origin area as possible within the project area.
- Understory conifers less than 9.0 inches diameter breast height outside bark (DBHOB) would be excluded from harvest.
- The post-harvest prescribed minimum level of CWD is two dominant or co-dominant trees per acre across all treatment units. Existing down trees of decay Class 1 or 2 quality can be

used to satisfy this requirement. New inputs of CWD would occur from the incidental felling of reserve trees during the thinning operations. Post-harvest CWD would be inventoried to assure that there are at least two trees (decay Class 1 or 2) per acre across all treatment units. The silvicultural prescription provides for two green trees per acre to be reserved from the residual stands and felled under the timber sale contract if the existing post-harvest CWD levels are not sufficient to meet the desired quantity and quality of trees. Trees to be utilized for CWD creation would be stand average DBHOB or larger. In order to facilitate adequate spacing across the landscape any post-harvest clump of CWD that contains more than 10 quality trees would only be credited with 10 trees (five-acre maximum size per clump).

- To reduce damage to trees in leave islands (areas reserved from harvest), trees within one tree height would be felled away from reserve areas. Any logging debris resulting from felling operations would be pulled back into the harvest area.
- Ground-based yarding would be excluded from patch cuts and leave islands. Avoid cable yarding through patch cuts and leave islands, but if required to complete the project, maintain corridor widths to the minimum possible.
- Snag levels would be monitored for 10 years post harvest to determine if levels are less than 5 stand average DBHOB or larger snags per acre. If found to be deficient, snags would then be created to meet that level. Snag creation methods would include any or all viable and economically feasible methods to create full or partial snags from living trees.

**To reduce fire hazard risk and protect air quality:**

- Fuel reduction would be accomplished by burning of slash piles, by machine processing of slash on-site, or by a combination of these techniques.
- Whenever possible, alternative waste recycling of slash material would be encouraged. This may be accomplished by: setting aside firewood to the public, chipping for co-gen power production, chipping for soil amendments, soil protection, etc.
- Debris accumulations would be machine and/or hand piled and/or chipped. For all areas to be piled or chipped, at least 75 percent of the slash in the ¼ inch to 6 inch diameter range would be piled for burning or chipped with the chips being spread out on the site or removed from the site.
- Light accumulations of debris cleared during renovation of roads that would remain in drivable condition following the completion of the project would be scattered along the length of rights-of-way.
- Heavy accumulations of debris on landings and within 30 feet of existing roads that would remain in drivable condition would be either machine or hand piled and burned as directed by the contract administrator.
- All piles would be located in areas suitable for burning at least ten feet away from reserve trees, snags, or unit boundaries. Piles should not be located on top of large logs or stumps. Larger piles would be preferable over small piles. Windrows would be avoided unless approved in advance by the contract administrator.
- Wherever applicable and practical, logs larger than 12” in diameter shall be left scattered on site to help meet the down log requirement.
- During the late summer, before the onset of fall rains, all piles to be burned would be covered at least 80 percent with 4-millimeter (minimum thickness) black polyethylene plastic.
- All burning would occur under favorable smoke dispersal conditions in the fall, in compliance with the Oregon Smoke Management Plan (RMP pp. 42).
- Logging debris would be cleared from within 4 feet each side of a primitive trail that lies within the moderate density and control area.

**To protect Bureau Special Status Plants, Fungi and Animals:**

- Site management of any bureau special status (SS) botanical and fungal and animal species found as a result of additional inventories would be accomplished in accordance with, BLM Manual 6840- *Special Status Species Management* and the *Record of Decision To Remove the Survey and Manage Mitigation Measure Standards and Guidelines from Bureau of Land Management Resource Management Plans Within the Range of the Northern Spotted Owl* (July, 2007).
- The RA biologist and/or botanist would be notified if any bureau SS plant and animal species were found occupying stands proposed for treatment during project activities. Research areas are exempt from NWFP and S&G (Standards and Guidelines) as stated in the REO (Regional Ecosystem Office) memo on Assessment and Review of Proposed Research under the Northwest Forest Plan, dated May 12, 2003 (Appendix 4).

**To protect Cultural Resources:**

The project area occurs in the Oregon Coast Range. Survey techniques are based on those described in Appendix D of the *Protocol for Managing Cultural Resource on Lands Administered by the Bureau of Land Management in Oregon*. 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 were discovered during project work until an archaeologist can assess the significance of the discovery.

**2.3 Project 1: Comparison of Alternatives With Regard To Purpose and Need**

**Table 3: Comparison of Alternatives by Purpose and Need**

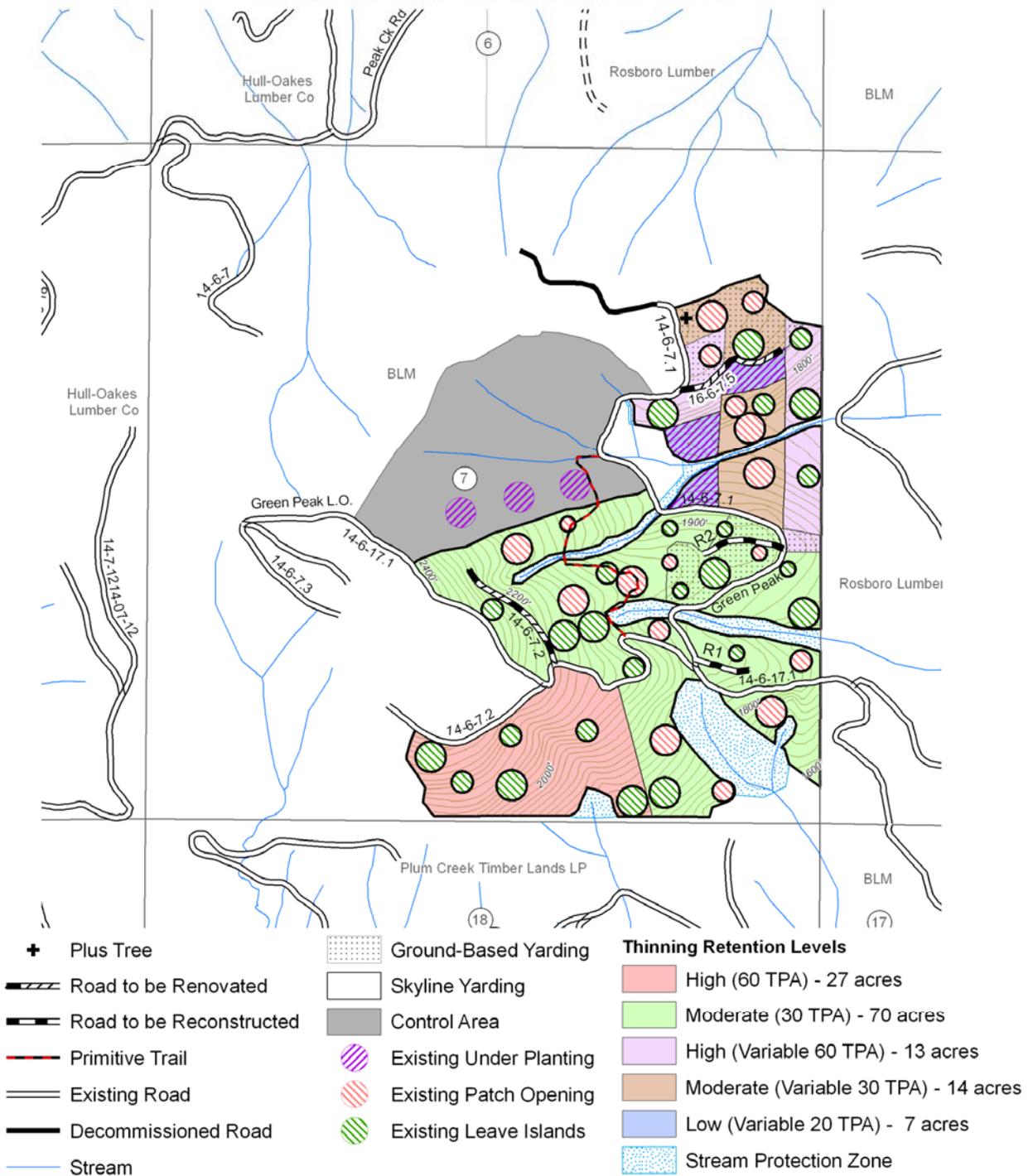
Purpose and Need (EA section 1.2)	Alternative 1 (No Action)	Alternative 2 (Proposed Action)
Continue implementation of the DMS by implementing Phase 2 of the experiment.	Does not meet this purpose and need. Research collected to date would have limited value without additional treatments and continued research.	Continues the original purpose of the DMS with additional research and monitoring.
Late-successional forest conditions, which serve as habitat for late-successional forest species, can be developed, accelerated, and enhanced.	Does not meet this purpose and need. Stand structure would remain relatively uniform, except for gaps created by disturbance. The main input of CWD would come from density mortality, disturbance events and endemic levels of insects and disease.	Creates patch openings with adjacent clumps of trees. Retains existing limbs on open grown trees through selective cutting of trees. Larger diameter trees felled for safety or operational reasons would be retained for CWD. Increases the quality and value of wildlife habitat.
Offer a marketable density management timber sale.	Does not meet this purpose and need. No timber would be offered for sale.	Offers approximately 131 acres of timber for sale.
Provides appropriate access for timber harvest and Silvicultural practices used to meet the objectives above, while minimizing increases in road densities.	No change. Maintain existing road densities in current maintained state.	Renovates approximately 3.5 miles of road.
	Delay maintenance on feeder roads, main routes would be maintained.	Would implement maintenance on feeder roads, allowing for continued access.

Map 2: Map of Alternative 2 (Proposed Action)

United States Department of the Interior - BUREAU OF LAND MANAGEMENT

**GREEN PEAK II EA MAP**

T. 14 S., R. 6 W., Section 7, W. M. - SALEM DISTRICT - OREGON



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### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS COMMON TO ALL PROJECT AREAS

#### 3.1 Identification of Affected Elements of the Environment

The interdisciplinary team reviewed the elements of the human environment, required by law, regulation, Executive Order, and policy, to determine if they would be affected by the proposed actions (formerly BLM H-1790-1, Appendix 5, BLM Handbook H-1790-1: p. 137), [40 CFR 1508.27(b)(3)], [40 CFR 1508.27(b)(8)]. Table 4 summarizes the results of that review. Affected elements are **bold**. All entries apply to the action alternative, unless otherwise noted.

**Table 4: Review of the Elements of the Environment**

<i>Elements Of The Environment</i> [Statute/Authority/CFR]	<i>Status</i> <sup>1</sup>	<i>Cumulative Effects</i> <sup>2</sup>	<i>Remarks</i>
<b>Air Quality</b> [Clean Air Act as amended (42 USC 7401 et seq.)]	<b>Affected</b>	<b>Addressed in text EA section 3.2.6.3</b>	<b>Addressed in text (EA sections 3.2.6 and Green Peak II Fuels Report)</b> Addressed in Text ( <i>EA section 3.3.6</i> )
Cultural Resources [National Historic Preservation Act (NHPA), as amended (16 USC 470), 40 CFR 1508.27(b)(3)], 40 CFR 1508.27 (b)(8)]	Not Affected	No	Cultural resource sites in the Oregon Coast Range, both historic and prehistoric, occur rarely. The probability of site occurrence is low because the majority of BLM managed Oregon Coast Range land is located on steep upland mountainous terrain that lack concentrated resources humans would use. Post-disturbance inventory would be completed on slopes less than 10 percent.
Ecologically critical areas [40 CFR 1508.27(b)(3)] )	Not Present	No	
Energy Policy [Executive Order (E.O.) 13212]	Not Affected	No	There are no known energy resources located in the project areas. The proposed action would have no effect on energy development, production, supply, and/or distribution.
Environmental Justice [E.O. 12898, 2/ 11/1994]	Not Affected	No	The proposed action is not anticipated to have disproportionately high and adverse human health or environmental effects on minority populations and low income populations.
<b>Fire Hazard/Risk Healthy Forests Restoration Act of 2003 (P.L. 108-148)</b>	<b>Affected</b>	<b>Addressed in text EA section 3.2.6.3</b>	<b>Addressed in text (EA sections 3.2.6 and Green Peak II Fuels Report)</b>
<b>Essential Fish Habitat</b> [Magnuson-Stevens Act Provision: Essential Fish Habitat (EFH): Final Rule (50 CFR Part 600; 67 FR 2376, 2/17/ 2002)]	<b>Affected</b>	<b>Addressed in text EA section 3.2.4.3</b>	<b>Addressed in text (EA sections 3.2.4 and Green Peak Thinning Project Environmental Assessment Fisheries Report)</b>

<sup>1</sup> *Not present* = not present within the project area, *Not affected* = not affected by the project, *Affected* = affected by the project yet in compliance with listed authority

<sup>2</sup> Do the action alternatives contribute to cumulative effects to this element? Yes/No

<i>Elements Of The Environment [Statute/Authority/CFR]</i>		<i>Status<sup>1</sup></i>	<i>Cumulative Effects<sup>2</sup></i>	<i>Remarks</i>
<b>Fish Species/Habitat (except Endangered Species Act (ESA) listed species/habitat)</b>		Affected	Addressed in text EA section 3.2.4.3	Addressed in text (EA sections 3.2.4 and Green Peak Thinning Project Environmental Assessment Fisheries Report)
Floodplains [E.O. 11988, as amended, 5/24/1977)		Not Affected	No	The proposed action does not involve occupancy or modification of floodplains, and would not increase the risk of flood loss.
Hazardous or Solid Wastes [Resource Conservation and Recovery Act of 1976 (43 USC 6901 et seq.), Comprehensive Environmental Response Compensation, and Liability Act of 1980, as amended (43 USC 9615)]		Not Present	No	
<b>Invasive, Nonnative Species (plants) (Federal Noxious Weed Control Act and E.O. 13112)</b>		Affected	Addressed in text EA Section 3.2.1.3	Addressed in text (EA sections 3.2.1 and Green Peak II Botanical & Fungal Special Status and Noxious Weed Report)
Land Uses (right-of-ways, permits, etc)		Not present	No	
Late Successional and Old Growth Stands		Not Present	No	
<b>Migratory Birds [Migratory Bird Treaty Act of 1918, as amended (16 USC 703 et seq.), E.O. 131186]</b>		Affected	Addressed in text EA Section 3.2.5.3	Addressed in text (EA sections 3.2.5 and Biological Evaluation for Green Peak II Density Management Timber Sale)
Native American Religious Concerns [American Indian Religious Freedom Act of 1978 (AIRFA) (42 USC 1996)]		Not Affected	No	No Native American religious concerns were identified during the public scoping period.
Public Health and Safety [40 CFR 1508.27(b)(2)]		Not Affected	No	Oregon Occupational Safety and Health Administration (OR OSHA) rules would be enforced through contract administration.
Recreation		Not Affected	No	Dispersed recreation in the area may include hunting, camping and target shooting and would continue upon completion of the proposed projects therefore recreational activities would not be affected.
Rural Interface Areas		Not Present	No	
<b>Soils</b>		Affected	Addressed in text EA section 3.2.2.3	Addressed in text (EA sections 3.2.2 Green Peak II Soils/Hydrology Report)
<b>Other Special Status Species / Habitat</b>	Plants	Affected	Addressed in text EA section 3.2.1.3	Addressed in text (EA sections 3.2.1 and Green Peak II Botanical & Fungal Special Status and Noxious Weed Report)

<i>Elements Of The Environment [Statute/Authority/CFR]</i>		<i>Status<sup>1</sup></i>	<i>Cumulative Effects<sup>2</sup></i>	<i>Remarks</i>
	Wildlife	Affected	Addressed in text EA section 3.2.5.3	Addressed in text (EA sections 3.2.5 and Biological Evaluation for Green Peak II Density Management Timber Sale)
Threatened or Endangered (T/E) Species or Habitat [Endangered Species Act of 1983, as amended (16 USC 1531) (ESA) ]	Fish	Affected	Addressed in text EA Section 3.2.4.3	Addressed in text (EA section 3.2.4 and Green Peak Thinning Project Environmental Assessment Fisheries Report)
	Plant	Not Present	No	
	Wildlife	Affected	Addressed in text EA Section 3.2.5.3	Addressed in text (EA sections 3.2.5 and Biological Evaluation for Green Peak II Density Management Timber Sale)
Visual Resources		Not Affected	No	The project is located within VRM 4 designations. Changes to the landscape character is expected to comply with these guidelines..
Water Quality [Clean Water Act of 1977 (33 USC 1251 et seq.) (CWA)]		Affected	Addressed in text EA section 3.2.3.3	Addressed in text (EA Sections 3.2.3 and Green Peak II Soils/Hydrology Report)
Water Resources – Other		Affected	Addressed in text EA section 3.2.3.3	Addressed in text (EA sections 3.2.3 and Green Peak II Soils/Hydrology Report)
Wetlands (E.O. 11990 , 5/24/1977), 40 CFR 1508.27(b)(3)]		Not Affected	No	No effects to wetlands are expected because all proposed activities would occur outside of known wetlands.
Wild and Scenic Rivers [Wild and Scenic Rivers Act, as amended (16 USC 1271), 40 CFR 1508.27(b)(3)]		Not Present	No	
Wildlife Habitat Components (snags, CWD, remnant old growth trees)		Affected	Addressed in text EA section 3.2.5.3	Addressed in text (EA sections 3.2.5 and Biological Evaluation for Green Peak II Density Management Timber Sale)
Wilderness (Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.); Wilderness Act of 1964 (16 USC 1131 et seq.)		Not Present	No	

## **3.2 Affected Environment and Environmental Effects**

Those elements of the human environment that were determined to be affected are *vegetation, soils, water, fisheries/aquatic habitat, wildlife, and fuels/air quality*. This section describes the current condition and trend of those affected elements, and the environmental effects of the alternatives on those elements.

### **3.2.1 Vegetation**

(*IDT Reports incorporated by reference: Silviculture Prescription Green Peak II Project, pp. 1-17 (and Appendices 1-4) and Green Peak II Botanical and Fungal Special Status and Noxious Weed Report pp 1-7*)

#### **Affected Environment**

##### **Site Conditions**

The project is in the eastern edge of the Oregon Coast Range at elevations of 1550 to 2510 feet. The average site index (King, 50-year) is 123 (site class 2).

The stands in the Green Peak area are dominated by the western hemlock/ dwarf Oregon-grape – oxalis plant association, typically moist and shaded sites with soils that average 50 inches depth and are very productive. These plant associations are relatively cool (mean annual temperature of 50 degrees Fahrenheit) and moist (about 109 inches annual precipitation) for the Coast Range climate, and are found at elevations of 1,050 to 2,510 feet. The plant association predominates in the Green Peak II area largely due to the northwest aspect of the project area.

##### **Present Stand Condition and History**

The proposed treatment area consists of one forest stand totaling 238 acres. It was clearcut harvested in the 1930's, and cattle grazing occurred there in the 1930's and 1940's. The area was burned in 1943, and the current stand established shortly after that from natural regeneration. Very little management of any kind occurred, though approximately 5 acres are known to have been precommercially thinned (date unknown). The stand is dominated by Douglas-fir with a minor component of western hemlock and western red cedar. Red alder is found in moist areas, and golden chinquapin is found in drier uplands on south slopes.

Four stand treatments of 30–60 acres each were established at each of seven initial thinning study sites: 1) unthinned control, 2) high density retention (120 trees per acre (TPA), 3) moderate density retention (80 TPA), and 4) variable density retention (40, 80 and 120 TPA). Small (1/4 to 1 acre in size) leave islands were included in all treatments except the control, and small patch cuts (1/4 to 1 acre in size) were included in the moderate and variable density treatments (See Map). Phase one of the study treatments were implemented in the Green Peak timber sale sold in October 1999, and harvest was completed by June, 2000. Underplanting (2-0 bare-root Douglas-fir, western hemlock and western red cedar) of 1-acre patches within the control, high and moderate density treatments was completed in March, 2000.

The riparian buffer study was nested within the moderate density treatment at each of the initial thinning study sites. Alternative riparian buffer widths included: 1) streamside retention (one tree

canopy width, or 20–25 ft; and retained all trees contributing to bank stability), 2) variable width (follows topographic and vegetative breaks, 50 ft slope distance minimum), 3) one full site-potential tree height (approximately 220 ft), the fourth buffer width, two full tree heights (approximately 440 ft) does not occur at Green Peak, but does at some other DMS sites.

### Stand Structure and Forest Health

The current condition of stands in the Green Peak project is summarized in Table 5.

The data is from research plots established in 1998 and re-measured in 2002 and 2005, including over 1,400 trees. Table 5 summarizes data collected in 2005, with growth and mortality modeled for 5 years to 2010 using Organon (v.8.2, Hann, et al, 2006).

Currently, the phase one treatment has resulted in stand densities ranging from untreated control (160 trees per acre) to relatively low density in the moderate density 80 TPA and (variable density) low retention 40 TPA. In general, treatments have resulted in slightly greater species diversity by reducing density of Douglas-fir only, greater horizontal and vertical diversity, and increased growth rates.

In 2004, an ice storm caused breakage in trees in an area of approximately 5 acres in the moderate retention treatment area, near the end of Road 14-6-7.3. An estimated 15 trees per acre were affected.

The stand is aged approximately 70 years (2010). In the previous treatment, only Douglas-fir trees were removed, increasing the proportion of hardwood and less common conifer species. Douglas-fir currently makes up about 94 percent of the trees per acre.

Inter-tree competition can be described by the concept of relative density. Relative density is the current density of trees, relative to a maximum density of 1.0. Currently the treatments in project Green Peak range from .28 in the variable density (40 trees per acre), to .66 in the high density retention (120 trees per acre), and the untreated controls are .76 to .95 relative density index.

Canopy cover represents the proportion of the forest floor covered by the vertical projection of tree crowns, and was calculated (Organon v. 8.2) from the crown widths of trees sampled in 2005. Canopy cover currently ranges from 55 percent to 78 percent in the treatments, and 82 percent to 86 percent in the untreated controls.

**Table 5.** Current stand attributes for Green Peak II Project (trees greater than 7” DBH).

<i>Treatment (Unit)</i>	<i>Species</i>	<i>Tmt. Acres<sup>1</sup></i>	<i>Total age<sup>2</sup></i>	<i>Trees per acre</i>	<i>Basal area/ac (ft<sup>2</sup>)</i>	<i>QMD (in.)<sup>3</sup></i>	<i>RDI<sup>4</sup></i>	<i>Canopy Cover<sup>5</sup></i>	<i>Site Index (DF)</i>
<b>Control</b>	Douglas-fir			152	269	18.0			
	W. Hemlock			5	1	7.0			
	Red Alder			1	1	13.5			
	<b>Total</b>	57	70	158	271	17.7	.76	82%	123
<b>Riparian Control<sup>6</sup></b>	Douglas-fir			142	357	21.5			
	Red Alder			6	7	14.6			
	<b>Total</b>	32	70	148	364	21.3	.95	86%	123
<b>High 120 TPA</b>	Douglas-fir			116	239	19.4			
	Red Alder			1	1	13.5			
	Bigleaf maple			2	2	13.5			
	<b>Total</b>	28.3	70	119	242	19.3	.66	78%	123

<i>Treatment (Unit)</i>	<i>Species</i>	<i>Tmt. Acres<sup>1</sup></i>	<i>Total age<sup>2</sup></i>	<i>Trees per acre</i>	<i>Basal area/ac (ft<sup>2</sup>)</i>	<i>QMD (in.)<sup>3</sup></i>	<i>RDI<sup>4</sup></i>	<i>Canopy Cover<sup>5</sup></i>	<i>Site Index (DF)</i>
<b>Mod. 80 TPA</b>	Douglas-fir			84	188	20.3			
	<b>Total</b>	76.5	70	84	188	20.3	.50	67%	123
<b>Variable 120 TPA</b>	Douglas-fir			121	215	18.0			
	W. Hemlock			1	3.4	21.9			
	Hardwood			2	1.4	10.8			
	<b>Total</b>	14.4	70	124	220	18.0	.61	76%	123
<b>Variable 80 TPA</b>	Douglas-fir			91	196	19.8			
	W. Hemlock			3	3	13.7			
	<b>Total</b>	14.3	70	94	199	19.7	.54	70%	123
<b>Variable 40 TPA</b>	Douglas-fir			40	96	21.0			
	W. Hemlock			8	6	11.3			
	Chinquapin			3	3	13.5			
	<b>Total</b>	7.3	70	51	105	19.3	.28	55%	123

<sup>1</sup> Acres include thinning area only; riparian buffers, leave islands, and patch cuts are not represented in this data.

<sup>2</sup> Stand age in 2010. Data was collected in 2005, and grown forward in Organon (v. 8.2) to simulate growth to 2010.

<sup>3</sup> Quadratic mean diameter - the diameter at breast height (4.5 feet) of the tree of average basal area.

<sup>4</sup> Relative Density Index, the density of trees per acre relative to the maximum density possible (Reineke, 1933).

<sup>5</sup> Canopy cover from stand data analyzed in Organon, SMC v. 8.2 growth model, corrected for crown overlap. Correction factor reduced for Variable 40 TPA, because overlap is minimal.

<sup>6</sup> Data is from within untreated one-site-potential tree buffer, southeast portion of project.

There are no known threats to forest health except the following endemic processes in the project area. Laminated root rot, caused by the fungus *Phellinus weirii*, is a native root pathogen that spreads from root to root contact between live, susceptible trees, including Douglas-fir, and grand fir. It is a natural part of many forest ecosystems (Thies and Sturrock 1995), and contributes snag and downed wood habitat to affected stands over time. *P. weirii* affects less than 5 percent of the Green Peak II area, mostly in the control area, creating small (.1 to .25 acre), and scattered openings.

Douglas-fir bark beetles are endemic in the project area. Recently downed Douglas-fir trees encourage the build-up of beetle populations, which subsequently attack and kill standing Douglas-fir trees. Douglas-fir trees weakened by root disease infection are more likely to be attacked by the beetle (Hadfield 1986). In stands under 100 years old, the risk of mortality to healthy green trees is low, even when beetle populations may be quite high.

The risk of breakage and windthrow from severe winter storms always exists, and the upper lee slopes of major ridges oriented southeast to northwest generally experience the highest degree of windthrow in the Oregon Coast Range.

## Density Management Research

Collection of data in 2002 and 2005 on overstory trees, understory vegetation, snags, and CWD provides a basis for monitoring changes due to treatment. An additional measurement at Green Peak would occur in 2010 prior to treatment, and in 2011 or 2012 after phase two treatment, and then 5 years later in approximately 2016.

Early study findings were summarized in Chan et al., 2004:

- Terrestrial floor of headwaters riparian zones are hotspots of arthropod (insect), diversity.
- Moderate thinning increases species richness of arthropods, and heavy thinning and large gaps increase species richness of both forest and introduced species.
- Forest riparian buffers 30m wide serve as refuge for both forest-upland and forest-riparian arthropod species.
- Thinning has minimal effects on most species of aquatic vertebrates (salamanders).
- Diversity and abundance of lichen and bryophyte species are associated with canopy gaps, hardwood trees and shrubs, and remnant large trees. Dense stands with little understory make poor habitat.
- Upland vascular plant diversity increased with lower stand densities and larger gaps.
- Canopy expansion and closure were evident five years following thinning.
- Even heavy thinning (low retention in variable density treatment) resulted in light levels less than 40 percent full sunlight.

## Coarse Woody Debris

Coarse wood, which includes downed wood, snags, and live trees with dead or broken tops or decay, is scarce in the project area, likely due to past fire. Table 6 displays the volume of downed wood and snags per acre, and the count of snags in the project area. Approximately 65 percent of the snags are decay class 1 and 2. There is a weighted average of 7.5 conifer snags per acre of 17.6" DBHOB in the project area including the control area, and a weighted average of 2.6 snags per acre of 12.7" DBHOB within the treatment areas only.

**Table 6. Project Area CWD**

Unit	Acres	Down wood volume (cu ft/ac)	Snag Volume (greater than 5"DBH) (cu ft/ac)	Total volume (cu ft/ac)	Snags per acre	Snag QMD
<b>Control</b>	57	1104	315	1419	13	12.6
<b>Rip. Con.</b>	32	131	241	372	13	12.6
<b>High 120 TPA</b>	28	1445	296	1741	3	38.0
<b>Mod. 80 TPA</b>	76	743	123	866	4	14.4
<b>Var. 120 TPA</b>	14	500	119	619	3	13.3
<b>Var. 80 TPA</b>	14	852	351	1203	6	28.9
<b>Var. 40 TPA</b>	7	1308	249	1557	7	22.0
<b>Weighted Average</b>	<b>228</b>	<b>843</b>	<b>226</b>	<b>1069</b>	<b>7.5</b>	<b>17.6</b>

**Figure 1: Down Tree and Down Woody Material Decay Class Condition Codes**

					
<b>Log Decomposition Class</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Bark	Intact	Intact	Trace	Absent	Absent
Twigs	Present	Absent	Absent	Absent	Absent
Texture	Intact	Intact to soft	Hard, large pieces	Soft, blocky pieces	Soft, powdery
Shape	Round	Round	Round	Round to oval	Oval
Color of wood	Original	Original	Original to faded	Light brown to faded brown	Faded to light yellow or gray
Bole portion on ground	None, elevated on supports	Parts touch, still elevated	Bole on ground	Partially below ground	Mostly below ground

*Bureau SS Botanical and Fungal Species*

Inventory of the project area for bureau sensitive vascular plant, lichen, bryophyte and fungal species was accomplished through review of; 1) existing survey records and spatial data, 2) habitat evaluation and evaluation of species-habitat associations and presence of suitable or potential habitat, and 3) field clearances, field reconnaissance and inventories utilizing intuitive controlled surveys, in accordance with survey protocols for the specific groups of species, and 4) expertise on the habitat needs of special status species and those found within the project area.

There are no “known sites” of any bureau sensitive vascular plant, lichen or bryophyte species within the project area nor were any found during field surveys. A bureau sensitive fungal species, *Phaeocollybia sipei* is known from within the variable density study area. It may be considered as “locally abundant” in the Green Peak vicinity.

*Non-native plants and noxious weeds:*

The following noxious weeds occur in small infestations along or adjacent the right-of-ways from within or adjacent the project area: bull and Canadian thistles, false brome, Armenian Himalayan blackberry, Scot’s broom, St. John’s wort, and Tansy ragwort.

**Environmental Effects**

**3.2.1.1      *Alternative 1 (No Action)***

**Stand Structure**

Without treatment, natural disturbance agents such as disease, insects, and wind would create stand structural diversity and contribute to late-successional structural development. The timing and intensity of these conditions are unknown, but it is expected that diversity would take considerably longer to develop than if the proposed treatment were implemented.

Stand structural conditions would remain on the current trajectory of increasing density and decreasing individual tree growth rates, however due to the phase one treatment in 2000, current densities are below the zone of density mortality, except in the high retention treatment and the untreated controls.

Stand growth projections were made using the Organon growth and yield computer simulation model, v. 8.2. In 30 years without treatment, the relative density of the areas treated in phase one in 2000 would increase to an average of .63. Above relative density of .55 individual tree growth slows and density-induced tree mortality occurs.

Without treatment, stand structure would remain relatively uniform, except for gaps created by disturbance. The low retention portion of the variable density treatment would likely have considerable understory development. The main input of CWD would come from density mortality, disturbance events and endemic levels of insects and disease and resulting in more snags and downed logs than with treatment. On average, density mortality is predicted (Organon) to average 3.1 trees per acre of about 10" DBH in the next 30 years without treatment.

Crown ratio, the proportion of the tree crown length to the total tree height, is directly related to the health and vigor of the tree. As the canopy closes and lower limbs are lost to shading, crown ratios would decrease from the current average for stands treated in phase one, of 31 percent to an estimated 24 percent in 30 years. Wind firmness and individual tree stability would also decrease.

This alternative does not meet the objective of providing treatments on which to base phase two of the Density Management and Riparian Buffer Studies.

Characteristics for the Green Peak II stands for 30 years from present with treatment and without treatment as projected by Organon are compared in Table 7.

**Table 7.** Stand Characteristics with **Treatment vs. No Treatment** 30 years in the future (year 2040)<sup>1</sup>

Unit/ Phase 1 Treatment	Tmt. (Residual TPA)	Age <sup>1</sup> (yrs)	TPA <sup>2</sup>	% DF (TPA)	BA <sup>3</sup> (Sq.Ft.)	QMD (in.) <sup>4</sup>	RDI <sup>5</sup>	Density Mortality		
								TPA	BA	QMD
<b>Control</b>	n/a									
	No Tmt.	100	137	97	314	20.5	0.83	21.2	13	10.6
<b>Riparian Control</b>	n/a									
	No Tmt.	100	119	95	380	24.2	0.94	29	28.1	13.3
<b>High Retention</b>	60 TPA	100	59	95	174	23.3	0.44	6	13.2	20.1
	No Tmt.	100	112	97	295	22	0.76	7.7	5.4	11.3
<b>Moderate Retention</b>	30 TPA	100	30	98	117	26.7	0.28	5.1	14.8	23.1
	No Tmt.	100	81	100	251	23.8	0.63	1.3	1.5	14.5
<b>Variable Density- High</b>	60 TPA	100	61	95	163	22.1	0.42	5.4	10.5	18.9
	No Tmt.	100	118	97	274	20.6	0.72	6.6	4.8	11.5
<b>Variable Density- Moderate</b>	30 TPA	100	30	89	105	25.2	0.26	4.9	13.4	22.4
	No Tmt.	100	92	96	254	22.5	0.65	3.4	2.5	11.6
<b>Variable Density- Low</b>	20 TPA	100	27	60	86	24	0.21	5.4	15.8	23.2
	No Tmt.	100	50	79	154	23.4	0.39	1.3	1.1	12.4
<b>Average</b>	<b>Tmt.</b>	<b>100.0</b>	<b>44.3</b>	<b>87.0</b>	<b>135.0</b>	<b>24.0</b>	<b>0.34</b>	<b>5.5</b>	<b>13.6</b>	<b>21.3</b>
	<b>No Tmt.</b>	<b>100.0</b>	<b>102.8</b>	<b>94.2</b>	<b>278.0</b>	<b>22.4</b>	<b>0.71</b>	<b>11.2</b>	<b>9.0</b>	<b>12.3</b>

<sup>1</sup> Stand age in 2040. Data collected in 2005, treatment modeled in 2010, and grown forward in Organon (v. 8.2) to simulate growth to 2040.

<sup>2</sup>Trees per acre greater than 7" DBH.

<sup>3</sup> Basal area in square feet: cross-sectional area occupied by tree boles on each acre, a measure of density

<sup>4</sup> QMD=quadratic mean diameter, the DBH of tree of mean basal area.

<sup>5</sup> Relative Density Index, the density of trees per acre relative to the maximum density possible (Reineke,1933).

**Table 8.** Average pre-treatment and post-treatment stand characteristics (Organon projections) immediately after thinning stands in the Green Peak II Project (trees greater than 7" DBH only).

Unit / Treatment	Age <sup>1</sup> (yrs)	Pre-treatment					Immediately After Treatment				
		TPA <sup>2</sup>	% DF TPA	BA <sup>3</sup> (sq ft)	QMD (in) <sup>4</sup>	RDI <sup>5</sup>	TPA <sup>2</sup>	% DF TPA	BA <sup>3</sup> (sq ft)	QMD (in) <sup>4</sup>	RDI <sup>5</sup>
<b>Control</b>	70	158	96%	271	17.7	0.76	n/a				
<b>RiparianControl</b>	70	148	96%	364	21.3	0.95	n/a				
<b>120 TPA</b>	70	119	97%	242	19.3	0.66	66	94%	131	19.1	0.36
<b>80 TPA</b>	70	84	99%	188	20.3	0.5	35	98%	78	20.2	0.21
<b>Var 120</b>	70	124	97%	220	18	0.61	67	95%	119	18	0.33
<b>Var 80</b>	70	94	96%	199	19.7	0.54	35	91%	72	19.4	0.2
<b>Var 40</b>	70	51	77%	105	19.3	0.28	33	65%	61	18.4	0.17
<b>Average</b>	<b>70.0</b>	<b>111</b>	<b>94%</b>	<b>227</b>	<b>19.4</b>	<b>0.61</b>	<b>47</b>	<b>89%</b>	<b>92</b>	<b>19.0</b>	<b>0.25</b>

<sup>1</sup>Total stand age in 2010.

<sup>2</sup>Number of trees per acre. <sup>3</sup>Basal area per acre.

<sup>4</sup> Diameter at breast height (4.5 feet) of tree of average basal area (quadratic mean diameter).

<sup>5</sup> Relative Density Index, the density of trees per acre relative to the maximum density possible (Reineke, 1933).

### Forest Health

There would be no short-term increase in the risk of bark beetle infestation that could result from harvest, but risk of significant windthrow that could trigger bark beetle infestation would remain. Laminated root rot infection would remain and would continue to slowly spread.

### Bureau Sensitive Botanical and Fungal Species

The *Phaeocollybia sipei* site would not be impacted by additional thinning operations. Additional studies on logging impacts to this species would not be implemented and additional information gained.

This project would not affect any other bureau sensitive vascular plant, lichen, bryophyte or fungi species since there are no known sites within the project area or adjacent to the project.

### Invasive (Noxious Weeds, Invasive Non-native Species)

The established noxious weed populations would remain at or near the current level, with the exception of false brome.

Exposed mineral soil creates favorable environments for the establishment of non-native plant species. Any activity that exposes mineral soil in this proposed action would create an opportunity for non-native plant species to become established. Any future road maintenance activities not included in this proposed action could provide additional habitat for noxious weeds that currently are established in the project area.

With the exception of false brome, the risk rating for adverse affects from these species would remain low because the known noxious weeds which occur in the project areas are widespread and this project area is localized within the watershed.

Without any type of treatment, false brome would continue to spread along the right-of-way systems and into forested areas. The risk rating for the establishment of false brome without the implementation of this project would be low-medium.

### **3.2.1.2      *Alternative 2 (Proposed Action)***

#### **Stand Development**

Stand development for 30 years growth after density management under the proposed action and without treatment is compared in Table 9. Density Management Study phase two treatments to the recommended densities are expected to put the stands on a trajectory toward development of stand structure and individual tree characteristics desirable for attainment of composition and structural diversity objectives in the LSRA in the following ways:

#### *Restored structural complexity of the stands*

Tappeiner, et al (1997) concluded that thinning 40 to 100 year-old Douglas-fir stands in western Oregon promotes tree regeneration, shrub growth, and multi-storied stand development, and thinning that incorporates retention of large remnant trees, snags, and down wood, and hardwoods accelerate the development of old-growth characteristics. Treatment includes proportional density management and retention of gaps and clumps, increasing the spatial and structural diversity of the stand.

#### *Accelerated development of desired tree characteristics*

Residual trees would increase in diameter and crown size. Limb diameter and crown depth would be maintained because trees would be released from competition that causes growth decrease and loss of shaded lower limbs. The long-term results of density management would be larger average diameters and deeper crowns (higher crown ratios) at any given age. After treatment and 30 years of growth, QMD would increase from 19.0” (immediately after treatment) to 24.0”, an increase of 5.0”. Without thinning, the average increase in QMD is predicted to be 3.2 inches (from 19.3 inches to 22.5 inches QMD). Density management would result in an additional 1.8 inch of diameter growth in 30 years, a 56 percent increase from no treatment.

#### *Increased species diversity*

Species diversity would be increased since thinning would target Douglas-fir, the predominant species, increasing the relative proportion of the other tree species. The proportion of hardwood and less common conifer species would increase from the current average of 6 percent to 11 percent (by trees per acre) in the treatment areas. Furthermore, density management is very likely to allow establishment of seedlings, including hardwood, western hemlock and western red cedar species.

#### *Maintenance of stand health and stability*

Trees with less competition maintain deeper live crowns, lowering their center of gravity and decreasing their height/diameter ratios, reducing susceptibility to wind damage. With treatment, the current stand average height to diameter ratios (calculated from the quadratic mean diameter and the height of the 40 largest trees per acre) of 69, would remain at 69 after 30 years of growth indicating maintenance of favorable tree stability over time. Currently crown ratios for stands treated in phase one are 31 percent. Without treatment, they are predicted to decrease to an average of 23 percent in 30 years, and with treatment to decrease only slightly to 29 percent.

## Coarse Woody Debris Management

Thinning short-circuits the snag recruitment that results from inter-tree competition (Carey, 1999), and very little density mortality (.4 trees per acre) is expected to occur for 30 years after treatment. Proposed action treatments to create downed logs and snags would result in increases in large diameter, decay class 1 snags and downed logs, of approximately 170 cubic feet of logs and 450 cubic feet of snags. Inputs resulting from harvest consist of limbs and tops, breakage and cull and incidentally felled or topped trees would be left on site. The harvest input would likely result in a gain of 200 cubic feet per acre of CWD in skyline yarding areas and about 100 cubic feet per acre in ground-based yarding areas. This would bring post-treatment coarse wood levels to 1,889 cubic feet per acre, which is in the mid-range of levels prescribed in the Late Successional Reserve Assessment for Oregon Coast Province, Southern Portion (Page 66-68). In the long-term, due to increased diameter growth resulting from density management, larger trees would be available for recruitment for CWD.

Approximately 53 acres (41 percent) of the proposed treatment area in the density management project is within RR LUA boundaries. However, the habitat conditions within the RR, outside the SPZ are essentially identical to habitat conditions within the uplands (outside of Riparian Management Area). From the SPZ to the upper edge of the Riparian Management Area, stand density would be reduced using the same prescription used on the upland forest. Habitat for aquatic and riparian dependent species would be maintained or enhanced in RR in the following ways:

### Long-term increase in quality instream LWD recruitment

In the long-term, trees would reach large diameters earlier than without treatment, creating opportunities for high quality LWD recruitment. Smaller wood would continue to fall from within the untreated stream protection zones, and larger wood would begin to be recruited from farther up the slopes as the treated stands reach heights of 200 feet. Thus, wood with a larger range of sizes would potentially be recruited into streams over the long-term in treated stands.

### Maintenance of stream temperature through shading

Stream shading would potentially be affected by the proposed treatments, and is one of the variables studied in the Riparian Buffer Study. According to the Stream Shading Sufficiency Analysis (USDA, USFS et. al., 2004) for the proposed treatment, SPZs need to be 55 feet wide to provide shade in the primary shade zone, based on topography and average tree height (Appendix 4). Additional criteria required for shade sufficient to maintain stream temperatures are that vegetation density is high and will benefit from thinning and that vegetation treatment in the secondary shade zone (from the primary shade zone to approximately one tree height from the stream) will not result in canopy reduction of more than 50 percent (See Appendix 4). Shade can be described by two separate and different parameters: canopy cover and canopy closure. Canopy cover is the vertical projection of tree crowns on the forest floor. It can be modeled in Organon based on tree crown widths. Based on Organon modeling, current canopy cover is 55-82 percent (Table 5), and canopy cover would drop to about 40 percent in the moderate retention treatment (to 30 TPA) and to 35 percent in the low retention of the variable density treatment (20 TPA) after treatment. Canopy closure is the proportion of the sky hemisphere obscured by vegetation when viewed from a single point, and is generally a much higher value in the same stand than canopy cover. Measurements of canopy closure (spherical “fish eye” lens photography, computer analyzed) after the initial treatment show that stream shade was maintained above the Oregon DEQ standard of 80 percent in all treatments, including 40 trees per acre. Based on those data it is very likely to remain above 50 percent in both the off-stream, moderate retention treatment (to 30 TPA) and the low retention of the variable density treatment (20 TPA) areas after treatment as well. (Anderson, Larson, and Chan, 2007, *Riparian Buffer and Density Management Influences on Microclimate of Young Headwater Forests of Western Oregon.*, *Forest Science* 53(2):

254-269). Researchers have estimated that shade levels, as measured by a “fish eye” camera would not drop below 50 percent until relative density drops below .10. Projected relative density, post-treatment would be .17 to .36 (Sam S. Chan, USDA Forest Service PNW pers comm. e-mail, February 10, 2004).

## **Forest Health**

There would be a short-term (one to three years post-harvest) elevated risk of a bark beetle infestation from the input of downed wood resulting from both the logging operation and creation of two TPA of downed wood, and (10 years later) creation of snags. Additional mortality is very unlikely to reduce tree stocking below desired levels.

The incidence of root disease and heartrot would be unaffected or reduced as a result of treatment. Laminated root rot (*Phellinus weirii*) would be reduced by removing susceptible trees from around current infection centers, and reducing root-to-root contact between trees, reducing the spread of disease.

The potential for windthrow from winter storms would be higher for the first decade following density management. The risk may be increased due to the relatively low density that would result from the moderate retention and variable retention treatments. The risk would be reduced by selecting leave trees with deep, healthy crowns. Risk is greater near created openings (clearcuts on adjacent private lands and existing patch openings), and where aspect (the lee side of ridges from prevailing winds), topography, and shallow soils increase risk. Windthrow is not expected to reduce tree stocking by more than 20 percent for the first decade after treatment over the treated area (Busby, Adler, Warren and Swanson, 2006). A two-year study of wind damage following variable density thinning (Roberts, et al., 2007), showed a loss of 1.3 percent of stems, concentrated in topographically vulnerable conditions. The study showed overall level of wind damage resulting from variable density thinning is not statistically greater than unthinned stands, nor uniform thinning.

## **Damage to Residual Trees**

Skyline and ground-based yarding systems would result in bole and crown damage to a small percentage of the residual trees. Damage may result in greater incidence of stem decays in the future, adding to late-successional structure and function. Prescribed burning of slash piles along roads and on landings could result in damage to the crowns of a few adjacent residual trees. Restrictions to yarding during the sap-flow period in the spring would reduce damage.

### *Bureau SS Botanical and Fungal Species*

The *Phaeocollybia sipei* site would be protected by reserving the adjacent conifers which are suspected to be mycorrhizal with the species. This species known site has been incorporated into a part of the fungal study at Green Peak which monitors species response to thinning. This site would continue to be monitored and any findings incorporated with other fungal studies the Marys Peak Resource Area. If this species does not persist on site after treatments, it would not lead to the need to list the species as the species is fairly common in Benton County along the crest of the Oregon Coast Range Mountains.

This project would not affect any other bureau sensitive vascular plant, lichen, bryophyte or fungi species since there are no known sites within the project area or adjacent to the project.

However, thinning dense stands would provide older forest characteristics to the reserved trees at an earlier age when compared to the no action alternative. This action would create habitat for late forest

and/or SS species by increasing the secondary growth of the reserved conifers. In addition, it would provide for a higher diversity to the shrub and forb layers by allowing an increase in sunlight to the forest floor.

*Invasive (Noxious Weeds, Invasive Non-native Species)*

Any adverse effects from the establishment of Canadian and bull thistles, false brome, Armenian blackberry, St. John's wort, Scot's broom and tansy ragwort within or near the project area are not anticipated and the risk rating for the long-term establishment of these species and consequences of adverse effects on this project area is low because; (1) the amount of exposed mineral soil would be minimized, (2) these early successional species persist for several years after becoming established but soon decline as native vegetation increases within the project areas, (3) all false brome sites within the project areas, including haul routes are being targeted by the Marys Peak Resource Area for treatments beginning in the summer of 2008. In addition, all project areas would be monitored to detect for any "new invader" noxious weed infestations and targeted for removal. All non-native species would be eradicated as funding allows.

**3.2.1.3 Cumulative Effects**

There would be no overall effect to bureau sensitive species, but the project would provide for additional habitat at a quicker rate when compared to the no action alternative.

Many past and present management and non-management activities tend to open dense forest settings and disturb soils therefore providing opportunities for widespread NNP infestations to occur. Most NNP's are not shade tolerant and would not persist in a forest setting as they become out-competed for light as tree and/or shrub canopies close and light to the understory is reduced. In addition many NNP's are early successional species and are replaced by more dense growing shrubs and forbs that are common in western Oregon. The implementation of this project would likely increase the number of common and widespread non-native plant species that are known to occur within the Upper Alsea River and Marys River Watersheds. However, as discussed above the risk rating for any adverse cumulative effects to the Upper Alsea River and Marys River Watersheds or any adjacent watersheds would remain low.

**3.2.2 Soils**

*(IDT Reports incorporated by reference: Green Peak II Density Management Soils/Hydrology Report, pp. 1-11)*

**Affected Environment**

The predominant soil types in the proposed area are Marty gravelly loam and Klickitat gravelly clay-loam. The major management concerns with these soils are their sensitivity to compaction when moist or wet, and the subsequent reduction in infiltration rate and site productivity if compacted. On steeper sites (greater than 25 percent slopes), run-off rates and hazard of erosion can be high for bare, compacted soils. Another concern, particularly with the Klickitat soil, is depth of the surface horizon.

The existing rocked road surfaces within the proposed project area are stable. A few sections of natural surfaced roads show signs of limited surface erosion where vehicle traffic occurs during wet weather and/or where surface water accumulates and runs down the compacted road surface. No areas were found that had a high risk of contributing large amounts of sediment to streams through surface erosion or mass failure.

Slopes on most of the skyline yarding areas vary from 30 percent to 50 percent; a few included areas have slopes up to 60 percent for short distances. Slopes on the ground based yarding areas vary from 5 to 35 percent.

## **Environmental Effects**

### ***3.2.2.1 Alternative 1 (No Action)***

If no action is taken, the existing soil compaction from past logging activities in the project area would continue to recover slowly through time. Overall, no additional substantial soil compaction or top soil displacement would occur in the project area above natural rates.

### ***3.2.2.2 Alternative 2 (Proposed Action)***

## **Compaction and disturbance/displacement of soil**

### **Landings**

Permanent roads and landings make up 3.5 percent of the project area. By keeping the roads narrow and the landings small, the effect on overall site stocking and tree growth at rotation age would be negligible. There are no new roads planned for this entry into the study area. Existing landing areas would be re-used for this entry creating no additional disturbed area.

### **Ground-based Yarding**

Approximately 16 acres would be harvested with ground-based equipment. Use of the shovel would result in less impact than if yarded using a conventional crawler tractor. The overall amount of soil disturbance and compaction from a shovel yarding operation on low soil moisture areas is generally less than 7 percent.

Significant soil compaction can be expected if repeated passes of the equipment take place when soils are wet. A small but acceptable amount of compaction would likely occur under moist soil conditions if shovel yarding is conducted according to the criteria listed under the design features (pg. 9). The compaction would be limited to the area under the tracks and would be discontinuous or interrupted where heavy slash areas support the weight of the machine. The compacted layer would vary between 0 and 5 inches deep, and generally not exceed 2 feet in width for each track.

Ground-based yarding with crawler tractors on designated skid trails should at the most impact 2 percent of the harvest area. Existing haul road and skid trails would be used to minimize the need for new skid trails. Meeting these criteria would restrict the area of compaction from tractor yarding to less than 2 percent of the unit area, like in the previous harvest of the study area.

### **Skyline Yarding**

In the thinning areas, the volume removed per yarding corridor is relatively low. Cable yarding would result in minor disturbance and shallow compaction of the surface soil in the yarding corridors. Less than 4 percent of the area proposed for cable yarding would be impacted. Ground disturbance from cable yarding would be approximately 6.6 acres (4 percent of the harvest area).

## **Site Productivity**

The effect on overall project site productivity (from all proposed treatments) would be a 0.9 percent reduction in overall yield for the entire 248 acre treatment area.

### Pile Burning:

Pile burning could produce small patches of soil with altered surface properties that restrict infiltration. However, erodibility rates would be expected to return to original levels a year or two after the burn, as soil cover and vegetation recover. A slight mineralization of nitrogen under the burned piles could occur, which would enhance plant growth at the spot. However, pile burning is not expected to result in overall long-term losses to soil structure or productivity.

### Skyline Yarding:

For cable yarding systems, the effect on overall site productivity from light compaction on approximately 4 percent of the total area is expected to be low (no measurable reduction in overall yield for the project area).

### Ground-Based Yarding:

For shovel or tractor harvest systems, soil impacts in skid trails are expected to result in light to moderate compaction in two discontinuous, narrow strips less than 3 feet in width. The effect on overall site productivity from light to moderate compaction on less than 2 percent of the treatment area is expected to be low (no expected measurable reduction in overall yield for the project area).

In the entire ground-based yarding area, waterbarring and blocking skid trails after use would promote out-slope drainage and prevent water from accumulating in large quantities, running down the trail surface, and causing erosion. After several seasons, the accumulated litter fall on the closed trails would further reduce the surface erosion potential by protecting the soil from wind and runoff.

#### **3.2.2.3 Cumulative Effects**

The total area of residual soil compaction from yarding, skid trails, landings, and area removed from production by existing roads on this project site would not exceed 7 percent. This meets BLM standards for residual compaction within the unit. In the disturbed areas (including permanent roads), soil structure, bulk density and surface condition would be restored to pre-study harvest levels over a period of several decades as a result of normal soil biological processes as well as the mechanical effects of weathering, wetting, and drying.

#### **3.2.3 Water**

*(IDT Reports incorporated by reference: Green Peak II Density Management Soils/Hydrology Report, pp. 1-11 )*

### **Affected Environment**

There are two stream systems draining the Green Peak II project area: tributaries to Peak Creek, which flows into the South Fork Alsea in the Upper Alsea River 5<sup>th</sup> field watershed and tributaries to Oliver Creek, which flow into Muddy Creek in the Mary's River 5<sup>th</sup> field watershed. Neither the Upper Alsea River nor the Mary's River Watersheds are identified as either municipal or key watersheds.

The project area receives approximately 65 inches of rain annually and has a mean 2-year precipitation event of 4.25 inches in a 24-hour period. Most runoff is associated with winter storm events that result from low pressure fronts moving inland from the southwest off the Pacific Ocean. Peak stream flow events are concentrated in the months of November through March when Pacific Storm fronts are strongest. As a result of little or no snowpack accumulation and infrequent summer rainfall, stream flow in the summer is typically a fraction of winter levels and many headwater channels retreat to subsurface flow.

Terrain in the project area catchments is generally hilly with elevations ranging from approximately 1,500 to 2,200 feet. Only a small portion (19 percent) of the project area lies in the “transitional hydro region” (above 2000 feet in elevation), where snowpack can accumulate each winter. There is only one small section of stream channel (200 feet) that drains this portion of the harvest area. The watersheds are classified as rain-dominated watersheds and therefore, the project area is not at a high risk for peak stream flow events based on rain rapidly melting a snowpack.

### **Project Area Streams**

The stream channels in the project area are high gradient, large gravel streams that are source areas for fine sediment but are also stable. These channels are ephemeral or intermittent, becoming perennial near the BLM property line. Data collected by Olson and Rugger (2007) showed that all of the five surveyed stream reaches in the Green Peak study area were dry for approximately 50 percent of their length. Those portions of the riparian/channel systems on BLM managed lands in the project area are functioning properly. Stream flow primarily originates from winter precipitation, with rare extreme events supplemented by rain-on-snow conditions. Summer stream flows are derived from groundwater inputs.

Forest management has occurred throughout this area, and all of the channels and riparian areas were heavily disturbed in the past by grazing and logging, road construction, inputs of logging debris and sediment and removal of LWD. The boulder-cobble substrate of the channels has allowed the streams to remain very stable through these past actions and their current condition is also considered to be stable.

### **Project Area Water Quality**

#### *Stream Temperature*

Stream temperature data for Oliver Creek collected as a portion of the research project has shown that between August 2006 and September 2007 the stream temperature of the tributary coming out of the control area was well below the State of Oregon standard of 17.8° C. This stream went dry for a portion of the study period. No other site specific stream temperature data has been collected in the streams of the harvest area. Stream temperatures in lower Peak Creek exceeded the State of Oregon’s standard in the summer of 1995 and 1996. Temperatures at the two sites were tested again in 1997 and found to be below the standard at that time.

The majority of tributaries in or near the project area do not flow on the surface during most summers. Therefore, these channels are not at risk to heating by exposure to direct solar radiation. The one perennial stream has very low to intermittent flow during the summer. Most of these channels are sufficiently shaded by streamside vegetation to meet summer temperature standards. Watershed analyses identified project area streams as having a “low” risk of increases to stream temperature due to inadequate shading (USDI, 1995 & 1997).

#### *Other Water Quality Parameters*

Additional water quality parameters (e.g. nutrients, dissolved oxygen, pesticide and herbicide residues, etc.) are unlikely to be affected by this proposal and were not reviewed for this analysis (U.S.E.P.A. 1991).

#### *Oregon Department of Environmental Quality (DEQ) Standards*

The Oregon Department of Environmental Quality’s (DEQ) 1998 303d List of Water Quality Limited Streams (<http://waterquality.deq.state.or/wq/303dpage.htm>) is a compilation of streams which do not meet the state’s water quality standards. A review of the listed streams for the Alsea River and Muddy Creek watersheds was completed for this report. Muddy Creek is 303d-listed for exceeding summer temperature standards from river mile 0 to 33, approximately 7 stream miles downstream of the

proposed project. The South Fork Alsea River is also 303d-listed for exceeding summer temperature standards from river mile 0 to 17.2, approximately 3 stream miles downstream of the proposed project.

The DEQ also published an assessment, the 319 Report, which identifies streams with potential non-point source water pollution problems (1988 Oregon Statewide Assessment of Nonpoint Sources of Water Pollution). Muddy Creek is not listed in the 319 Report. The lower South Fork Alsea River is listed for having moderate water quality conditions affecting fish and aquatic habitat.

### **Beneficial Uses**

There are no known municipal or domestic water users in the project area. There are no water rights listed for Peak Creek. Oliver Creek has rights for irrigation, fire protection, an industrial log deck and a right for manufacturing approximately 3 miles downstream from the project area near Dawson. There is an instream water right along the South Fork Alsea River for anadromous and resident fish rearing approximately 3 stream miles downstream of the project area. Irrigation and livestock watering occur in the Alsea valley and in the Muddy Creek valley, several miles downstream from the project area. Additional recognized beneficial uses of the stream-flow in the project area include anadromous fish, resident fish, recreation, and esthetic value.

### **Environmental Effects**

#### **3.2.3.1      *Alternative 1 (No Action)***

The watersheds would continue to experience logging, road construction, and recreational use. The large majority of development would occur on private lands. These activities would continue to contribute fine sediments into the stream system. No change, other than natural fluctuations, in stream temperatures or flows would occur, unless large areas are cleared of vegetation or substantial portions of riparian vegetation are removed.

#### **3.2.3.2      *Alternative 2 (Proposed Action)***

### **Direct and Indirect Effects**

Measurable impacts on stream flow, channel conditions, and water quality due to this proposal are unlikely due to the heavy armoring of the channels by larger substrate of cobbles and boulders. Research presented in 2007 for all of the DMS study areas in western Oregon did not detect any effects to stream habitat parameters due to treatment activities based on the study period of 1998 through 2004. The site specific Green Peak data surveys showed no statical change in pool depth, pool amounts, riffle amounts or substrate shifts.

This action is unlikely to alter the current condition of the aquatic system with respect to its physical integrity, water quality, sediment regime or in-stream flows. Some short-term, variable increases in stream turbidity may result. Alterations in the capture, infiltration and routing (both surface and subsurface) of precipitation may occur as a consequence of the mechanical removal of trees and reductions in stand density. This effect would be difficult to measure and unlikely to substantially alter stream flow or water quality. This second entry into the harvest areas would bring 64 percent of the stand area towards a more open condition (less than 40 trees per acre). This number does not include the 49 acres of leave islands and riparian buffers spread through the unit. These undisturbed areas and the patchwork-type harvest pattern would help to reduce any changes in the capture and routing of precipitation in the near term and allow a quicker recovery towards pre-treatment conditions as the remaining forest continues to grow. Increases in stream temperature as a result of this proposal are

unlikely due to the implementation of the research stream buffers (25 to 220 feet of undisturbed forest) and adjacent density management areas. This phase of timber harvest would decrease tree density outside the uncut buffer areas more towards a more open condition but in combination with the stream buffers should still provide adequate shading. The results of a recent study for this research project have shown that even the minimum buffer width implemented for this study maintained the near stream micro-climate in treated areas the same as untreated areas. Primary stream shade was maintained above the Oregon DEQ standard of 80 percent in all treatment scenarios. While stream water temperature was not collected in this study, streambed substrate temperature was collected, and all the treatment sites remained well below the State of Oregon standard of 17.8° C.

Due to the topography of the study area and the patchwork type of harvest activity which includes 49 acres of leave islands and riparian buffers, increases in mass wasting and alterations in the sediment regime would continue to have a low probability. There has been no evidence of any mass wasting resulting from the last entry.

There would be no new road construction with this phase of the project, although any needed road renovation work would be completed to keep the existing roads in good shape. The road work would be completed in periods of low rainfall. The largest potential impact would be from the ability to haul timber during periods of wet weather when water is flowing on roads and into ditches. This could lead to an increase in turbidity if flows from ditches are large enough to enter streams. Additional rock surfacing would be added to those sections of road where it is needed to limit this impact.

Compacted surfaces would occur around areas where ground-based equipment is utilized, landing areas, and yarding corridors. If sufficiently compacted, these areas may route surface water and sediment towards streams. Project design features would reduce these impacts along with the existing undisturbed stream buffers in the harvest area. Tree removal would not occur on steep, unstable slopes where the potential for mass wasting adjacent to streams is high. Therefore, increases in sediment delivery to streams due to compaction or mass wasting are unlikely to result from this action.

Mechanically removing trees and removing stand densities can alter the capture, infiltration and routing (both surface and subsurface) of precipitation. By removing vegetation, surface runoff is increased and more water reaches streams. The compaction of skid trails and roads would also increase surface runoff in the project area. Thus, it can be assumed that this project would likely result in some small increase in water yield. However, this effect from the proposed action would be difficult to measure and unlikely to substantially alter stream flow or water quality because the increase would be undetectable by common field techniques. Other than increased peak flows, an increase in fall and winter discharge from forest activities is unlikely to have biological or physical significance (U.S.E.P.A. 1991). As the majority of the project area lies below the elevation where rain on snow events are likely to occur, measurable increases to peak flows from the proposed project area are also unlikely.

Roads and skid trails would be far enough from stream channels (greater than 200 feet) as to not cause direct sedimentation from displaced top soil or increased surface runoff and no new stream crossing would be constructed. In addition, SPZ have high surface roughness, which function to trap any overland flow and sediment before reaching streams. Ground-based yarding would occur during periods of low soil moisture with little or no rainfall, in order to minimize soil compaction and erosion.

The SPZ of the southeastern most stream in the project area would require full-suspension of logs, so as to not disturb the stream channel, its banks, or riparian area. In the event that any vegetation would need to be removed for this corridor, it would be left on-site to preserve riparian biomass and limit soil disturbance. Due to the small size of this stream and the resiliency of local vegetation, if a small

opening were to be created during yarding operations, it would not likely increase water temperature in the creek (and brush would be expected to fill in any gaps before the summer months).

Since the proposed action is unlikely to result in any measurable increase in stream temperature or sedimentation and would not place large amounts of fine organic material in the stream or alter stream reaeration, it is unlikely that it would have any measurable effect on dissolved oxygen or nutrient levels.

### 3.2.3.3 *Cumulative Effects*

Current and likely future management actions on public lands in the two major watersheds include: stand density management through timber sales, road construction and maintenance (drainage improvements, renovations, decommissioning) riparian treatments, and stream restoration projects. Likely future private actions include: timber management and associated road construction, Christmas tree farming, limited grazing and small-scale agriculture.

The proposed project combined with similar operations on private lands in the watershed could potentially raise the amount of fine sediment in the lower stream system. As more trails, corridors, and roads are constructed and used, the risk of fine sediment entering streams increase. Though the proposed project would not be likely to directly contribute fines into project area streams, sediment levels are already high in the lower watersheds and additional ground-disturbing activities would increase the potential for these to appear at the larger watershed scale.

Currently, an estimated 15 percent of the Upper Alsea River 5<sup>th</sup>-field watershed is in an “open” state (cleared of forest canopy) and an estimated 20 percent of the Marys River 5<sup>th</sup>-field watershed is in an “open” state. Because the proposed project would affect much less than 1 percent of the forest cover in the Upper Alsea River Watershed or Marys River Watershed, it would be unlikely in itself to produce any measurable effect on stream flows. However, in the context of cumulative impacts, the project would contribute a minute amount to increases in mean annual water yield in the Marys River Watershed. Because the proposed project would not completely remove forest vegetation and would only remove select trees, any effects on base flows would be extremely small (undetectable). Additionally, timber sales recently completed and/or planned on public lands in these watersheds would not remove enough forest canopy cover to affect base flows in the watershed (less than 1 percent of forest cover).

Because the risk of increases to stream flows from the proposed project would be trivial at both the fifth-field and sixth-field scales, the proposed project was evaluated at the 7<sup>th</sup>-field watershed scale in order to capture local impacts. Level 1 analysis was performed to determine the risk of increasing peak flows in the project area 7<sup>th</sup>-field watersheds, through density management for Upper Oliver Creek and East Fork Peak Creek.

The watersheds were analyzed for land ownership, vegetation type, age class, and extent of the transitional hydro region. Using the methodology of the Oregon Watershed Assessment Manual (1999) the percent of the watersheds’ rain-on-snow zone with less than 30 percent conifer crown closure and the percentage of the watershed lying above the rain-on-snow zone were determined. The analysis determined a low risk of peak flow enhancement in both watersheds (due to adequate crown closure and low elevations).

### **3.2.4 Fisheries/Aquatic Habitat**

*(IDT Reports incorporated by reference: Green Peak Thinning Project Environmental Assessment Fisheries Report, pp. 1-8)*

#### **Affected Environment**

##### **Upper Alsea Watershed**

The primary drainage of the western half of the project area is a tributary to Peak Creek. Green Peak Falls located to the southwest of the project area on Peak Creek is approximately 4 miles downstream. Oregon Coast coho salmon, Chinook salmon, and steelhead are known to be present up to Green Peak Falls.

There are no known aquatic habitat surveys of project area streams. The tributary to Peak Creek nearest the project area, draining the Southeast quarter, was surveyed using Oregon Department of Fish and Wildlife (ODFW) protocols in 1995 (ODFW 1995). Based on ODFW benchmarks (Foster et al 2001) shade and channel dimension (width to depth ratio) are at desirable levels and LWD accumulation was below desirable levels at 11 key pieces.

Streams in the project area are considered too steep to support fish presence. Cutthroat trout and sculpin species inhabit the tributary to Peak Creek approximately  $\frac{3}{4}$  mile downstream from treatment units.

##### **Marys River Watershed**

The primary drainage to the eastern half of the project area is Miller Creek and tributaries, all of which are tributary to Oliver Creek. No anadromous fish are thought to enter Oliver Creek or it's tributaries (BLM 1997). Oliver Creek is tributary to Muddy Creek in the Marys River Watershed.

No aquatic habitat surveys have been conducted in Miller Creek or downstream from the project area. The habitat surveys of Oliver Creek (BLM 1996) are located upstream of the Miller Creek junction, thus would not receive transported material from Miller Creek and would not to be affected by the proposed actions.

Streams in the project area are considered too steep to support fish presence. Geographic map review of the project area streams indicate steep channel gradients (greater than 20 percent) and low stream flows most likely are the limiting factors to cutthroat trout distribution more than  $\frac{3}{4}$  mile below the project area.

##### **Endangered Species**

The Upper Willamette River (UWR) spring Chinook salmon Evolutionarily Significant Unit (ESU) are listed as threatened under the Endangered Species Act. Oregon chub is listed as endangered under the Endangered Species Act. The UWR Steelhead ESU is listed as threatened under the Endangered Species Act. Due to the distance to the known populations of UWR Chinook, UWR steelhead, and Oregon Chub in the Willamette Basin, the distances to historic habitats, and the lack of any connected effects of proposed actions to any known populations or habitat a No Effect determination has been made. No consultation with the National Marine Fisheries Service (NMFS) would be necessary for these species.

The Oregon Coastal (OC) Coho Salmon is listed as threatened under the Endangered Species Act. Due to the distance to anadromous habitat and the distance to known populations of OC coho salmon in the

Alsea Basin and the lack of any connected effects of proposed actions to any known coho populations or habitat a No Effect determination has been made. No consultation with NMFS would be necessary for this species.

Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act, as amended, an assessment of proposed actions effects to Essential Fish Habitat (EFH) and consultation with NMFS is necessary for projects which may adversely affect EFH. For purposes of this analysis stream reaches with known populations of Chinook and/or coho salmon present, or considered highly likely to be present, are considered EFH. The nearest stream reach with Chinook or coho salmon is 4 miles downstream of the project in Peak Creek of the Upper Alsea Watershed, and over 26 miles downstream in Beaver Creek of the Marys River Watershed. The proposed haul route extends the area of potential effects beyond the immediate project area, and follows rocky and paved roads out the east side of the project area in the Marys River Watershed. The nearest unpaved road stream crossings where sediment could enter the stream channel is over 24 miles from EFH habitat in the Marys River. There are no stream crossings connected to EFH in the Upper Alsea Watershed. No adverse effects are anticipated from the proposed action due to the distance of EFH habitat from the project area and the lack of any connected effects of proposed actions to EFH. Since a No Adverse Affects determination was made on EFH no consultation with NMFS would be necessary for EFH.

### **Environmental Effects**

No effects are anticipated to spring Chinook salmon, coho salmon, and steelhead due to distance to occupied habitat, and project effects to these species shall not be assessed further in the environmental consequences. No project actions are anticipated to cause effects to chub due to the distance of proposed actions from chub habitat and this species shall not be assessed further in the environmental consequences. Other native species (sculpins, lamprey, etc...) may be present concurrent with native salmonids in the affected drainages, analysis of potential effects to native cutthroats were assumed to be sufficient to address impacts to these other species.

#### **3.2.4.1      *Alternative 1 (No Action)***

Current timber stand conditions would be maintained. Expected benefits of thinning riparian stands under proposed, increased growth rate achieving large diameter trees earlier which would improve the quality and retention of future LWD, would not be realized. The existing road network would remain unchanged. Impacts to aquatic habitat would be unlikely with the implementation of the no-action alternative.

#### **3.2.4.2      *Alternative 2 (Proposed Action)***

### **Yarding/Falling**

Reductions in canopy closure, and vegetative cover, can result in changes in peak or base flows which in turn impair the availability or quality of aquatic habitat. The proposed project would affect less than 0.06 percent of the forest cover in the Upper Alsea Watershed, and 0.04 percent of the cover in the Marys River Watershed. Due to the small percentage of forest cover affected, all located below the transient snow zone, alterations in stream flows would be unlikely (Wegner, 2009). Undetectable changes in peak and base stream flows are unlikely to affect fish habitat within the treatment area, and are even less likely to affect fish habitat downstream.

Removing trees which provide shade to the stream channel can negatively affect water temperatures. The hydrology analysis indicated that the no-entry buffers would maintain stream shading greater than 80 percent (Wegner 2009). Site specific monitoring of air temperatures over the stream channel suggests stream temperatures were unaffected by past research thinning treatments. Based on the

hydrology report and temperature analysis for project area streams the proposed actions are unlikely to affect project area stream temperatures or fish habitat downstream.

Loss of CWD and LWD due to harvest can affect the stability and quality of aquatic habitat. Short-term recruitment of the existing CWD is expected to be maintained from retention of stream side buffers (Snook 2009). The proposed actions are not expected to cause short-term effects to fish habitat downstream. The proposed action would increase the average stand diameter by 42 percent over no treatment over the next 30 years (Snook 2009). In the long-term beneficial growth in the size of trees in RMA LUA could beneficially affect LWD recruitment to the stream channel, thus potentially improving the quality/complexity of aquatic habitat adjacent to the treatment areas or available for future recruitment downstream.

Skidding can compact soil and displace soil thus allowing sediment to be transported down slope and potentially to the stream channel. Skyline corridors can also displace soil thus allowing sediment to be transported down slope and potentially to the stream channel negatively affecting stream channel bedload. The proposed project is unlikely to result in any measurable changes in sediment delivery to the surrounding stream network which could affect the turbidity, substrate composition, or the sediment transport regimes (Wegner 2009). Buffers, residual slash, and use of existing skid trails should keep sediment movement to a minimum. The proposed project is unlikely to measurably alter dissolved oxygen or nutrient levels. As the proposed actions are not likely to measurably alter water quality characteristics at the treatment sites, it would be highly unlikely to affect aquatic habitat downstream from the project area.

#### Road Construction/Renovation/Decommissioning

No new road construction is proposed with this project. No effects to fish and aquatic habitat would occur.

The proposed road renovation work is located on ridge tops. All renovation work is intended to improve drainage and road surface conditions, resulting in less erosion into the surrounding area over time. All road reconstruction and renovation work would be seasonally restricted to occur during the dry season, typically May thru October. No stream channels would be effected by the proposed renovation or decommissioning. No effects to fish and aquatic habitat would occur.

#### Hauling

Hauling can increase the risk of sediment reaching stream channels and negatively affect aquatic habitat. The majority of the haul route is located near the ridge top between Marys River and the Upper Alsea Watersheds, with few stream crossings. There are no known stream crossings on the rocked haul route in the Upper Alsea Watershed and no effects to fish would occur in the Peak Creek drainage from proposed hauling.

Cutthroat trout occupy habitat along Miller Creek which parallels a portion of the haul route in the Marys River Watershed. Approximately 11 stream crossings are associated with the haul route over rocked surfaces in the Marys River Watershed, with ten intermittent crossings at least 200 feet from fish bearing stream channels. One crossing is over a perennial unnamed tributary to Miller Creek which is known to be fish bearing.

The proposed year round hauling on rocked and paved roads is not expected to result in measurable quantities of sedimentation reaching streams, due to the limited number of crossings on relatively gentle road gradients. Most sediment that would reach the intermittent streams from the haul route crossings would likely be assimilated into the intermittent channels before reaching fish habitat (Duncan et al, 1987). The crossing over the sole fish bearing stream may have direct short-term

connections of road surface flows with stream channels. Minor site specific effects to short reaches of fish habitat downstream of the stream crossing could occur due to sediment generated from hauling. Fish would be expected to move away from elevated turbidities while hauling was occurring and would reoccupy habitat following cessation of sediment recruitment. With application of sediment control PDFs (mulching, grass seeding, etc...) and cessation of haul during heavy rainfall, the magnitude of sediment reaching streams would be reduced and direct impacts to fish and aquatic habitat would be minimized. The duration of sediment and turbidity changes would be short-term episodic nature, primarily occurring during the initial winter freshets and may occur over three winter seasons.

#### Pile Burning

Pile burning is not expected to result in short-term or long-term effects to fish. Short-term changes to soil infiltration is possible at the site of the burn pile resulting in surface runoff, but unlikely to reach fish habitat more than ¾ mile downstream. The no-entry buffers are expected to provide sufficient distance from the stream to capture any surface erosion from pile burning treatments.

#### **3.2.4.3 Cumulative Effects**

In general, the proposed stand treatments actions are not expected to alter LWD recruitment, stream bank stability, and sediment supply to channels at the 5th field watershed scale in the short-term or long-term with the implementation of stream-side no entry zones.

Cumulative impacts to fishery resources could occur if proposed actions result in alterations in runoff contributing to changes in flows where fish reside. Based on the Hydrology reports analysis of alterations to peak flows in East Fork Peak Creek and Upper Oliver Creek were considered low risk for changes in peak flows and are unlikely to contribute to cumulative effects (Wegner 2009), subsequently no cumulative effects are anticipated on aquatic resources.

The Hydrology report indicated that the proposed project was unlikely to have effects on stream temperatures, nor were any cumulative effects anticipated (Wegner 2009). No cumulative effects are anticipated for peak flows, streambanks, and instream structure which could also affect temperature. Since no cumulative effects were anticipated for temperature, streambank conditions, and peak flows these issues would not result in cumulative effects for fisheries resources.

Proposed timber hauling and road renovation, over or adjacent to fish bearing stream channels, may contribute a minor amount of sediment to the streams. The small magnitude of sediment reaching fish bearing streams combined with the short-term episodic nature of these events suggests any sediment reaching fish habitat is expected to be unmeasurable against background turbidity. Total suspended solids were noted as being “moderately high” in Oliver Creek (BLM 1997), the main stream to which Miller Creek is tributary. No point source locations were identified in the watershed analysis as sediment problems. The watershed analysis report did note that high use roads, such as the Mainline Road, which are adjacent to streams were likely the single largest contributor of fine sediment. However, the small scale local effects which may occur due to proposed hauling are not anticipated to contribute to cumulative effects at either fifth field level, as these impacts are not anticipated to result in increased sediment transport rates downstream which could combine with other sediment source areas and create additive impacts.

### **3.2.5 Wildlife**

*(IDT Report incorporated by reference: Biological Evaluation for Green Peak II Density Management Timber Sale, pp. 1-8 and Appendices A and B)*

#### **Affected Environment**

The proposed rethinning treatments, undisturbed patch-openings and leave-islands, along with new inputs of snags and CWD, are all designed to accelerate the structural development of late successional old growth (LSOG) characteristics, in a research environment.

The ownership pattern at the subwatershed scale (sixth-field watersheds) is a checkerboard of BLM and private forestlands in the Upper South Fork Alsea River, with a great majority of the land being under private control in the Oliver Creek subwatershed. A checkerboard ownership pattern severely limits the ability to manage the landscape with a large-scale ecosystem approach. Wildlife habitat on private lands can be characterized as a patchwork of intensely managed conifer forest stands in the early-seral (0-39 years old) and mid-seral (40-79 years old) types, with stands seldom older than 50 years. These private forests provide a continuous source of early and mid-seral habitat that is very simple in composition and structure when compared to unmanaged stands their age. Habitat conditions on BLM managed lands in the subwatersheds are dominated (landscape matrix) by managed mid-seral stands that average approximately 60 years old.

#### **Special Habitats & Special Habitat Components**

Special habitats in the conifer forests of the Oregon Coast Range are usually associated with the following environments; permanent shrub patches, oak woodlands, cliffs, caves, talus, wet/dry meadows, ponds/lakes, and other lentic wetland types. There are no known special habitats in the action area.

Special habitat components most important to wildlife in conifer forests of the Oregon Coast Range are very large diameter remnant/legacy live and dead trees. In addition to remnant structure, the following types of trees also function as special habitat components: stand-age trees which were open-grown (wolf trees); older cohorts with full live crowns; trees with deformities like broken tops or witches' brooms, and large diameter deciduous trees like bigleaf maple. The project stands are lacking in desirable amounts of large, hard snags and CWD.

#### **Special Status Species**

##### **Northern Spotted Owl:**

There are no known owl nests/sites in or adjacent to the proposed action. The action area is not in designated northern spotted owl critical habitat. The mid-seral stands function as owl dispersal habitat and may also function as foraging and roosting habitat. Over the past 25 years, owl activity has been documented to the south, west, and north of the Green Peak summit. The project area is located between OMOCA-36 and OMOCA-39 and may provide some low quality (due to its location on the eastern edge of the corridor) connectivity potential. The closest known active owl site is over two miles north of the project area.

##### **Marbled Murrelet:**

The research project site is located approximately 32 miles from the ocean. There are no known murrelet nests/sites in or adjacent to the proposed action. The action area is not within designated marbled murrelet critical habitat. The mid-seral stands currently do not provide suitable nesting

structure for the murrelet. The closest known murrelet detection is over three miles to the southwest and the closest known occupied marbled murrelet site is over six miles to the southwest.

#### Mollusks:

There are no known mollusk sites in or adjacent to the proposed action. The action area falls within the designated range of six Bureau Sensitive mollusks, five slugs and one snail. Five of the mollusks have not been found in the resource area since surveys began in 1997; the probability of finding any one of them in the action area is very low. The sixth, the warty jumping-slug, has so many known sites in the Coast Range that it was taken off the Survey and Manage list several years ago (still listed by OR Natural Heritage Program; delisting requested and in process). Mollusk surveys were done before the initial thinning treatments in 1999-2000 and no listed mollusks were found. New surveys would not be completed since the probability of finding these Bureau Sensitive mollusks in the project area is expected to be very low.

#### Red Tree Vole

There are no known red tree vole nests/sites in or adjacent to the proposed action. Stands in the project area are not yet suitable habitat for the tree vole. Pre-project surveys are not required for the tree vole in this part of the Coast Range.

#### Riparian Reserve Species

One of the many functions of the RR LUA, is to provide habitat for riparian-dependent and associated species, and specifically for the following native wildlife species; all mollusks, all amphibians, all bats, marbled murrelet, northern spotted owl (dispersal habitat function), red tree vole, and the American marten. Several mollusk, amphibian, and bat species are expected to occur within the RR LUA of the proposed action area. The American marten is rare in the northern Oregon Coast Range and is not expected to occur in the project area. Townsend's big-eared bat is also not expected to occur in the project area due to the lack of any caves or cave-like structures which are necessary for their roost sites.

#### Bird Species of Conservation Concern

Bird Species of Conservation Concern are migratory birds which have been exhibiting downward population trends for several years. There are approximately 88 bird species that can occur in the MPRA; 23 have a high likelihood of breeding in the mid-seral stands of the proposed rethinning project, 33 have a moderate likelihood, 23 have a low likelihood, and 9 are not expected to breed within the project area. There are 34 Bird Species of Conservation Concern that can occur in the MPRA; 9 have a high likelihood of breeding in the treatment area, 15 have a moderate likelihood, 7 have a low likelihood, and 3 are not expected to breed in the project area.

### **Environmental Effects**

#### ***3.2.5.1 Alternative 1 (No Action)***

The ongoing, long-term DMS would be compromised which would have a negative impact on the adaptive management process. The mid-seral stands in section 7 would continue to grow and develop into mature structure at a much slower rate than if released through rethinning. A new impulse of snags and CWD would not occur without a large-scale natural disturbance. Species dependent on larger and more complex structure, both live and dead, would be expected to avoid these stands for a longer period of time.

### 3.2.5.1 *Alternative 2 (Proposed Action)*

At the subwatershed scale forests on private lands would continue to provide early and mid-seral habitat; as mid-seral stands reach 40-50 years they would be harvested. These privately owned stands would lack structural complexity and any legacy or remnant live or dead wood typical of unmanaged early and mid-seral stands in the Oregon Coast Range. On BLM-managed lands in the Oliver Creek subwatershed approximately 480 acres of mid-seral habitat would be thinned in the next five years, while approximately 200 acres would be thinned in the South Fork Alsea River subwatershed.

#### Landscape and Stand Level Effects

The rethinning treatments (140 acres) are expected to maintain (short-term neutral impacts) the wildlife habitat functionality of the larger mid-seral stand (334 acres) in which they occur, especially at the subwatershed (Oliver Creek and Upper South Fork Alsea River sixth-fields) landscape level. These treatments would have long-term (10+ years) positive impacts for species dependent on, or associated with LSOG forest habitat in the subwatersheds by accelerating the development of large tree structure, by creating snags and CWD and by protecting the patch-openings and leave-islands.

The rethinning prescriptions for the research stands would remove the smaller co-dominant Douglas-fir and leave the most dominant Douglas-firs. Since the largest trees with the best crown ratios would be left the post-treatment crown canopy is expected to be 40 percent or greater on all units except the seven acre Variable-40 unit. Species dependent on a closed or dense overstory conifer canopy and/or shaded understory may move into the adjacent undisturbed mid-seral stand in the short-term. Species that prefer a more open overstory canopy and/or a more complex grass/forb/shrub understory may increase on the site in the short-term.

#### Special Habitats and Habitat Components

The mid-seral stands to be treated are lacking in numbers of standing and down large, hard, dead trees when compared to other unmanaged stands their age. The proposed action would have a positive impact on live and dead structure; first by protecting the best existing live structure, and next by creating at least five new snags per acre (within five years post-treatment) and two new down trees per acre during the rethin. Dead wood creation is expected to have no known negative impacts to stand composition or function, while both immediate and long-term positive impacts are anticipated for species which require complex dead wood structure associated with natural disturbance in unmanaged stands in the Oregon Coast Range.

#### Special Status Species

##### *Northern Spotted Owl*

The proposed action is a may affect, not likely to adversely affect northern spotted owl because it would modify the structure and composition of owl dispersal habitat at the stand level but would maintain the functionality of the habitat for owl dispersal since only seven acres are expected to fall below at least 40 percent crown closure.

The proposed action would result in a may affect not likely to adversely affect northern spotted owl because the long-term impact of density management on owls would be positive since the existing habitat would develop into suitable nesting habitat sooner than if left untreated and would also have immediate and long-term positive impacts for foraging owls by improving prey habitat due to the creation of new snags and CWD in the stands.

### *Marbled Murrelet*

The proposed action is a may affect, not likely to adversely affect marbled murrelet because treatment of the mid-seral habitat would have long-term positive affects by accelerating the time it would take for these stands to develop into suitable nesting habitat.

### *Mollusks*

The action would have a long-term positive impact on listed mollusks, since the proposed treatments would accelerate the development of LSOG conditions within the selected stands. The undisturbed leave-islands, riparian buffers, and existing CWD would provide refugia for some on-site mollusks.

### *Red Tree Vole*

The project would have a positive impact on red tree voles since the vole prefers late-seral habitat and the proposed treatments would accelerate the development of these conditions within the selected stands. If any active red tree vole nests are found during the rethinning process then the nest tree and those trees immediately adjacent to it would be protected.

### Bird Species of Conservation Concern

In the central Oregon Coast Range the majority of birds complete their breeding cycle within the April 15 to July 15 time period while some birds (eagles; owls; hawks; woodpeckers) begin breeding as early as February or March and others (flycatchers; finches) do not finish breeding until August. Due to the ubiquitous nature of breeding birds, soil disturbance (affecting ground-nesting birds) and vegetation manipulation would have a direct negative impact on bird nesting success if it occurs during the breeding season. There is a high likelihood that some level of disturbance to nesting birds would occur if the proposed thinning operations are conducted during the February-August breeding season.

The Green Peak II Density Management rethinning treatment is not expected to modify bird nesting and foraging habitats to the point that some species are no longer able to occupy the site. Research shows that bird species respond differently to changes in their nesting and/or foraging habitats; some populations seem to be unaffected by thinning (for example, Stellar's Jay, Black-headed Grosbeak), some decrease in numbers (for example, Golden-crowned Kinglet, Hermit Warbler, Pacific-slope Flycatcher, Varied Thrush), and others increase (for example, American Robin, Hairy Woodpecker, Dark-eyed Junco, Western Tanager). Responses to thinning can occur immediately and then change slowly over time. In some cases short-term (0-5 years) decreases can lead to mid-term (6-10 years) and/or long-term (10+ years) increases (for example, Hermit Warbler, Varied Thrush); in other cases just the opposite response can occur (for example Olive-sided Flycatcher, Evening Grosbeak, Townsend's Solitaire). In general, species that nest and/or forage in closed canopies would show declines commensurate with the intensity of the thinning, and species that nest and/or forage in open forest canopies usually increase in numbers. Species that nest and forage on the ground and in the understory usually maintain their pretreatment abundance or show an increase in abundance after the thinning. The proposed action includes the creation of snags and CWD which would improve habitat conditions in the selected stands for those species which nest or roost in, and/or forage on, dead wood (for example, Hairy Woodpecker, Northern Flicker, Pileated Woodpecker, Red-breasted Sapsucker, Winter Wren).

### 3.2.5.2 *Cumulative Effects*

The parameters for this cumulative impact analysis are as follows: rethinning approximately 131 acres of 69 year old conifer forest; resource of concern – mid-seral (40-79 years old) conifer forest wildlife habitat; spatial scale for past, present and reasonably foreseeable future actions - Oliver Creek and Upper South Fork Alsea River subwatersheds; temporal scale for reasonably foreseeable future actions – five years; current conditions – see Affected Environment above; trend without proposed action– see No-Action Alternative above. In relation to the no-action alternative ,there would be a positive cumulative impact in the Oliver Creek and Upper South Fork Alsea River subwatersheds to wildlife habitat from this action and future mid-seral thinnings since they are designed to enhance the conditions of the existing habitat by increasing structural diversity, accelerating the development of late-seral habitat, and creating new snags and CWD. The private timberlands in the watersheds would only provide simple structured early and mid-seral forest habitat in the reasonably foreseeable future. If these private lands cannot provide late-seral forest habitat conditions then any treatments which enhance diversity and the development of late-seral characteristics would have a positive effect on species, systems, and functions across the landscape.

Knowledge gained from the long-term Density Management Study would also have a positive cumulative effect on the management of all forestlands in western Oregon and the Pacific Northwest.

### 3.2.6 **Fuels/Air Quality**

*(IDT Reports incorporated by reference: Green Peak II Density Management Fuels and Soils Report, pp. 1-6)*

#### **Affected Environment**

##### Fuels

The estimated total dead fuel loading for this stand ranges from 10 up to 30 tons per acre. Much of the existing down material is rotten or only partially sound.

In the treated timber stands, there is a moderate to heavy accumulation of small and medium diameter dead woody material and leaf litter on the ground, much of it being logging slash from the previous density management treatment. The large diameter down wood component is higher in the treated stands by design and there are scattered wind thrown trees as well. Large snags are scarce. Small snags less than 12” DBHOB are less common in the treated verses the untreated stand. Patch cut areas in both the thinned and un-thinned stands have the highest accumulation of slash.

The estimated total dead fuel loading for this stand ranges from 15 up to 35 tons per acre. Approximately 50 percent of the existing down material is rotten or only partially sound.

##### Air Quality

Air quality in the vicinity of this proposed project is generally very high. Occasional stagnant air conditions do develop during the burning season and may result in accumulation of particulate mater but generally these are short lived lasting less than 1 week.

## **Environmental Effects**

### **3.2.6.1      *Alternative 1 (No Action)***

This alternative would result in no change to the affected environment. Short-term impacts to fuels and air quality would be avoided. However, immediate enhancements to forest structure would not be achieved.

### **3.2.6.2      *Alternative 2 (Proposed Action)***

#### **Fuels**

Fuel loading, risk of a fire start and the resistance to control a fire would all increase at the sites as a result of the proposed action. Depending on the level of treatment in the various units, slash created from timber harvest would add an estimated 10-30 tons per acre of dead fuel to the treatment areas.

Risk of a fire start in the untreated slash would be greatest during the first season following cutting. Fire risk would continue to diminish as the area "greens up" with under story vegetation, and as the fine twigs and branches in the slash begin to break off and collect on the soil surface. Past experience, in the geographic area of this proposed action, has shown that, in approximately 15 years, untreated slash would generally decompose to the point where it no longer contributes significantly to increased fire risk. Depending on the amount of large, down wood left on site from logging, the resistance to control would also decrease over time but more slowly. The resulting total residual dead fuel loading would vary throughout the site ranging from 5-30 tons per acre. It is expected that about half of the dead fuel tonnage to be left on site following treatment would be in the form of down logs and pieces in the 8-inch and larger size class.

#### **Air Quality**

The total amount of slash debris expected to be piled for burning is estimated to be approximately 250 to 400 tons from the landings and treated areas along the roads. Burning 250 to 400 tons of dry, cured, piled fuels under favorable atmospheric conditions in the coast range is not expected to result in any long-term negative effects to air quality in the air shed. Locally within ¼ to ½ mile of the piles there may be some very short-term smoke impacts after piles are ignited resulting from drift smoke. Depending on size, arrangement, type and moisture content of the remaining fuel, the smoke would diminish over several hours or days as the piles cool and burn out (sooner if rain develops). Generally this later smoke only affects the immediate area (¼ to ½ mile or less) around the pile. If a temperature inversion develops over the area during the night time hours, smoke may be trapped under the inversion and accumulate, resulting in a short-term impact to the local air quality. The accumulated smoke generally clears out by mid-morning as the inversion lifts.

### **3.2.6.3      *Cumulative Effects***

#### **Fuels**

In the treated areas along the access road, there would be a moderate increase in fuel loading and resultant fire hazard in the short-term, but that would diminish within a few years. When looked at from a watershed scale and in terms of the other dispersed units in the 5 year sale plan, the selected harvest on approximately 141 acres of forest habitat would have a minor overall effect on the long-term (5 or more years) potential of the stands to carry a fire. The localized increase in fire risk would diminish down to background levels within 10 to 15 years. If fuels are removed from the site by

burning, for cogen power production, or for other uses, fire risk would diminish immediately by a substantial margin.

#### Air Quality

There would be few cumulative effects to the resources, as the effects from the project would be local and / or short lived, and there would be no other uses affecting this resource. Since the effects of burning on air quality only last a few days at most there will be no cumulative impacts resulting as burning is implemented for other units planned in the 5 year sale plan. Burning of all slash would be guided by the Oregon State Smoke Management Plan which serves to coordinate all forest burning activities on a regional scale to protect local and regional air sheds. Based on past experience with pile burning in this and other similar areas there are no expected cumulative effects on air quality from the planned fuels treatment under this proposal.

## **4.0 Compliance with the Aquatic Conservation Strategy**

### ***Existing Watershed Condition***

The Green Peak II Density Management Project area is in the Upper Alsea River 5th-field Watershed which drains into the Alsea River and the Marys River 5th-field Watershed which drains into the Willamette River. Fifty-two percent of the Upper Alsea River Watershed is managed by the BLM, 47 percent is private and one percent is managed by the U. S. Forest Service. Approximately 37 percent of the total BLM managed lands consist of stands greater than 80 years old; and approximately 27 percent of BLM-managed lands are located in riparian areas (within 100 feet of a stream). Ninety-two percent of the Marys River Watershed is managed by private, five percent is managed by the U. S. Forest Service, and three percent is managed by the BLM. Approximately 37 percent of the total BLM managed lands consist of stands greater than 80 years old.

### ***Review of Aquatic Conservation Strategy Compliance:***

The following is an update of how this project complies with the four components of the Aquatic Conservation Strategy. The project would comply as follows:

***Component 1 – Riparian Reserves:*** The project would comply by maintaining canopy cover along all streams and wetlands which protect stream bank stability and water temperature. Stream protection zones (SPZ) would protect streams from direct disturbance from logging. Riparian Reserve boundaries would be established consistent with direction from the *Salem District Resource Management Plan*. No new road construction would occur within RMP Riparian Reserves.

***Component 2 – Key Watershed:*** The Green Peak II Density Management project is not within a key watershed.

### ***Component 3 – Watershed Analysis:***

The *South Fork Alsea River Watershed Analysis* (1995) describes the events that contributed to the current condition such as early hunting/gathering by aboriginal inhabitants, road building, agriculture, wildfire, and timber harvest. The following are watershed analysis findings that apply to or are components of this project:

- Density management opportunities in LSRs should focus at improving the corridor of dispersal habitat in the Middle South Fork Alsea River, Upper South Fork Alsea River, and Peak Creek subwatersheds, since existing Late Successional/Old Growth habitat in this area is highly

fragmented. The Green Peak II Density Management Project is located within the Peak Creek subwatershed (p. 44).

The *Benton Foothills Watershed Analysis* (1997) describes the events that contributed to the current condition such as early hunting/gathering by aboriginal inhabitants, road building, agriculture, wildfire, and timber harvest. The following are watershed analysis findings that apply to or are components of this project.

- BLM RRs in the analysis area lack older forest characteristics. Approximately 1,636 acres (78 percent) of the RRs are in early and mid seral age stands. Many of these stands tend to be overstocked, and lack vertical structure. Density management through the creation of gaps would benefit structural diversity (p.7).
- Management activities in the RRs can be used to promote older forest characteristics, attain ACS objectives and move the RRs on a trajectory toward older forest characteristics. Desired riparian characteristics include: Diverse vegetation appropriate to the water table, diverse age classes (multi-layered canopy); mature conifers where they have occurred in the past; and dead standing/down wood (p.9).

**Component 4 – Watershed Restoration:**

The project would restore watershed conditions by providing a gradual transition in structural characteristics of the treated stands that would more closely resemble late-seral forest. This project would also promote stand diversity, provide more light to accelerate growth of selected conifers and promote species diversity.

**Table 9: Consistency with the Nine Aquatic Conservation Strategy Objectives**

Aquatic Conservation Strategy Objectives (ACSOs)	Green Peak II and Associated Actions
1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features.	<p>Does not prevent the attainment of <i>ACSO 1</i>.</p> <p>The watershed where this project occurs lacks structural diversity and CWD. The project would enhance late-successional forest conditions and speed up attainment of these conditions across the landscape. Treatment includes proportional density management and retention of gaps and clumps, increasing the spatial and structural diversity of the stand. Species diversity would be increased since thinning would target Douglas-fir, the predominant species, increasing the relative proportion of the other tree species. In the long-term, due to increased diameter growth resulting from density management, larger trees would be available for recruitment for CWD.</p> <p>The proposed action is unlikely to have detrimental cumulative effects on the hydrologic regime. Road renovation practices help to prevent fill failures, slides, washouts, and other disturbances which can alter landscape features and complexity and add sediment to adjacent streams.</p>
2. Maintain and restore spatial and temporal connectivity within and between watersheds.	<p>Does not prevent the attainment of <i>ACSO 2</i>.</p> <p>Treatment includes proportional density management and retention of gaps and clumps, increasing the spatial and structural diversity of the stand.</p> <p>The crossing over the sole fish-bearing stream may have direct short-term connections of road surface flows with stream channels. Minor site-specific affects to short reaches of fish habitat downstream of the stream crossing could occur due to sediment generated from hauling. Fish would likely move away from elevated turbidities while hauling was occurring and would reoccupy habitat following cessation of sediment recruitment. .</p>

<b>Aquatic Conservation Strategy Objectives (ACSOs)</b>	<b>Green Peak II and Associated Actions</b>
<p>3. <i>Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.</i></p>	<p>Does not prevent the attainment of <b>ACSO 3</b>.</p> <p>This action is unlikely to alter the current condition of the aquatic system with respect to its physical integrity, water quality, sediment regime or in-stream flows. Some short-term, variable increases in stream turbidity may result from timber hauling.</p> <p>Measurable impacts on stream flow, channel conditions, and water quality due to this proposal are unlikely due to the heavy armoring of the channels by larger substrate. Research presented in 2007 for all of the DMS study areas in western Oregon did not detect any effects to stream habitat parameters due to treatment activities based on the study period of 1998 through 2004. The site-specific surveys of Green Peak showed no statistical change in pool depth, pool amounts, riffle amounts or substrate shifts.</p> <p>The undisturbed areas (49 acres of leave islands and riparian buffers) spread throughout the unit and the patchwork-type harvest pattern would help to reduce any changes in the capture and routing of precipitation in the near term and allow a quicker recovery towards pre-treatment conditions as the remaining forest continues to grow.</p>
<p>4. <i>Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.</i></p>	<p>Does not prevent the attainment of <b>ACSO 4</b>.</p> <p>Increases in stream temperature as a result of this proposal are unlikely due to the implementation of the research stream buffers (25 to 220 feet of undisturbed forest) and adjacent density management areas.</p> <p>By removing vegetation, surface runoff is increased and more water reaches streams. The compaction of skid trails and roads would also increase surface runoff in the project area. Thus, it can be assumed that this project would likely result in some small increase in water yield. However, this effect from the proposed action would be difficult to measure and unlikely to substantially alter stream flow or water quality because the increase would be undetectable by common field techniques.</p> <p>Due to the topography of the study area and the patchwork type of harvest activity which includes 49 acres of leave islands and riparian buffers, increases in mass wasting and alterations in the sediment regime would continue to have a low probability. There has been no evidence of any mass wasting resulting from the last entry.</p> <p>Since the proposed action is unlikely to result in any measurable increase in stream temperature or sedimentation and would not place large amounts of fine organic material in the stream or alter stream aeration, it is unlikely that it would have any measurable effect on dissolved oxygen or nutrient levels.</p> <p>Alterations in the capture, infiltration and routing (both surface and subsurface) of precipitation may occur as a consequence of the mechanical removal of trees and reductions in stand density. This effect would be difficult to measure and unlikely to substantially alter stream flow or water quality.</p>

<b>Aquatic Conservation Strategy Objectives (ACSOs)</b>	<b>Green Peak II and Associated Actions</b>
<p>5. <i>Maintain and restore the sediment regime under which aquatic ecosystems evolved.</i></p>	<p>Does not prevent the attainment of <b>ACSO 5</b>.            With application of sediment control PDFs (mulching, grass seeding, etc...) and cessation of haul during heavy rainfall, the magnitude of sediment reaching streams would be reduced and direct impacts to fish and aquatic habitat would be minimized.</p> <p>Since the proposed action is unlikely to result in any measurable increase in stream temperature or sedimentation and would not place large amounts of fine organic material in the stream or alter stream aeration, it is unlikely that it would have any measurable effect on dissolved oxygen or nutrient levels.</p> <p>Roads and skid trails would be far enough from stream channels (greater than 200 feet) as to not cause direct sedimentation from displaced top soil or increased surface runoff and no new stream crossing would be constructed. In addition, SPZs have high surface roughness, which function to trap any overland flow and sediment before reaching streams. Ground-based yarding would occur during periods of low soil moisture with little or no rainfall, in order to minimize soil compaction and erosion.</p> <p>Due to the topography of the study area and the patchwork type of harvest activity which includes 49 acres of leave islands and riparian buffers, increases in mass wasting and alterations in the sediment regime would continue to have a low probability. There has been no evidence of any mass wasting resulting from the last entry.</p> <p>Tree removal would not occur on steep, unstable slopes where the potential for mass wasting adjacent to streams is high. Therefore, increases in sediment delivery to streams due to mass wasting are unlikely to result from this action.</p>
<p>6. <i>Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing.</i></p>	<p>Does not prevent the attainment of <b>ACSO 6</b>.            By removing vegetation, surface runoff is increased and more water reaches streams. The compaction of skid trails and roads would also increase surface runoff in the project area. Thus, it can be assumed that this project would likely result in some small increase in water yield. However, this effect from the proposed action would be difficult to measure and unlikely to substantially alter stream flow or water quality because the increase would be undetectable by common field techniques.</p> <p>The proposed project would affect less than 0.06 percent of the forest cover in the Upper Alsea Watershed, and 0.04 percent of the cover in the Marys River Watershed. Due to the small percentage of forest cover affected, all located below the transient snow zone, alterations in stream flows would be unlikely.</p>
<p>7. <i>Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.</i></p>	<p>Does not prevent the attainment of <b>ACSO 7</b>.            The proposed project would affect less than 0.06 percent of the forest cover in the Upper Alsea Watershed, and 0.04 percent of the cover in the Marys River Watershed. Due to the small percentage of forest cover affected, all located below the transient snow zone, alterations in stream flows would be unlikely.</p> <p>The proposed action does not involve occupancy or modification of floodplains, and would not increase the risk of flood loss.</p>

<b>Aquatic Conservation Strategy Objectives (ACSOs)</b>	<b>Green Peak II and Associated Actions</b>
<p>8. <i>Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands.</i></p>	<p>Does not prevent the attainment of <b>ACSO 8</b>.</p> <p>The actual riparian areas along streams would be excluded from treatment during the project by designating SPZs, and only the upslope portions of the RRs would be included in the density management treatment. Short-term recruitment of the existing CWD is expected to be maintained from retention of stream side buffers (Snook 2009). The propose action would increase the average stand diameter by 42 percent over no treatment over the next 30 years (Snook 2009). In the long-term beneficial growth in the size of trees in RR LUA could beneficially affect LWD recruitment to the stream channel, thus potentially improving the quality/complexity of aquatic habitat adjacent to the treatment areas or available for future recruitment downstream.</p> <p>Thinning dense stands would provide older forest characteristics to the reserved trees at an earlier age when compared to the no action alternative. This action would create habitat for late forest and/or SS species by increasing the secondary growth of the reserved conifers. In addition, it would provide for a higher diversity to the shrub and forb layers by allowing an increase in sunlight to the forest floor.</p> <p>The project would require removal of localized vegetation, including removal of trees within the RRs. In the long-term where small openings are created the riparian area would benefit from increased structural diversity.</p>
<p>9. <i>Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.</i></p>	<p>Does not prevent the attainment of <b>ACSO 9</b>.</p> <p>Dead wood creation is expected to have no known negative impacts to stand composition or function, while both immediate and long-term positive impacts are anticipated for species which require complex dead wood structure associated with natural disturbance in unmanaged stands in the Oregon Coast Range.</p>

## 5.0 LIST OF PREPARERS

**Table 10: List of Preparers**

Resource	Name	Initial	Date
Cultural Resources	Dave Calver		
Botany TES and Special Status Plant Species	Ron Exeter		
Fisheries/Aquatic Habitat	Scott Snedaker		
Fuels/Air Quality	Tom Tomczyk		
Hydrology/Water Quality/Soils	Steve Wegner		
NEPA	Gary Humbard		
Recreation/Rural Interface/Visuals	Traci Meredith		
Silviculture/Riparian Ecology	Hugh Snook		
Wildlife TES and Special Status Animal Species	Gary Licata		
Road Work	Russ Buswell		
Harvest Plan	Cory Geisler		

## **6.0 CONTACTS AND CONSULTATION**

### **6.1 Agencies, Organizations, and Persons Consulted (ESA Section 7 Consultation)**

#### **United States Fish and Wildlife Service (USFWS)**

To address concerns for effects to federally listed wildlife species and potential degradation of critical habitats, the proposed action has been consulted upon with the U.S. Fish and Wildlife Service, as required under Section 7 of the ESA. Consultation for this proposed action was facilitated by its inclusion within a programmatic Biological Assessment (BA) that analyzes all projects that may modify the habitat of listed wildlife species on federal lands within the Northern Oregon Coast Range during fiscal years 2009 and 2010. The resulting Letter of Concurrence (FWS Reference Number 13420-2008-I-0125, dated October 7, 2008) concurred with the BA, that this action was not likely to adversely affect spotted owl, marbled murrelets or their critical habitats. This proposed action has been designed to incorporate all appropriate design standards set forth in the BA which forms the basis for compliance with the Letter of Concurrence.

#### **National Marine Fisheries Service (NMFS)**

Consultation with NMFS is required for projects that ‘may affect’ listed species. Protection of EFH as described by the Magnuson/Stevens Fisheries Conservation and Management Act and consultation with NMFS is required for all projects which may adversely affect EFH of coho or Chinook salmon. The proposed Green Peak II project is not expected to affect EFH due to distance of all activities associated with the Green Peak II project from occupied habitat.

The proposed actions associated with the Green Peak II Project is not expected to cause any effects to the listed fish or listed critical habitat in the Upper Alsea River or Marys River Watersheds. A determination has been made that the proposed project would have ‘no effect’ on UWR Chinook Salmon and/or OC Coho salmon. This ‘no effect’ determination is based on the distance upstream of the project area from ESA listed fish habitat (approximately 4 miles downstream). Due to the “no effect” determination the project was not consulted upon with the NMFS.

### **6.2 Cultural Resources – Section 106 Consultation and Consultation with State Historical Preservation Office**

The project area occurs in the Oregon Coast Range. Survey techniques are based on those described in Appendix D of the *Protocol for Managing Cultural Resource on Lands Administered by the Bureau of Land Management in Oregon*. 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 were discovered during project work until an archaeologist can assess the significance of the discovery.

### **6.3 Public Scoping and Notification-Tribal Governments, Adjacent Landowners, General Public, and State County and local government offices**

- A scoping letter, dated September 16, 2008, was sent to 31 potentially affected and/or interested individuals, groups, and agencies. One response was received during the scoping period and is addressed in EA section 6.2.
- A description of the project was included in the June, September, December 2008, and March, 2009 project updates to solicit comments on the proposed project.

### 6.3.1 EA public comment period

- ✓ The EA and FONSI will be made available for public review July 1, 2009 to July 31, 2009. The notice for public comment would be published in a legal notice by the *Gazette-Times* newspaper. Comments received by the Marys Peak RA of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before July 31, 2009 would be considered in making the final decisions for this project.

## 7.0 MAJOR SOURCES AND APPENDIXES

### 7.1 Major Sources

#### 7.1.1 Interdisciplinary Team Reports

Exeter, R. 2009. Botanical & Fungal Special Status and Noxious Weed Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Licata, G. 2009. Biological Evaluation for Green Peak II Density Management Timber Sale. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Meredith, T. 2009. Recreation/VRM/Rural Interface Evaluation for Green Peak II Density Management Timber Sale. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Snedaker, S. 2009. Green Peak Thinning Project Environmental Assessment Timber Sale Fisheries Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Snook, H. 2009. Silviculture Prescription Green Peak II Project. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Tomczyk, T. 2009. Green Peak II Density Management Fuels/Air Quality Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Wegner, S. 2009. Green Peak II Soils/Hydrology Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

#### 7.1.2 Additional References

USDA Forest Service, USDI Bureau of Land Management. 1994. Final Supplemental Environmental Impact Statement Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl. Portland, OR.

USDA Forest Service, USDI Bureau of Land Management. 1994. Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl. Portland, OR. **Note:** The ROD and S&G are collectively referred to herein as the Northwest Forest Plan (NWFP)

USDA Forest Service, USDI Bureau of Land Management. 1998. Late-Successional Reserve Assessment Oregon Coast Province-Southern Portion- (Late-Successional Reserve RO267, RO268). Salem, OR.

USDA Forest Service and USDI Bureau of Land Management. 2008. Biological Assessment, Fiscal years 2009/2010 Habitat Modification Activities in the North Coast Province Which Might Affect Bald Eagles, Northern Spotted Owls or Marble Murrelets.

USDI Bureau of Land Management. 1994. Salem District Proposed Resource Management Plan/Final Environmental Impact Statement. Salem, OR.

USDI Bureau of Land Management. 1994. Salem District Watershed Cumulative Effects Analysis Procedure. Salem District BLM, Salem, OR. Internal document.

USDI Bureau of Land Management. 1995. Salem District Record of Decision and Resource Management Plan. Salem, OR.

USDI Bureau of Land Management. 1995. South Fork Alsea Watershed Analysis. Salem, OR.

USDI Bureau of Land Management. 1997. Benton Foothills Watershed Analysis. Salem, OR.

USDI Fish and Wildlife Service. 2009. Biological Opinion for Effects to Northern Spotted Owls and Marbled Murrelets from the North Coast Province Fiscal Year 2009-2010 activities that have the potential to adversely affect, due to habitat modification and disturbance, U.S. Department of the Interior; Bureau of Land Management, Eugene District and Salem District, and the U.S. Department of Agriculture; Siuslaw National Forest. Oregon Fish and Wildlife Office, Portland, Oregon. Tracking Number: 13420-2008-1-0125 (dated 10/07/2008), Unpublished Document.

## **7.2 Appendix 1 – Response to Scoping Comments**

A scoping letter, dated September 16, 2008, was sent to 31 potentially affected and/or interested individuals, groups, and agencies. One response was received during the scoping period.

### **7.2.1 Summary of comments and BLM responses**

The following addresses comments raised in one letter from the public received as a result of scoping (40 CFR Part 1501.7). Additional supporting information can be found in Specialists' Reports in the NEPA file.

#### **7.2.1.1 Oregon Wild (October 23, 2008)**

1. **Comment:** *“We are interested in a detailed description of the research project, its intended outcomes, and its environmental impacts.”*

**Response:** A detailed description of the project is located in Chapter 1 of the EA.

2. **Comment:** *“We would like to see some results and analysis from that included in the Green Peak II EA to help inform the public about the study”*

**Response:** A detailed description of the project is located in Chapter 1 of the EA. The DMS study plan, site data and research papers can be found at <http://ocid.nacse.org/nbii/density/index.html>.

3. **Comment:** *“Although this area is part of a study and so you may be pursuing different goals than usual, we still believe that LSR and RR objectives must be met for this area. Please describe how the thinning study in these LUAs still meet objectives for wildlife habitat, canopy closure, and other natural resource guidelines.”*

**Response:** The objectives of the study are listed in Section 1.1 Background, of the EA. The objectives of the research are centered on attainment of LSR and RR objectives through alternative management. The study plan for the DMS and Riparian Buffer Study (USDI, USGS, 2006) details the desired future condition of the study site stands at age 120-150 years, and it is essentially a description of old growth characteristics from Spies and Franklin (1991). Carefully testing the results of stand treatments through the study may expand our knowledge of how to meet LSR and RR objectives. Short-term attainment of LSR and RR objectives resulting from the proposed action (phase 2 treatment in the study) are described in the EA in Chapter 3.0 Existing Condition and Environmental Effects.

4. **Comment:** *“The project analysis should separately discuss each of the Aquatic Conservation Strategy objectives, and describe how the proposed action is consistent with these objectives.”*

**Response:** Each ACS objective was addressed separately in the EA (Section 4 Table 13).

5. **Comment:** *“The agency must consider and disclose cumulative impacts from the proposed action.”*

**Response:** Cumulative impacts were considered and discussed in the specialist reports in Chapter 3, see Table 4 and 5 in Chapter 3.

6. **Comment:** *“The Alsea Stewardship Group – would certainly be interested in learning about this project.”*

**Response:** The Marys Peak Field Manager participates in the Alsea Stewardship Group and maintains lines of communication with them. Some of their members receive the scoping and decision documents on our projects, including Green Peak II. The relevancy of the Green Peak II project to the Alsea Stewardship Group may be limited by the fact that only a small portion of the project area is in the Alsea watershed, and the project has not been planned as a stewardship project. Marys Peak Resource Area staff look forward for the opportunity to work with an interest-based local group in developing stewardship projects that meet the mutual goals of the Stewardship Group and the BLM.

## 7.3 Appendix 2 – Green Peak II Marking Guides

### 7.3.1 Marking Guidelines for Green Peak II Density Management Project

(T. 14 S., R. 6 W., Section 7)

**Table 1. Prescription Summary - Orange (Leave Tree) Mark to Target TPA**

Unit / Treatment	Age (yrs)	Pre-treatment			Marking Guide				
		TPA All Trees	BA <sup>1</sup> (sq ft)	QMD (in) <sup>4</sup>	TPA <sup>2</sup> Conifer greater than 9” DBH	Leave Spacing (feet)	% of Overstory Trees to leave	Est. Leave BA (sq ft)	QMD <sup>3</sup> (in)
<b>High Retention</b>	70	119	242	19.3	<b>67</b>	26	56%	131	19.1
<b>Moderate Retention</b>	70	84	188	20.3	<b>37</b>	34	44%	78	20.2
<b>Variable - High</b>	70	124	220	18	<b>67</b>	26	54%	119	18
<b>Variable- Mod.</b>	70	94	199	19.7	<b>37</b>	34	40%	72	19.4
<b>Variable- Low</b>	70	51	105	19.3	<b>27</b>	40	65%	61	18.4
<b>Avg</b>	<b>70.0</b>	<b>111</b>	<b>227</b>	<b>19.4</b>	<b>47</b>			<b>92</b>	<b>19.0</b>

<sup>1</sup> Basal area in square feet: cross-sectional area occupied by tree boles on each acre

<sup>2</sup> **Leave Trees Per Acre:** remaining overstory conifer trees after thinning.

<sup>3 4</sup> QMD=quadratic mean diameter, the DBH of tree of mean basal area.

#### Boundaries

Exterior unit boundaries are marked by orange paint and Boundary Timber Reserve posters. Boundaries between marking units would be designated with orange flagging.

#### Goals

Increase the diversity of stand structure and composition while reducing density:

- Maintain the full range of diameter distribution
- Retain a range of tree structures, crown sizes, and damaged or deformed trees
- Increase the proportion of minor species: focus the removal on Douglas-fir

#### Hierarchy (Priorities)

1. Meet target number of **trees per acre** greater than 9” DBH, selecting for best crown ratios.
2. Retain “**unique**” trees - wolf, remnant/legacy trees, broken-top, forked, have wildlife use, full crowns, etc.
3. Retain **minor species**: All hardwoods retained and do NOT count toward TPA targets. All western hemlock retained and count toward TPA targets.
4. Retain existing **diameter distribution** by keeping trees in all size classes. Harvest trees would be primarily co-dominants.
5. Meet residual tree **spacing**. Small gaps/clumps OK. Do NOT adjust marking near existing patch cuts.
6. **Remove unstable roadside conifer**. Remove conifers on or above road cut slope that are unstable (pistol-butted or with excessive lean toward the road).

**Required leave trees for all units**

- All snags are reserved under the timber sale contract. Protect high-value snags by leaving adjacent trees.
- All Trees less than 9” are reserved under the timber sale contract (not marked and not counted toward TPA or BA).
- All remnants from the previous stand.
- All tree improvement parent trees (marked with orange “T” and metal signs).
- All trees marking the center of research plots (overstory trees with red blazes).

Appendix 3 – Instruction Memorandum OR-2005-083 Dated August 12, 2005



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Oregon State Office

P.O. Box 2965

Portland, Oregon 97208



**In Reply Refer to:**  
5610 (OR-933) P

August 12, 2005

EMS TRANSMISSION 08/16/2005  
Instruction Memorandum No. OR-2005-083  
Expires: 9/30/2006

To: District Managers: Coos Bay, Eugene, Roseburg, Salem  
From: State Director, Oregon/Washington  
Subject: Density Management Studies

**Purpose:** This Instruction Memorandum provides direction for the next phase of the Density Management and Riparian Buffer Study (DMS).

**Policy/Action:** To begin out-year planning to implement the next phase of the DMS according to the revised DMS Study Plan. The DMS Site Coordinator for each site should work with the local field manager and employees responsible for the necessary contract work to ensure that this schedule can be met and to resolve difficulties. The DMS Study Coordinator should be kept informed and involved as necessary to help keep necessary actions on schedule.

**Timeframe:** The schedule for on-the-ground treatment implementation is as follows:

Site Name	District	Implementation Year	Site Coordinator
Bottomline	Eugene	2009	Peter O'Toole/Shami Premdas
OM Hubbard	Roseburg	2009	Craig Kintop
Keel Mountain	Salem	2009	Charley Thompson
Sand Creek	Salem	2009	Hugh Snook
Callahan Creek	Salem	2009	Hugh Snook
North Soup	Coos Bay	2010	Frank Price
Little Wolf	Roseburg	2010	Craig Kintop
Blue Retro	Coos Bay	2010	Frank Price
Green Peak	Salem	2011	Hugh Snook
Ten High	Eugene	2011	Peter O'Toole/Shami Premdas
Delph Creek	Salem	2011	Charley Thompson
Perkins Creek	Eugene	2011	Peter O'Toole/Shami Premdas

**NOTE:** Implementation year means the year that the activity happens on the ground. Every effort should be made to ensure the DMS units are treated in the one-year window assigned above.

**Budget Impact:** Funding to support contract development and implementation for the next round of treatments will come out of normal operating budgets, and achievements will contribute to normal accomplishment reporting. The Study Coordinator and other individuals in the State Office are evaluating the feasibility of funding post-treatment monitoring through contract receipts, either through stewardship contracting and/or use of the 5900 forest health funds. Additional funding of post-treatment monitoring may be needed and will be funded out of 6320, 6334, and/or 6310 subactivities, as has been the case for the last 10 years. Total funding needs for post-treatment monitoring will range from \$100,000 to \$300,000 annually depending on scheduling and partner funding contributions. Partner contributions have exceeded Bureau of Land Management (BLM) study funding to date.

**Background:** Initial direction to implement the DMS was provided through two State Office directives (Instruction Memorandum OR-93-145, Information Bulletin OR-94-317) over ten years ago. Since then, treatments implementing the study have been completed, over a thousand plots have been established, measurements for a wide variety of responses have been conducted, initial results have been reported, and a wide range of outreach and education activities have been conducted on DMS sites or with DMS information. Several manuscripts officially reporting five-year post-treatment results are scheduled for publication within the year. A strong partnership among Pacific Northwest Research Station, Oregon State University, US Geological Survey, and the BLM has supported these accomplishments.

An extensive effort was made over the past year to develop a revised DMS Study Plan (Cissel et al. in review) to address key information needs of the BLM. Proposal development steps included:

- DMS scientists and site coordinators developed initial ideas for the revised study plan and reviewed proposals in the field
- Revised study plan was reviewed and discussed with a wide range of field practitioners and managers at the DMS Workshop and Field Trips in June, 2004
- The DMS Study Coordinator reviewed the proposal with affected field managers
- Revised study plan proposal was distributed to westside field units for review
- Revised proposal was reviewed and approved by the interagency DMS Steering Committee (includes BLM district manager and branch chief)

The BLM State Office leadership and Pacific Northwest Research Station Leadership Team were briefed and concurred on study plans and direction.

**Manual/Handbook Sections Affected:** None

**Coordination:** Development of these instructions was coordinated with District Management, DMS Coordinators, and OR-930 Management and staff.

**Contact:** Contact the DMS Study Coordinator John Cissel, at (541) 683-6410 with questions, or for a copy of the revised study plan.

**Districts with Unions** are reminded to notify their unions of this Instruction Memorandum and satisfy any bargaining obligations before implementation. Your servicing Human Resources Office or Labor Relations Specialist can provide you assistance in this matter.

Signed by  
Kathy Eaton  
Acting Associate Director

Authenticated by  
Mary O'Leary  
Management Assistant

## 7.5 Appendix 4 – Regional Ecosystem Office Memorandum Dated May 12, 2003

### Regional Ecosystem Office

333 SW 1st P.O. Box 3623

Portland, Oregon 97208-3623

Website: [www.reo.gov](http://www.reo.gov) E-Mail: [REOmail@or.blm.gov](mailto:REOmail@or.blm.gov)

Phone: 503-808-2165 FAX: 503-808-2163

### Memorandum

**Date:** May 12, 2003

**To:** Regional Interagency Executive Committee (See Attached Distribution List)

**From:** Anne Badgley, Executive Director /s/Anne Badgley

**Subject:** Assessment and Review of Proposed Research under the Northwest Forest Plan

**Purpose:** The purpose of this memorandum is to clarify implementation of certain Northwest Forest Plan (NWFP) provisions regarding research assessments and reviews.

**Background:** In 2001, the Regional Ecosystem Office (REO) received questions from field offices asking whether REO review of new proposed research is required. The REO prepared findings to clarify two aspects of the research questions:

1. Reviews. When is REO review of research required?
2. Assessments. Who assesses new research proposals and what factors should be considered?

This memorandum is based on interagency discussions (which included participation by research agency representatives) and review of NWFP provisions. Key NWFP provisions are attached and referenced below.

**Findings:** Reviews. The NWFP Standards and Guidelines (S&Gs) distinguish between ongoing and proposed research (S&Gs, pp. C-4, 18, 19 & 38). Project summaries of ongoing research, i.e., current, funded, agency approved research, were to be submitted to REO for review within 180 days after the date the NWFP Record of Decision (ROD) was signed (April 13, 1994). New research, i.e., research proposed after the NWFP was signed, does not require REO, Research and Monitoring Group (RMG), or Regional Interagency Executive Committee (RIEC) review. However, agencies may request REO or RMG assistance in conducting science reviews of new proposed research, particularly where independent, regional-scale, or interagency analysis is indicated. Requests should be submitted through the agency's RIEC executive to the REO Executive Director.

Assessments. The S&Gs (pp. C-4, 18 & 38) require that research be assessed to determine if it is consistent with the objectives of the standards and guidelines. The appropriate land manager is responsible for assessing proposed research and has discretion regarding how to conduct the assessment and documentation process. For example, the assessment and documentation may be completed in conjunction with the NEPA process.

The ROD states that, where appropriate, some research activities may be exempted from the standards and guidelines (ROD, p.15). The S&Gs further provide for this by indicating that some activities not otherwise consistent with the objectives of the standards and guidelines may be appropriate (S&Gs, pp. C-4, 18 & 38), particularly if the activities:

- Will test critical assumptions of these standards and guidelines;
- Will produce results important for habitat development; or
- If the activities represent continuation of long-term research.

In addition, the S&Gs (p. C-4) state that every effort should be made to locate non-conforming activities in land allocations where they would have the least effect upon the objectives of the standards and guidelines. (Language specific to Late-Successional Reserves (LSRs) and Riparian Reserves (RRs) is provided in the S&Gs (pp. C-18 & 38)). This factor should be considered and documented during the assessment.

The land manager is responsible for identifying any proposed research activities that are inconsistent with the objectives of the standards and guidelines, for assessing whether the activities are appropriate, and for ensuring that appropriate efforts have been made to locate non-conforming activities in land allocations where they would have the least effect upon the objectives of the standards and guidelines. The land manager may then exempt research activities from the standards and guidelines where appropriate. All research activities must meet the requirements of applicable federal laws (ROD, p.15), including the Endangered Species Act, NEPA, etc.

**Related Considerations:** The REO identified other factors that may be helpful to ensure scientific credibility of proposed research (a basic principle of the NWFP). These factors are not specified in the NWFP, however, land managers may consider them if appropriate during design and assessment of new research proposals, particularly proposals which include activities inconsistent with the objectives of the standards and guidelines. Optional factors that may be appropriate to consider include:

1. The extent to which the proposed research represents credible science. The following questions may be helpful in evaluating whether the proposed research represents credible science:
  - What hypotheses would be tested by the proposed research, and how are they linked to assumptions or uncertainties in the S&Gs?
  - Is the proposed study design adequate to test the stated hypotheses?
  - What are the temporal and spatial zones of inference for the proposed research?
  - Has the proposal been the subject of an independent science review? If so, what are the results?
2. The potential of the research to contribute to scientific knowledge of importance beyond the local area.
3. The potential to modify the research proposal to make it more consistent with the objectives of the standards and guidelines.
4. The extent to which the desired results could be obtained if the research was modified to conform to the standards and guidelines.

This memorandum is intended for use as the basis for responding to future inquiries regarding research assessments and reviews. All RIEC executives are encouraged to distribute this memorandum to appropriate individuals in their agency. If you have comments or need additional information, please contact me at 503-808-2165, or your REO representative.

cc: REO/RMG reps  
 Ken Denton (FS)  
 John Cissel (BLM)

1819final.doc/kc

### **NWFP Excerpts Related to Research Assessments and Reviews**

This enclosure provides excerpts from the Northwest Forest Plan Record of Decision (ROD) and Standards and Guidelines (S&Gs) which are referenced in the accompanying memorandum on research assessments and reviews.

#### **ROD, p. 15:**

“An important component of this decision is the facilitation of research activities to gather information and test hypotheses in a range of environmental conditions. Although research activities are among the primary purposes of adaptive management areas and experimental forests, this decision does not intend to limit research activities to these land allocations. Where appropriate, some research activities may be exempted from the standards and guidelines of this decision. However, every effort should be made to locate non-conforming activities in land allocations where they would have the least adverse effect upon the objectives of the applicable standards and guidelines. All research activities must meet the requirements of applicable federal laws, including the Endangered Species Act.”

#### **S&Gs, p. C-4:**

“A variety of wildlife and other research activities may be ongoing and proposed in all land allocations. These activities must be assessed to determine if they are consistent with the objectives of these standards and guidelines. Some activities (including those within experimental forests) not otherwise consistent with the objectives may be appropriate, particularly if the activities would test critical assumptions of these standards and guidelines, would produce results important for habitat development, or if the activities represent continuation of long-term research. Every effort should be made to locate non-conforming activities in land allocations where they would have the least adverse effect upon the objectives of these standards and guidelines.

Current, funded, agency-approved research that meets the above criteria, is assumed to continue if analysis ensures that a significant risk to Aquatic Conservation Strategy objectives does not exist. Research Stations and other Forest Service and BLM units would, within 180 days of the signing of the Record of Decision, submit a brief project summary to the Regional Ecosystem Office of ongoing research projects that are potentially inconsistent with other standards and guidelines in this document but are expected to continue under the above research exception. The Regional Ecosystem Office may choose to more formally review specific projects, and may recommend to the Regional Interagency Executive Committee modification, up to and including cancellation, of those projects that have an unacceptable risk [to] the objectives of these standards and guidelines.”

#### **S&Gs, pp. C-18,19:**

“A variety of wildlife and other research activities may be ongoing and proposed in late-successional habitat. These activities must be assessed to determine if they are consistent with Late-Successional Reserve objectives. Some activities (including those within experimental forests) not otherwise consistent with the objectives may be appropriate, particularly if the activities would test critical assumptions of these standards and guidelines, would produce results important for habitat development, or if the activities represent continuation of long-term research. These activities should only be considered if there are no equivalent opportunities outside Late-Successional Reserves.

Current, funded, agency-approved research that meets the above criteria is assumed to continue if analysis ensures that a significant risk to Aquatic Conservation Strategy objectives does not exist. Research Stations and other Forest Service and BLM units would, within 180 days of the signing of the Record of Decision for these standards and guidelines, submit a brief project summary to the Regional Ecosystem Office of ongoing research projects that are potentially inconsistent with other standards and guidelines of this document, but are expected to continue under the above research exception. The Regional Ecosystem Office may choose to more formally review specific projects, and may recommend to the Regional Interagency Executive Committee modification, up to and including cancellation, of those projects having an unacceptable risk to Late-Successional Reserve objectives.”

**S&Gs, p. C-38:**

**RS-1.** A variety of research activities may be ongoing and proposed in Key Watersheds and Riparian Reserves. These activities must be analyzed to ensure that significant risk to the watershed values does not exist. If significant risk is present and cannot be mitigated, study sites must be relocated. Some activities not otherwise consistent with the objectives may be appropriate, particularly if the activities would test critical assumptions of these standards and guidelines; would produce results important for establishing or accelerating vegetation and structural characteristics for maintaining or restoring aquatic and riparian ecosystems; or the activities represent continuation of long-term research. These activities should be considered only if there are no equivalent opportunities outside of Key Watersheds and Riparian Reserves.

**RS-2.** Current, funded, agency-approved research, which meets the above criteria, is assumed to continue if analysis ensures that a significant risk to Aquatic Conservation Strategy objectives does not exist. Research Stations and other Forest Service and BLM units would, within 180 days of the signing of the Record of Decision adopting these standards and guidelines, submit a brief project summary to the Regional Ecosystem Office of ongoing research projects that are potentially inconsistent with other standards and guidelines but are expected to continue under the above research exception. The Regional Ecosystem Office may choose to more formally review specific projects, and may recommend to the Regional Interagency Executive Committee modification, up to and including cancellation, of those projects having an unacceptable risk to Key Watersheds and Riparian Reserves. Risk would be considered within the context of the Aquatic Conservation Strategy objectives.”

**S&Gs, pp. D-7, 8:**

“Monitoring and research, with careful experimental design, would be conducted in Adaptive Management Areas. Research in forest ecology and management as well as social, biological, and earth sciences may be conducted. Each Adaptive Management Area would have an interdisciplinary technical advisory panel that would provide advice to managers and the local communities involved with this effort. The technical advisory panels would provide advice and information on the appropriateness of the project.

Direction and review are provided by the Regional Interagency Executive Committee, through the Regional Ecosystem Office. This review would help assure that plans and projects developed for the various Adaptive Management Areas would be both scientifically and ecologically credible. It would assure that new, innovative approaches are used, that the laws and the goals of the plan are met, and that validation monitoring is incorporated.”

**S&Gs pp. E-17, 18:**

“The Research and Monitoring Committee would review and evaluate ongoing research; develop a research plan to address critical natural resource issues; address biological, social, economic, and adaptive management research topics; and develop and review scientifically credible, cost efficient monitoring plans; and facilitate scientific review of proposed changes to the standards and guidelines.”