

ENVIRONMENTAL ASSESSMENT

Diamond Peak Thin

**USDA FOREST SERVICE
SIUSLAW NATIONAL FOREST
HEBO RANGER DISTRICT**

Lincoln County, Oregon
April 2006

**RESPONSIBLE OFFICIAL:
GEORGE T. BUCKINGHAM**

DISTRICT RANGER

For Further Information Contact:

**Janet Moser
NEPA/PLANNING
Hebo Ranger District
Hebo, OR 97122**

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Table of contents

Chapter 1 Purpose of and Need for Action.....	1
Relationship to Forest Plan	2
Chapter 2 Alternatives.....	12
Chapter 3 Affected Environment and Environmental Consequences	24
Chapter 4 Agencies and Persons Consulted	62
List of Preparers	63
Appendix A: Public Comments to Scoping Document Summary Table	
Diamon Peak Thin Map	

Chapter 1 Purpose of and Need for Action

The intent of the National Environmental Policy Act (NEPA), its implementing regulations, and Forest Service policy is to evaluate and disclose the effects of proposed actions on the quality of the human environment. These procedures are meant to improve the quality of decision-making, as well as make the decision-making process more accessible and transparent to the affected public.

Chapter 1 includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.

Introduction

In April 2004, the Hebo Ranger District initiated the Diamond Peak Thin Environmental Assessment, which analyzed the young managed conifer stands in the vicinity of Deadwood Mountain and Pea Ridge to determine if actions are needed to improve watershed conditions and habitat for aquatic and terrestrial species. The project area, shown on the Diamond Peak Project Map, includes 5,516 acres of National Forest System (NFS) lands.

The project area is contained within the Drift Creek Tier I Key Watershed (5,514 acres) and the Lower Siletz Watershed (2 acres). The legal description for the Diamond Peak Project Area is Township 7 South, Range 10 West, Sections 26, 27, 34, 35 and Township 8 South, Range 10 West, Sections 1, 2, 3, 10, 12, 13 and 14, Willamette Meridian, Lincoln County, Oregon.

Proposed Action

The Hebo District Ranger proposes the following actions:

- Commercially thin approximately 347 acres of an existing 611 acres of 33 to 50 year old young managed conifer stands¹. Cable and ground based yarding systems would be used.
- Realign approximately 3080 feet of National Forest System (NFS) road 1784 that has been damaged by slope instability to provide access to road 1784-119 and the remainder of road 1784. The realignment would follow the ridge top, by constructing about 1000 feet of new road, through a plantation of 25 year old trees and reconstruct about 2,080 feet of an overgrown, old haul road. Following the timber sale activity this road would be placed in Maintenance Level 1 and closed.
- Decommission the existing damaged section, approximately 3,145 feet of NFS road 1784 following the realignment.
- Temporarily reopen Cougar Mountain rock pit access road to haul pit run rock from the pit floor to the reconstruction site on road 1784. This reopening would include reshaping the road bed for drainage, remove existing side cast material, adding ditch relief culverts if needed and berm the road closed following operations. No additional development in the Cougar Mountain Rock pit is planned with this project.
- Create 7 to 10 snags or down logs (CWD, coarse woody debris) per acre in stands with low levels. Snag and CWD creation includes the "no harvest" buffers along streams where young

¹ Stand: The original clearcut area expressed in acres.

conifers are crowded and need to be thinned, but yarding the trees during commercial harvest activities might adversely impact the riparian-dependant species' habitat or water quality.

- Construct approximately 0.70 mile of temporary roads. The constructed temporary roads, reopened existing temporary roads and reopened Maintenance Level 1 Forest system roads would be stabilized and closed upon completion of harvest or end of current operating season, whichever comes first.
- Road maintenance on the log haul routes may include replacing surface rock, cleaning ditches, grading, brushing and or adding ditch relief culverts.
- Create 20 snags and 20 CWD in Unit 8 to meet minimum levels as recommended in the Late Successional Reserve Assessment.

Complete descriptions of these proposed actions are found in Chapter 2 Alternatives.

Relationship to Forest Plan

This Environmental Assessment is tiered to the Siuslaw National Forest Land and Resource Management Plan (Siuslaw Forest Plan) and Final Environmental Impact Statement (USDA Forest Service, 1990). The Siuslaw Forest Plan was amended by the Record of Decision (ROD) for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and ROD Attachment A (Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Related Species Within the Range of the Northern spotted Owl) (USDA, USDI, 1994), commonly known as the Northwest Forest Plan. Hereafter, the above mentioned plans will corporately be referred to as the Forest Plan.

The proposed actions are designed to meet the Forest Plan Standards and Guidelines. The lands within this project area are allocated to one of six designated areas (ROD page A-4). These land allocations are briefly described below. In general, where land allocations overlap, the more restrictive standards and guidelines apply. For more detailed description of each management area or land allocation and standards and guidelines associated with them, refer to the Forest Plan

Northern Coast Range Adaptive Management Area (AMA)

The Diamond Peak Project Area is entirely within the AMA. The emphasis for this area is restoration and maintenance of late-successional forest habitat, consistent with marbled murrelet guidelines (ROD, D-15). The overall objective is to learn how to manage on an ecosystem basis in terms of both technical and social challenges, and in a manner consistent with applicable laws (ROD, D-1). The primary technical objectives are development, demonstration, implementation, and evaluation of monitoring programs and innovative management practices that integrate ecological and economic values (ROD, D-3).

Late-Successional Reserve (LSR)

The Diamond Peak Project Area is entirely within the LSR. A Late-Successional Reserve is "designed to serve a number of purposes. First, it will provide distribution, quantity and quality old-growth forest habitat sufficient to avoid foreclosure of future management options. Second, it will provide habitat for populations of species associated with late-successional forests. Third, it will help ensure late-successional species diversity will be conserved." (ROD page B-4). LSR Standards and Guides are listed in the ROD pages C9-C21. The standards and guidelines that apply to this project include:

- Management Assessment (page C-11) –A management assessment should be prepared for each large Late-Successional Reserve (or groups of smaller late-successional reserves) before habitat manipulation activities are designed and implemented.
- Silviculture (page C-12) **West of the Cascades**-There is no harvest allowed in stands over 80 years old (110 years in Northern Coast Adaptive Management Area). Thinning (precommercial and commercial may occur in stands up to 80 years old regardless of the origin of the stands (e.g., plantations planted after logging or stands naturally regenerated after fire or blowdown).
- Road Construction and Maintenance (page C-16)—Road construction in Late-Successional Reserves for silvicultural, salvage and other activities generally is not recommended unless the potential benefits exceed the costs of habitat impairment. If new roads are necessary to implement a practice that is otherwise in accordance with these guidelines, they would be kept to a minimum, be routed through non-late-successional habitat where possible, and be designed to minimize adverse impacts. Alternative access methods, such as aerial logging should be considered to provide access in reserves.

Riparian Reserves

These Designated Areas cover portions of both the AMA and LSRs. Riparian Reserves include lands along streams and unstable areas where riparian-dependent resources receive primary emphasis and where special standards and guidelines apply (ROD, B-12). Riparian Reserves cover 3,956 acres in the Diamond Peak Project Area. The standards and guidelines that apply to this Project are:

Timber Management

- TM-1 Prohibit timber harvest, including fire wood cutting, in Riparian Reserves, except as described below (page C-31).
 - c. Apply silvicultural practices for Riparian Reserves to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy objectives (page C-32).

Roads Management (page C-32)

- RF-2. For each existing or planned road, meet the Aquatic Conservation Strategy objectives by:
 - a. Minimizing roads and landing in Riparian Reserves.
 - b. Completing watershed analyses (including appropriate geotechnical analyses) prior to construction of new roads or landing in Riparian Reserves.
 - e. Minimizing disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow.
 - g. Avoiding wetlands entirely when constructing new roads.

Northern spotted owl Reserve Pair Area

The entire Project Area is within a Reserve Pair Area (ROD, D-16). The size of a Reserve Pair Area is at least equal to the median home range for owl pairs in the province. In these Reserve Areas, all suitable habitat in each area is reserved from timber harvest. Suitable habitat is defined by the Siuslaw National Forest as stands of conifer greater than 5 acres in size with trees greater than or equal to 18 inches in diameter at breast height comprising at least 50 percent of the canopy. In these Areas the following may occur:

- Late-Successional Reserve management standards and guidelines for salvage and other multiple-use activities would generally apply in the suitable habitat portion of the Reserve Pair Area.
- Allow for management of currently unsuitable areas consistent with Late-Successional Reserve management standards and guidelines for silviculture and salvage. Management of other multiple-use activities in the unsuitable habitat should follow standards and guidelines from current plans and draft plan preferred alternatives, which may allow some activities that would not be consistent with Late-Successional Reserve management standards and guidelines.

Key Watershed

Key Watersheds are Designated Areas that either provide, or are expected to provide, high quality habitat. Tier 1 Key Watersheds contribute directly to conservation of at-risk anadromous salmonids, bull trout, and resident fish species. They also have a high potential of being restored as part of a watershed restoration program.

The Diamond Peak Project proposed actions would occur within the Drift Creek Tier 1 Key Watershed. The standards and guidelines that apply are (ROD, page C-7) are:

- Reduce existing system and non-system road mileage. If funding is insufficient to implement reductions, there would be no net increase in the amount of roads in Key Watersheds.
- Key Watersheds are highest priority for watershed restoration.
- Watershed analysis is required prior to management activities, except minor activities such as those Categorically Excluded under NEPA (and not including timber harvest).

Supporting Documents

The Forest Plan requires that several analysis documents be prepared to guide the implementation of the Forest Plan. These include Watershed Analyses, Late-Successional Reserve Assessments and Adaptive Management Guides. These documents provide existing condition information and contain recommendations for attainment of the Forest Plan desired conditions.

Watershed Analysis (WA)

These documents identify important resource and information needs (data gaps), and describe ecological processes and interactions. The Diamond Peak Project Area is included in the Drift (Silte) Watershed Analysis (Siuslaw, 1996). The WA, pages 47-49, describes the existing condition of the conifer stands. In summary, about 46 percent of these stands on National Forest System land are in managed stands less than 50 years old. The WA, page 80, identifies four factors that are preventing or inhibiting the development of late-successional characteristics, which is a Forest Plan goal. They are:

1. Fragmentation of mature conifer blocks by managed stands of varying ages.
2. Even aged and often single species composition of managed stands.
3. Isolation of Late Successional Reserves by short rotation timber management.

4. Length of time for development of late-successional characteristics (Stands can be treated in many ways to accelerate growth and development of late-successional structure, but it would take time for these structures to develop.)

Late Successional Reserve Assessment (LSRA)

The Forest Plan requires that a Late-Successional Reserve Assessment (LSRA) be completed for each LSR or group of LSRs before habitat manipulation activities are designed or implemented. “*The Late-Successional Reserve Assessment for the Northern Coast Range Adaptive Management Area*” was completed January 1998. This Assessment provides a broad scale description of the resources and issues which affect late-successional habitat, describes management objectives and desired future conditions, and provides a context for future decision making. The Assessment includes recommendations for a variety of management activities considered appropriate for achieving the goals of the Forest Plan.

All proposed commercial units, except Unit 5 are within the Core Late-Seral Cell i.e. at least 50 percent of the cell is currently in late-seral stage forest. These are treatment priority 1, i.e. these areas have the best potential for developing large blocks of interior, late-seral habitat and are the highest priority for treatment on the Hebo Ranger District. (LSRA p. 48 and Appendix H)

Unit 5 falls within the Core Mixed Seral Cell, i.e. 20 to 35 percent of the landscape is in late-seral-stage forest. (LSRA p. 49).

Siuslaw National Forest Roads Analysis, 2003 (RA)

On January 12, 2001, the Forest Service issued the final National Forest System Road Management Rule. This rule revised regulations concerning the management, use and maintenance of the National Forest Transportation System, and requires each Forest to complete a Roads Analysis. The Siuslaw Forest Roads Analysis is designed to provide decision makers with information to develop road systems that are safe and responsive to public needs and desires, are affordable and efficient, and are in balance with available funding for needed management actions. The Forest RA, completed 2003, guides project level road analysis and decisions.

Purpose and Need for Action

Action is needed in the Diamond Peak Project Area to maintain or improve habitat for aquatic and terrestrial species in the area by accelerating the development of late-successional forest habitat and by improving watershed conditions.

What to do and how it is to be done is framed by two major underlying needs of the Forest Plan. They are:

“The need for forest habitat is the need for a healthy forest ecosystem with habitat that would support populations of native species (particularly those associated with late-successional and old growth forests) and includes protection for riparian areas and waters” (ROD, page 26)

“The need for forest products from forest ecosystems is the need for a sustainable supply of timber and other forest products that would help maintain the stability of local and regional economics on a predictable and long term basis.” (ROD, page 26)

To refine this dual need, an interdisciplinary team reviewed the Diamond Peak Project Area and identified the existing and desired conditions of the managed stands in the Area. The team identified actions needed to meet or implement changes that would, in the future, meet this dual need and the desired condition. The focus of this review was the conifer stands that are the basis of the late-successional forest including the coarse woody debris and snag habitat.

Existing and Desired Conditions

Existing Condition – Young managed conifer stands

Table 1-1 lists the stand acres on NFS land in the Diamond Peak Project Area. The managed stands (plantations) were created by clearcutting. The clearcuts were planted with 300 to 700 Douglas-fir seedlings per acre to maximize growth, and then were to be managed through a series of treatments for timber production.

Naturally regenerated Western hemlock dominates portions of many of the stands. Naturally regenerated Western hemlock also tends to dominate the edges of stands where trees outside the original harvest boundary blew down following the clearcut harvest.

TABLE 1-1: Managed and Natural Stands in the Project Area on FS Land

Stand Ages	Acres
Managed Stand: 32 years and younger	1301
Managed Stand: 33 years and older	611
Subtotal Managed Stands	1912
Non-Forest (lake, river, roads, meadow etc.)	13
Natural Stands	3591
TOTAL	5,516

The young managed stands in the Project Area form rather large, contiguous blocks with relatively narrow strips of older natural stands in-between. This fragmentation of older natural stands has diminished the amount and quality of the late-successional forest habitat. A goal of the Forest Plan is to maintain and develop, or accelerate the development of late-successional forest habitat. Acceleration of the development of late-successional forest habitat would provide connectivity between blocks of existing late-successional habitat, eventually creating large blocks of late-successional habitat.

The stands proposed for treatment currently are thirty three to fifty years-old. These stands are not complex, diverse stands that would soon achieve late-successional conditions. Desirable components of the stand, such as large-limbed, open-grown trees, may not develop due to stocking levels. The dominant species are Douglas-fir and western hemlock, (except units 9, 10 and 11 which are dominated by red alder due to delayed planting following harvest resulting in poor

conifer survival). There is a need in those stands dominated by Douglas-fir to develop a more “natural” mix of hemlock, spruce cedar and alder as appropriate. Stands 9, 10 and 11 would naturally be conifer-dominated with pockets of red alder, so treatments are developed to enhance this mix.

The stands are crowded ranging from 164 to 243 trees per acre. They are even-aged and single canopied (the crowns are all about the same height). The trees have little stem taper (the diameter of the trunk doesn’t vary much from top to bottom), few branches are over one inch in diameter and the crowns are small. The denser stands, especially on north-facing slopes or stands dominated by western hemlock have little or no understory vegetation. Areas on south facing slopes dominated by Douglas-fir tend to have a brushy understory, generally dominated by salal. There are varying but minor amounts of western red cedar, Sitka spruce and red alder scattered throughout the stands.

Due to lower growth rates and crowded conditions, these stands are more susceptible to damage from insects or wind than stands with fewer stems per acre. Examination of other stands in the area indicates that wind is the significant disturbance agent. The topography of the area, its proximity to the coast, and current stand densities increases the probability that an entire stand or stands could be lost in a single disturbance event. Sustained winds during the wet season that occur in the area can cause significant damage to these structurally weak stands. Due to the fragmentation of the late-successional habitat in the Diamond Peak Project Area, there is a need to develop wind firmness within the managed stands, to minimize stand replacement events.

Swiss needle cast is present in the Douglas-fir at severity levels in the low to moderate range. Swiss needle cast causes the growth of Douglas-fir to slow down and may increase the risk of mortality. A few of the stands have pockets of the root disease *Phyllinus weiri* and *Armillaria* that are characterized by groups of dead and down Douglas-fir.

Desired Condition – Young Managed Conifer Stands

The long-term desired condition is late-successional forest conditions. Late-successional forest characteristics include:

- some large trees (over 40 inches diameter at breast height, (dbh)), with large limbs and broken tops;
- multiple canopy layers, with shade tolerant species in the understory;
- forbs and shrubs scattered, in pockets, throughout the stand;
- numerous large snags (over 20 inches dbh);
- down logs in all decay classes;

The short-term desired condition is:

- A more heterogeneous stand with varying tree densities, gaps, and understory conditions.
- Some dominant “wolf” trees in a position to develop large limbs and deep crowns.
- Overall, fewer trees per acre, with improved growth rates on most of the remaining trees.
- Leave some areas untreated to provide stand density diversity.
- Retain some trees exhibiting defects, such as forks, crooks, butt rot, and other deformities to provide habitat niches.
- An overall increase in understory vegetation including shade-tolerant tree species.

- Vegetation in the stands composed of native species.
- Stands developing into a more wind-firm condition.

Existing Condition –Riparian Reserves

The Drift (Siletz) Watershed Analysis (page 55) discloses that approximately 50 percent of the stands are characterized as early seral. Human caused disturbance has impacted riparian ecosystems in the area. Plantations and other environments manipulated by man do not provide the range of habitat components (vertical and horizontal structure, large woody debris) needed to support the full complement of riparian-dependent wildlife. The unnaturally high rate of disturbance has increased the amount of alder, especially in riparian areas. Competition with alder will delay re-establishment of conifer, slowing the recruitment of coniferous large woody debris and long term stabilization of disturbed areas.

Desired Condition –Riparian Reserves

The Drift (Siletz) Watershed Analysis (page 55) identified that stand structure of natural stands within 150 to 300 feet of streams was similar to the Siuslaw description of Spruce-Wet plant associations. Even with the Western hemlock plant associations, the lower order streams had stand structures similar to the Siuslaw description for the Spruce-Moist plant associations. The Drift (Siletz) Watershed Analysis (page 49) displayed data compiled from plots taken in mature old growth stands to serve as a yardstick by which to measure the progress of restoring the watershed. The tables displaying this information can be found in the Watershed Analysis in Tables 4.6-7 through 4.6-10. In general, there would be approximately 64 to 102 trees per acre, 7 to 12 hard conifer snags per acre, 4 to 5 soft conifer snags per acre, 16 to 17 hard logs on the ground per acre, and 10 to 18 soft logs on the ground per acre.

Existing Condition — Coarse Woody Debris (CWD) and Snags

CWD is down wood on the forest floor such as logs and stumps. Levels of down wood, in these young managed stands, are highly variable. Down wood plots were taken on all 15 stands. The down wood pieces measured were at least 12 inches in diameter. Levels varied from a low of approximately 598 cubic feet per acre to a high of 7,763 cubic feet per acre. Most of the down wood is in the form of very large logs which is a legacy from the previous stand. These are in the soft log class, decay classes III through V.

Excerpts from the Late-Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area (LSRA, page 75) below, describe the current condition of CWD.

Large accumulation of CWD, including both snags and down logs, take a long time to develop naturally after a stand replacing disturbance. Due to rapid decomposition rates in the Coast Range most of the CWD from the previous stand is not detectable 100 to 150 years after it reaches the forest floor (Wright 1997). Additionally, at 100 to 150 years CWD accumulations are just beginning to increase as large trees begin to die (Spies and Cline 1998). This results in CWD levels operating on a different cycle than live trees biomass. CWD levels are actually highest early in succession and lowest in mid-seral stands,

Many of the natural 80 to 120 year old stands which would have started to contribute large CWD were harvested in the past 50 years. In commercially thinned stands, most of the suppressed trees

(which would have provided CWD as they died) have been removed, snags have been felled for safety concerns, and some of the down wood has been harvested. In clearcuts, most of the live trees have been salvaged or removed as firewood. Some of the CWD was removed from the site during harvest and post harvest treatments (slash burning). Spies and Cline (1988) observed that at least six times more CWD carries over after wildfire in old-growth systems than after logging in old-growth; in addition, the CWD left after logging is smaller and decays faster. Young managed stands will not provide high levels of CWD for at least 150 years after harvest (Wright 1997).

The trees in these stands are too small to provide medium to large snags (21 to 48 inches dbh). Snags most commonly encountered in these stands are small trees that have been shaded-out by faster growing trees. Individual stands varied from zero to 14 snags per acre. Most snags ranged from 7 to 9 inches in diameter. The higher snag densities are associated with root rot and bear damage.

Desired Condition — Coarse Woody Debris (CWD) and Snags

Strategies for Achieving desired CWD levels are described in the LSRA, pages 95 through 97. At the landscape scale, recommended CWD levels are not likely to be achieved during a single entry in early or mid-seral stands. Long-term, site specific strategies are necessary to guide current and future entries toward the goal of achieving the desired levels of snags and down wood. The Diamond Peak Project area proposes to utilize a combination of Strategies 2 and 3. Strategy 2 would be utilized to enhance CWD by creating snags and coarse wood within the thinned units. Strategy 3 would be utilized to enhance CWD by creating snags and coarse wood in the mixed seral stands that are not thinned.

Decision Framework

The Responsible Official for this project is the Hebo District Ranger, Siuslaw National Forest. The environmental assessment for this project provides the alternatives, the environmental effects of implementation and public comments upon which a decision will be made by the District Ranger. The District Ranger will determine through a Decision Notice::

- To what extent, if any, will activities called for in the proposed project or management alternatives be implemented?
- What management requirements and mitigation measures (design criteria) will be applied to these activities?

The primary factors that will influence the District Ranger's decision are based on how well the issues are addressed. The Decision Notice will document this decision and describe what activities will be implemented to address the problems. The decision will be consistent with the Forest Plan and will incorporate the associated the design criteria, including the management requirements and mitigation measures.

Summary of Scoping

Information used to identify the issues and develop the alternatives was gathered by a Forest Service Interdisciplinary Team (IDT), from field reconnaissance, District resource maps, local experience and review of comments from the public, Native American tribes, special interest groups, and state and federal organizations. Two methods were used to provide the public the opportunity to comment about the proposed actions:

- Starting in the winter of 2004, the Project has been listed in the Project Update, the Siuslaw National Forest's Schedule of Proposed Actions (SOPA), which is published and mailed quarterly to a Forest mailing list of interested groups and individuals. No comments were received by this scoping method.
- On July 12, 2004, soon after the project was initiated, the District mailed a project scoping letter to 24 interested individuals, organizations and Native American tribes. In addition, a public notice soliciting comments about the project was published in the *Lincoln City NewsGuard* newspaper. From this scoping method, the Forest Service received 5 letters. These comments are located in the project analysis file.

Issues

The IDT and the Hebo District Ranger, responsible official for this project, reviewed all of the comments to determine the significant and non-significant issues for this project. An issue is significant based upon the topographic distribution (extent), the length of time the issue is likely to be of interest (duration), or the level of interest or resource conflict (intensity). Significant issues can serve to formulate alternatives, prescribe mitigation measures or analyze environmental effects.

Non-significant issues generally are those that are outside the scope of the proposed action(s), decided by existing law, regulation, Forest Plan or higher level decision, irrelevant to the decision to be made and conjectural and not supported by scientific evidence. Forest Service regulations (1950, chapter 11(3) require that issues that are deemed not significant include a brief statement of why they would not be considered significant. For this project, these issues are in the Appendix B, Other Issues section.

Significant Issue Associated with the Proposed Action

After review of the both internal (Forest Service) and public comments, one issue, the anticipated impacts of the proposed actions to water quality and aquatic habitat is considered significant. The following discussion of this issue contains an issue statement, which generally describes the cause and effect relationship of implementing the proposed actions, and one or more concerns that detail these cause and effect relationships. Also, for each concern there are one or more elements that are used to quantify or qualify the effects between the fully evaluated alternatives. These estimates of effects are discussed in Chapter 3.

Impacts to Water Quality/Fish Habitat

The proposed activities have the potential to adversely impact water quality and fish habitat by increasing sediment in the streams that may be affected by the proposed actions.

Concern 1

The amount of sediment that may reach streams could be influenced by: 1) Temporary road construction. 2) Re-opening closed existing temporary and NFS roads that are revegetated. 3) Use of roads that have a gravel or dirt travelway during wet periods may become rutted. These ruts may channel sediment into the streams. Downstream aquatic habitat could be damaged if sufficient sediment reaches these streams.

Elements of the Issue:

- Miles of new temporary roads.

- Miles of reopened existing closed temporary roads and miles reopened NFS roads.
- Miles of roads with gravel or dirt surfaces used to support commercial harvest operations.

Chapter 2 Alternatives

This chapter includes a description of the reasonable range of alternatives developed to respond to the significant issue and need for actions described in Chapter 1. It also includes a list of the design criteria (mitigation measures) that would be implemented to minimize or prevent adverse effects on environmental, economic, and social resources in the Diamond Peak Project Area, and be consistent with Forest Plan Standards and Guidelines.

The section, *Alternatives Studied in Detail*, describes those alternatives that meet the need for actions described above and respond to the significant issues. The section, *Other Alternatives Considered but Eliminated from Detailed Study* describes the alternatives considered but dropped from further analysis, with each is an explanation of why it was dropped.

Alternatives Studied in Detail

Alternative 1 No Action

In this alternative, none of the managed stands in the Diamond Peak Project Area would be treated to control density, and create coarse woody debris or snags.

This alternative does not meet the purpose and need to maintain or improve habitat for aquatic and terrestrial species in the area by accelerating the development of late-successional forest habitat and by improving watershed conditions. This alternative also does not work toward meeting the desired conditions described in the Chapter 1 of this Environmental Assessment nor meet the two major underlying needs of the Forest Plan. However, this is a fully evaluated alternative because it provides the baseline for analysis for the action alternatives. It is required by NEPA (40CFR 1502.14(d)).

Design Criteria Common to All Action Alternatives

To meet the Forest Plan Standards and Guidelines and reduce or prevent the adverse impacts of the proposed actions, the following project design items (mitigation measures) would be implemented. This list applies to all of the action alternatives. Where design criterion is specific to an alternative, it is found in the description of that alternative.

Commercial Thinning

Commercial Sale Design

1. Trees 20 inches dbh or greater would not be harvested, except within road right-of-way and landing clearing limits where larger trees may be removed. Trees 20 inches dbh and greater would be left on site as CWD.
2. Protective vegetation leave areas or buffers would be implemented around all streams near potentially unstable areas and wet sites. These areas would be designed to protect riparian vegetation, to maintain stream temperature, and to maintain stream-adjacent slope stability (including headwalls). These areas would not be thinned and harvested. The minimum stream buffer would be 15 feet for intermittent

streams and 30 feet for perennial streams. Since the current stream temperatures on North Creek are elevated, a minimum buffer of 100 feet would be left.

Logging Operations

1. Ground-based equipment would not be used on slopes greater than 30 percent to reduce soil disturbance.
2. Ground-based operations would be limited to July 1 through October 31.
3. Ground-based skidding equipment would stay on designated skid trails. Ground-based skid trails would be pre-designated and pre-approved before use. They would not exceed 15 feet in width and would be a minimum of 100 feet apart. Ground-based tracked equipment (not rubber-tired equipment) would operate in the dry season, July through October, unless otherwise restricted by other resource concerns.
4. Partial or one end suspension would be required on skyline units, except at tail trees and landings. Given the uneven terrain in some units, small areas of ground lead may occur along ridge lines or benches.
5. Generally all snags and existing down wood would be retained. Snags that pose a safety hazard may be felled, but would be retained on site for coarse woody debris.
6. Trees would be directionally felled away from buffers to protect riparian vegetation from damage. Trees accidentally felled into buffers would be retained to minimize stream sedimentation or damage to riparian vegetation. Some trees could be removed as determined by the Forest Service.
7. Skyline corridors would be limited to 12 feet wide or less.
8. Where cable yarding is planned, logging systems would be designed to yard away from stream channels to minimize soil disturbance on stream-adjacent slopes. Where skyline corridors pass through riparian buffers, no more than 20 percent of the canopy would be removed in any given, 1,000-foot reach of stream. All logs yarded over streams would be fully suspended. Skyline cable landings would be built in stable areas with stable cut bank slopes. Existing landings would be used where feasible.
9. Damaged “rub trees” would remain on site.
10. To lessen damage to residual trees, trees would be directionally felled to the lead of cable corridors.
11. Equipment cleaning for all “off road” equipment would be included in the timber sale contract (includes yarders, shovels etc., log trucks not included).
12. Disturbed sites lacking canopy cover (cut/fill slopes, waste areas, landings, temp roads, tractor skid roads etc.) would be seeded and fertilized using native grass and forb seed (FS supplies seed). Rates would be 30 pounds per acre of seed and 200 pounds per acre of 16-16-16 slow release fertilizer. Seeding seasons would be April 1 through 30 and September 1 through 30.

13. Canopy cover would be maintained to the extent possible when reopening and building roads or stabilizing and closing them.
14. To maintain long-term productivity, the total acreage of all detrimental soil conditions would not exceed 15 percent of the total National Forest land within each harvest unit, excluding roads and landings. Detrimental conditions are those that would reduce the potential of the site to grow trees or vegetation.
15. Trees in riparian buffers that need to be cut to facilitate harvest operations would be dropped into the stream if possible to aid in woody debris recruitment.
16. Disturbance to the existing down woody debris concentrations would be avoided as much as practical.
17. Commercial Sale Operating Season—Felling, Yarding, and Hauling* (dates inclusive) —To reduce disturbance of northern spotted owls and marbled murrelets, adverse effects on aquatic species and soils and prevent bark slippage.

Table 2-2: Operating Season by Units

Units	*Operating Season for felling and yarding	Log Haul	Restriction reason(s)
1	July 8-February 28	July 8-February 28	Birds
2	July 8- October 31	July 8-October 31	Bark Slippage, Birds and Aquatic
3	July 8-October 31	July 8-October 31	Bark Slippage, Birds and Aquatic
4	July 8-February 28 (portions of see #2)	July 8-February 28	Birds
5	July 8-February 28 (portions of see #2)	July 8-February 28	Birds
6	July 8-October 31	July 8-October 31	Birds and Aquatic
7	July 8-October 31	July 8-October 31	Bark Slippage, Birds and Aquatic
8	July 8-February 28	July 8-October 31	Birds and soils
9	July 8-October 31 August 6-Feb 28 (portion of, see #2 & 18)	July 8-October 31	Birds
10	August 6-October 31	August 6-October 31	Ground based logging and Birds
11	July 8-October 31	July 8-October 31	Bark Slippage, Birds and Aquatic
12	July 8-October 31	July 8-October 31	Bark Slippage, Birds and Aquatic
13	July 8-October 31	July 8-October 31	Bark Slippage, Birds and Aquatic
15	July 8-October 31	July 8-October 31	Birds
16	July 8-October 31	July 8-October 31	Birds

18. Felling and yarding within 100 yards of suitable owl or murrelet habitat in occupied or un-surveyed stands (mature forest) would occur between August 6 and February 28. Within 100 yards of suitable

habitat in occupied or un-surveyed stands, daily-timing restrictions would limit operations to within 2 hours after sunrise to 2 hours prior to sunset August 6 through September 15.

19. Key Roads would be kept open during logging operations with no more than minor traffic delays.

20. When the Industrial Fire Precaution Level is 2 or above, the time of day restriction may be waived during the late breeding period of August 6 through September 15. In accordance with the Habitat Modification B.O. of 230 allowable acres, we predict approximately 60 acres to be waived for this project.

Road Management

1. Road maintenance of the NFS roads used for log haul may include adding surface rock, blading, brushing, ditch or culvert cleaning and the addition of several ditch relief culverts would occur prior to project implementation.

2. The road construction and re-opening operating season would be June through October. Open spur roads would be storm proofed and blocked to traffic if they have to sit through extended periods of wet weather.

3. Log haul routes will be monitored during periods of heavy rain, such as precipitation exceeding one inch in a 24-hour period. Straw bales or other sediment control measures would be utilized to trap sediment and reduce off-site erosion, as needed. Active erosion controls would be implemented if sediment is found entering stream channels.

4. Rock surfacing would be placed on roads with gravel or dirt travelways in sufficient amounts to minimize or stop rutting or soil displacement.

5. To reduce sedimentation and road wear, “constant reduced tire pressure” provision would be included in timber sale contract.

Fire and Fuels Management/Air Quality

All requirements of the Oregon Smoke Management Plan would be followed for all prescribed burning associated with this project. Impacts to downwind residents and communities would be evaluated and minimized on burn days. Pile burning would take place when atmospheric conditions are optimal for smoke dispersion, usually in the late fall or winter.

Alternative 2 Proposed Action

The proposed and connected actions included in this alternative are:

- Commercially thin approximately 347 acres of an existing 611 acres of 33 to 50 year old young managed conifer stands². Cable and ground based yarding systems would be used.
- Realign approximately 3080 feet of National Forest System (NFS) road 1784 that has been damaged by slope instability to provide access to road 1784-119 and the remainder of road 1784. The realignment would follow the ridge top, by constructing about 1000 feet of new road, through

² Stand: The original clearcut area expressed in acres.

a plantation of 25 year old trees and reconstruct about 2,080 feet of an overgrown, old haul road. Following the timber sale activity this road would be placed in Maintenance Level 1 and closed.

- Decommission the existing damaged section, approximately 3,145 feet of NFS road 1784 following the realignment.
- Temporarily reopen Cougar Mountain rock pit access road to haul pit run rock from the pit floor to the reconstruction site on road 1784. This reopening would include reshaping the road bed for drainage, remove existing side cast material, adding ditch relief culverts if needed and berm the road closed following operations. No additional development in the Cougar Mountain Rock pit is planned with this project.
- Create 7 to 10 snags or down logs (CWD, coarse woody debris) per acre in stands with low levels. Snag and CWD creation includes the “no harvest” buffers along streams where young conifers are crowded and need to be thinned, but yarding the trees during commercial harvest activities might adversely impact the riparian-dependant species’ habitat or water quality.
- Construct approximately 0.70 mile of temporary roads. The constructed temporary roads, reopened existing temporary roads and reopened Maintenance Level 1 Forest system roads would be stabilized and closed upon completion of harvest or end of current operating season, whichever comes first.
- Road maintenance on the log haul routes may include replacing surface rock, cleaning ditches, grading, brushing and or adding ditch relief culverts.
- Create 20 snags and 20 CWD in Unit 8 to meet minimum levels as recommended in the Late Successional Reserve Assessment.

Table 2-3 shows the proposed stand treatment methods, acres, implementation dates, and land allocations where they would occur. Unit 8 is analyzed in this EA, but is proposed to be thinned 5 to 10 years after the implementation period of the other units in this project area

TABLE 2-3: Treatment, Area Information and Tentative Timelines

Unit/Stand Number	Est. treated Acres*	Treatment Method	Forest Plan Land Allocations (Acres) in treatment areas	Proposed Implementation Date
All units/stands except 8	347	Variable density thinning, (commercial timber sale)	LSR & AMA: 347 Riparian Reserve: 272	2007-2012
	29	Snag and down wood creation in openings within harvest units	LSR & AMA: 29 Riparian Reserve: 23	2008-2017
	64	Snag and down wood creation within harvest units, outside of openings	LSR & AMA: 64 Riparian Reserve: 51	2008 - 2017
	171	Snag and down wood creation outside of harvest units	LSR & AMA: 171 Riparian Reserve: 137	2008-2017
	52	Underplanting	LSR & AMA: 52 Riparian Reserve: 41	2008-2017
Unit 8	40	Variable density thinning, (commercial timber sale)	LSR & AMA: 40 Riparian Reserve: 32	2013 or later
	4	Snag and down wood creation in openings within harvest unit	LSR & AMA: 4 Riparian Reserve: 3	20014 - 2020
	36	Snag and down wood creation within harvest unit, outside of openings	LSR & AMA: 36 Riparian Reserve: 29	2014 - 2020
	11	Snag and down wood creation outside of harvest unit	LSR & AMA: 11 Riparian Reserve: 11	2014 - 2020
	6	Underplanting	LSR & AMA: 6 Riparian Reserve: 5	2013 or later

Commercial Thinning

Alternative 2 would treat approximately 347 acres within 15 units. Variable density thinning would be prescribed within the units. Variability would be accomplished by the following methods:

- Thinning would generally be from below to remove the suppressed, intermediate, and some co-dominant trees. Those trees removed are the ones most susceptible to wind throw and competition mortality.
- Unthinned areas would be left within the stand. The unit being the area proposed for thinning and the stand being the original clearcut area.
- Within units 1, 2, 3, 4, 5, 7, 8, 12, 15, and 16, 0.5 to 1.5 acre patches would be thinned to 10 trees per acre. This would promote open grown characteristics and provide more light to reach the forest floor promoting understory tree development. These patches would occur at least 90 feet away from perennial streams and would not occupy more than 10 percent of the stand area nor reduce the result of stand canopy to less than 40%.

Thinning all units to the levels prescribed, allows for individual tree development and not jeopardizing the integrity of the stand from being blown down. Portions of units that are susceptible to wind throw, would be thinned to about 80 to 100 trees per acre. This level of thinning makes it likely that these stands would benefit from future thinning in about 10 years to further assist their development towards late-successional habitat. The remaining portions of units, not susceptible to wind throw, would be thinned to about 50 to 85 trees per acre.

Commercial Thinning Operations

A combination of ground based equipment and cable yarding would be used to harvest about 6 million board feet of timber. Table 2-4 shows which system would be used for each treatment unit.

TABLE 2-4: Proposed Commercial Thinning Yarding Methods

Cable	Ground Based
Units: 1, 2, 3, 7, 9, 10, 12, 13, 14, 15, and Portions of Units 4, 5, 6, 11 and 16. Total Acres: 312	Portions of Units: 4, 5, 6 11, and 16 Total Acres:35

Road Management

To support the commercial thinning, a combination of existing NFS roads, temporary roads, and new temporary roads would be needed. About 0.70 mile of temporary roads would be constructed, about 1.2 miles of existing closed temporary road and about 2.8 miles of NFS roads would be opened.

Decommission approximately 3,145 feet of NFS road 1784 between spur roads 1784-118 and 1784-119. In this section the 1784 is located on steep slopes and has several road failures. To provide access to road 1784-119 and the remainder of road 1784, a new section of permanent road, approximately 3,080 feet would be constructed. The new road would follow the ridge top, by constructing about 1000 feet of new road, through a plantation of 25 year old trees and reconstructing about 2,080 feet of an overgrown, old haul road.

The proposed new temporary roads are extensions of existing roads in the Project Area. These proposed new temporary roads do not cross any streams. They are constructed in such a way as to minimize exposed cut and fill slopes, minimize the total amount of excavation, and avoid streams and small unstable areas within the stands. These temporary roads are located on relatively flat ground and no new ditches will be constructed. This design feature is intended to preserve hydrologic function.

The following table identifies the proposed units that would require new temporary roads, the distance between those temporary roads located in the Riparian Reserve and the nearest streams, and the proposed thinning acres accessed by each road segment.

Table 2.5

Unit and Temporary Road Number	Temp Road Distance in miles	Length (in feet) of Temporary Roads In/Out of Riparian Reserve		*Distance (in feet) Between Temporary Road and Nearest Stream	Acres of Thinning Accessed by Temporary Road Segment
		Out	In		
4-2	.07	255	0	470	4
5-3	.07	180	200	390	8
7-1	.10	265	265	140	5
8-1	.06	0	300	100	4
8-2	.09	585	0		6
9-1	.07	180	180	290	5
13-1	.14	720	0	633	7
16-2	.10	510	0	400	6
Totals	.70	2695	945		45

*Estimated nearest point that the proposed temporary road may be to a stream.

Opening the existing temporary and NFS roads that are closed would include cutting and removing brush, small conifers and alder trees. Rock would be added to the travelways as necessary to support haul and to reduce or stop production of sediment from these roads. All of the temporary roads would

be stabilized with waterbars, scarified seeded and closed to public travel when use is completed. The NFS roads that are presently closed would be stabilized and closed to traffic when use is completed.

The proposed log haul would be on NFS roads 1784 and 1700 to the East, and NFS roads 1958, 1980, and 1900 to Siletz Hwy 229 to the West. During the wet season, November 1 through February 28, logging and haul may be allowed on roads that access units 1, portions of 4, 5, and 6. No ground based yarding would be allowed during the wet season.

Improvements to NFS roads to support log haul may include: repairing worn asphalt surfacing, cleaning ditches, replacing surface rock and adding ditch relief culverts. The locations of existing NFS roads and the proposed new road are shown on the Diamond Peak Project Map.

Coarse Woody Debris (CWD) and Snag Creation

Seven to twenty snags and seven to twenty down logs per acre would be created in Units 8, 9, 10 and portions of Unit 3 (approximately 115 acres). The objective of this proposed action is to increase CWD levels within these units. Four snags or down trees would be created per acre in portions of stands 1, 2, 5, 7, 12, 15, 16 and portions of Unit 3 (approximately 23 acres). See Table 2-3.

Underplanting

Underplanting is prescribed on approximately 58 acres in portions of Units 1, 2, 3, 4, 5, 7, 8, 11, 12, 15 and 16. Underplanting is planned for units that are thinned heavily enough or in 0.5 to 1.5 acre created openings to allow under planted trees to survive and grow. The primary purpose of underplanting is to begin the development of a multi-layered canopy. Approximately 50 to 100 seedlings per acre would be underplanted.

All units, except unit 11, would be planted with western hemlock, western redcedar and Sitka spruce. The seedlings would have protective mesh tubes placed over them during planting to discourage animal damage. The protective tubes would have to be lifted semi-annually on the western redcedar to prevent browsing by deer and elk. Brush release, done by cutting all brush within 3 to 5 feet of the seedling would be required for up to 5 years following planting. A mixture of shade tolerant species; Douglas-fir and red alder, would be planted in unit 11 to improve species diversity.

Although hardwoods would not be planted in the other units, red alder and other hardwoods are likely to naturally regenerate in larger openings, creating additional species and structural diversity in the stands.

Specific Design Criteria for Alternative 2

Temporary roads used November 1 through June 30, would be rocked to reduce erosion. Any winter haul or haul during heavy precipitation would be monitored by the Timber Sale Administrator and the Hydrologist or Geologist. When determined to be necessary, haul would be stopped during heavy rainfall to prevent adverse soil impacts and potential mobilization of sediment.

Alternative 3 No New Temporary Roads

This alternative differs from the Proposed Action alternative in that no new temporary roads would be constructed. This would affect portions of units 4, 5, 7, 8, 9, 13 and 16 totaling about 45 acres (see Table 2-5). The only treatment of these areas would be to create about 10 snags and 10 down wood per acre, if funding is available. The other commercial units that have existing access, including closed NFS

and temporary roads, would be treated as described in the Proposed Action alternative. The other actions in the Proposed Action alternative would be done as described.

Table 2-6—Comparison of Fully Evaluated Alternatives

This table displays a comparison of the results of the various proposed actions of the fully evaluated alternatives.

	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3 No New Temporary Roads
Vegetation Management			
Commercial Thinning—Estimated Acres	0	347	302
Underplanting –Estimated Acres	0	56	56
Coarse Wood Debris Creation—Estimated Acres	0	115	115
Logging/Road Use			
Ground skidding (acres)	0	35	35
Skyline yarding (acres)	0	312	267
Temporary road construction (mile)	0	.70	0
Open closed Forest Roads (miles)	0	2.8	2.8
Open closed temporary roads (miles)	0	1.2	1.2

Monitoring

Monitoring items include those required for implementation and effectiveness monitoring. Implementation monitoring determines if the project design criteria and Forest Plan standards and guides were followed. Effectiveness monitoring evaluates whether applying the management activities achieved the desired goals, and if the objectives of the standards and guides were met. Findings resulting from project observations and monitoring are expected to help influence designing future projects and developing future monitoring plans.

1. Implementation Monitoring

Forest Plan Standards and Guides

Before the contract is advertised, review project contracts for consistency with the standards and guides of the Forest Plan and project design criteria.

Contract and Operations

Involve appropriate specialists when developing timber sale, road decommissioning and other project contracts or conducting District operations work to ensure activities are implemented as designed. The appropriate specialists would also participate periodically during contract work, especially when unusual circumstances arise that may require a contract modification.

Key checkpoints include a plan-in-hand review, and a contract review of specifications before the next phase of work begins (to ensure key problem situations are addressed in the specifications).

The overall soil productivity objective is to maintain soil disturbance below the 15 percent (FW-107 as amended in 1992, Chapter IV, page 51) mandated by the Forest Plan and to prevent and mitigate potential adverse erosion. The sale would be monitored to see if these objectives are achieved.

2. Effectiveness Monitoring

Monitoring will be tiered to the Forest Plan.

Vegetation Management

- a. Monitor trees planted for survival and growth.
- b. Monitor created snags and wildlife trees.
- c. Monitor stands for existing snags and coarse woody debris within 4 years after treatment. These numbers would count towards meeting the snag and coarse wood objectives for individual stands.
- d. Observe all thinned stands to determine if residual trees are being damaged by Douglas-fir bark beetles.
- e. Evaluate riparian leave areas as to their effectiveness in maintaining stream shading.
- f. For a period of three years after project activities are completed, monitor project sites with a high risk of weed infestation. Conduct monitoring annually and focus on detection of new weed infestations. Refer to the project file for a list of high-risk stands.
- g. Monitor the effectiveness of silvicultural prescriptions in achieving variable density spacing and the retention of existing species and structural diversity prior to planting and the creation of snags and coarse woody debris (CWD). Adjust prescriptions for planting, and snag and CWD creation in treated stands where necessary to further enhance stand spacing variability and structural and species diversity.

Road Treatments

Observe road surface treatments such as water bars to determine effectiveness and effects on the stability of the outer portion of the road prism.

Water Quality

Stream temperature monitoring is done on an annual basis, in Sampson Creek, Drift Creek and Schooner Creek.

Wildlife Habitat Treatments

Common Stand Exams would be taken approximately 5 to 10 years following implementation to evaluate the effectiveness of the project.

3. Project Tracking

Forest Service direction, regulations, and standards and guides for resource protection may change over time. Should changes occur prior to completion of any actions under this project, an addendum will be done for the EA and contract specifications will be modified, if necessary.

Alternatives Considered but Eliminated

Helicopter yarding

For the most part, the proposed units can be accessed by an existing transportation system, thereby allowing the utilization of conventional yarding methods. Helicopter yarding costs approximately 50

percent more than skyline yarding. This would reduce the value of the sale thereby decreasing the receipts to the Forest. Reduced receipts would decrease the amount of LSR enhancement projects that could be funded.

No ground based equipment or horses.

Skyline cable yarding costs approximately 50 percent more than ground based yarding methods. These costs increase if the area is small and more time is spent setting up, tearing down and changing yarding corridors than actual yarding. Ground based yarding is more cost effective.

Commercially thin all available young managed stands

Transportation access to thin all young managed stands that are economically feasible was the main reason this alternative was eliminated. To access all portions of these stands it would be necessary to construct some temporary roads in unstable areas. Temporary roads through these types of areas could cause slumps or slides, delivering sediment into adjacent fish bearing streams. Unthinned portions of stands provide structural diversity within the stand. In addition, two stands in the project area were dropped from further consideration because they required extensive temporary road development – the value of wildlife habitat improvement by thinning was offset by the loss of wildlife habitat due to road construction.

Unit 17

Proposed harvest unit 17 was eliminated from all alternatives due to relatively limited environmental and economic thinning benefits. It may be analyzed at a later date.

Chapter 3 Affected Environment and Environmental Consequences

INTRODUCTION

This Chapter describes the physical, biological, social and economic conditions that may be affected by the fully evaluated alternatives described in Chapter 2. In some Environmental Assessments (EAs) and most Environmental Impact Statements (EISs), the existing conditions and environmental consequences have been presented in separate chapters. They are combined into one chapter for this EA to lessen repetition, reduce the length of the document, and provide a format in which existing conditions can be easily compared with predicted effects.

As directed by the Council for Environmental Quality (CEQ) implementing regulations for National Environmental Policy Act (NEPA), the discussion focuses on resource conditions in the Diamond Peak Project Environmental Assessment, associated with the significant issues and concerns presented in Chapter 1. The description of the affected environment succinctly describes the environment of the areas to be affected by the three fully evaluated alternatives. Only those descriptions necessary to understand the effects of these alternatives are provided.

Environmental consequences are discussed in terms of direct, indirect and cumulative effects. Direct effects are caused by implementing proposed activities and occur at the same time and place. Indirect effects are caused by implementing proposed activities and occur later in time or further removed in distance, but are still reasonably foreseeable. Cumulative effects result from incremental impacts of proposed activities when added to other past, present and reasonably foreseeable future actions regardless of what Agency or person undertakes such other actions. Some resource conditions consider a larger area if predicted effects extend beyond the Diamond Peak Project Area.

Access/Transportation

Introduction

This information is summarized from the *Diamond Peak Project Transportation Plan and Roads Analysis*. This report is in the Diamond Peak Project analysis file. The roads in the Diamond Peak Project Area directly or indirectly affect almost all activities and resources that occur in the Area. The two major factors that affect the roads and their management are the need to maintain them on a regular basis because of the wet climate and steep slopes, common in the planning area, and the limited amount of maintenance funding that is available to do the necessary work.

The Siuslaw National Forest Roads Analysis (January 2003) designated two broad categories of NFS roads; Key roads and non-Key roads. Key roads comprise a network of long-term-use roads forming connections between communities, roads considered vital for forest access and management and roads connecting to State, Federal and County routes. Non-Key roads are generally not considered vital to community connections or needed for constant access for forest management. Non-Key roads may be maintained in a closure status between periods of project access needs. The system of Key and non-Key roads is a management strategy responding to the reduced level of funding available for maintenance. This management strategy helps to prioritize available maintenance funding to the Key road system and

relies primarily on project-level funding for non-Key roads needed for periodic forest-management access. There is no reduction in net miles of roads proposed with this project. There is one failed mid-slope road segment proposed for decommission that would be replaced with a new road segment approximately the same length but on a stable ridge top location.

Existing Condition and Trends

The NFS roads open to public travel have either paved or gravel travel surface. To reduce maintenance costs and sediment from some Non-Key NFS roads, but allow them to remain open, waterbars were installed in 1990s. These roads are passable by high clearance vehicles. Maintenance on them is minimal. It is expected then; they would be less drivable (open) NFS roads over time.

Analysis of Direct and Indirect Effects

Alternative 1 No Action Alternative

There would be no access effects associated with this alternative. Existing Key NFS roads would continue to be maintained providing open public access to recreation sites and general forest areas. The non-Key NFS roads used for public access have been stabilized with water bars and have not been maintained for several years. These roads are becoming less accessible over time due to encroachment of vegetation. Some non-Key NFS roads are not drivable due to vegetation, obstructions or road bed failure. All non-Key NFS roads in the project area are expected to become less accessible for vehicle use, including high-clearance vehicles.

Alternative 2 Proposed Action

Two Key NFS road systems provide access for this project and are planned as log haul routes. Road 17 east from the junction of 1784 to Lincoln County road 106 provides access to project areas north of Drift Creek. A series of Key NFS roads 1900, 1980, and 1958 provide access to the project areas south of Drift Creek. Planned haul direction for project units accessed by road 17 is east to highway 18. Log haul from units accessed by roads 1900, 1980, and 1958 is west to highway 101. All other NFS roads in the project area are non-Key NFS roads which will be maintained for project use only and may be closed between project entry periods. A combination of existing NFS roads, overgrown existing temporary roads and proposed construction of approximately .70 mile of short ridge top temporary roads would provide logging access into individual units. The proposed temporary roads are needed because in order to protect streams, soils and residual trees it is necessary to extend some of the roads in the area to thin the stands.

The Key and non-Key NFS roads that would be used for log haul have not been fully maintained for vehicle traffic for several years due to a shortage of maintenance funding. To support this project, brushing, cleaning ditches, adding surface rock, repairing worn asphalt surfacing and installing some ditch relief culverts are needed to protect these roads from damage and reduce sediment that may reach streams.

During project operations some currently non drivable, overgrown existing NFS roads and existing temporary roads would be opened for project activities. NFS roads to be opened would be waterbarred following operations and allowed to grow closed. The existing reopened temporary roads and proposed new temporary roads would be waterbarred and bermed closed following logging operations. No temporary roads would be left open between or after operating periods.

Decommission approximately 3,145 feet of NFS road 1784 between spur roads 1784-118 and 1784-119. In this section the 1784 is located on steep slopes and has several road failures. To provide access to road 1784-119 and the remainder of road 1784, a new section of permanent road, approximately 3,080 feet will be constructed. The new road will follow the ridge top, by constructing 1000 feet of new road and reconstructing 2,080 feet of overgrown, old haul road.

An existing, overgrown temporary road less than one-tenth mile will be reopened to access Cougar Mountain rock pit. Existing pit run rock will be loaded and hauled to the reconstruction segment of 1784 for use as sub grade rock. No additional development, blasting or rock crushing will occur with this project, only use of existing pit run rock in the currently developed area. The existing temporary road will become part of the forest transportation system and will be closed with an earth berm after the project. If future opening or development of the rock pit is proposed that action will be covered by a separate NEPA analysis and decision

Alternative 3 No New Temporary Roads

This alternative would eliminate construction of the proposed temporary roads to access commercial thinning units. The re-opening and management of the existing closed Forest and temporary roads would occur as described in the Proposed Action alternative. The effects on the NF road system would be the same as alternative 2.

Access/Transportation-Cumulative Effects

The cumulative effects of the No Action alternative would be the continuation of the existing condition. The proposed action would improve, in the short term, the existing NFS roads used by this project. It is expected, due to reduced maintenance funding, that the conditions of these roads would revert back to conditions similar to the existing condition. Other foreseeable actions include noxious weed control, public recreational use, forest products gathering for personal and commercial uses, and fire and fuels management. Due to less road access, the ability to use and manage the various resources where road access is needed would be reduced.

Soils

Introduction

The following information is summarized from the *Diamond Peak Project Soils and Watershed Report October 12, 2004*. This report is located in the Diamond Peak Project analysis file. A study of the land and soils in the Diamond Peak Project Area provides a basis for understanding the existing condition of the area. Soil is a basic resource of the forest, and is the key to the productivity of an area. Maintenance of soil productivity is dependent on protecting the soil from displacement, compaction, nutrient loss and instability. Management actions do not affect factors such as climate and soil parent material. However, management activities can affect soil structure, density, nutrients and stability.

Applicable laws and regulations include 36 C.F.R. 219.14(a) which directs the Forest Service to classify lands under their jurisdiction as not suited for timber production if they fall into any of four categories:

- a. Non-forest;
- b. Irreversible soil or watershed damage (from NFMA 6(g)(3)(E)(i));
- c. No assurance of reforestation within five years;
- d. Legislatively or administratively withdrawn.

This report considers the first three categories of land.

Regional Guidelines include the Forest Service Manual R-6 Supplement No. 2500.98-1 (Title 2520 – Watershed Protection and Management) clarifies direction for planning and implementing activities in areas where soil quality standards are exceeded from prior activities; redefines soil displacement; provides guidance for managing soil organic matter and moisture regimes. In addition, the USDA FS Pacific Northwest Region handbook on General Water Quality Best Management Practices (November, 1988) provides a guide on practices which are applicable in conducting land management activities to achieve water quality standards to ensure compliance with the Clean Water Act, as amended, and Oregon Administrative Rules.

Finally Forest Plan Direction is found in Chapter IV of the Siuslaw Forest Plan which states the Forest-wide Standards and Guidelines for a variety of resources and activities. Soil and Water Quality protection are addressed in the section from FW-107 to FW-123. Based on direction in the Forest Wide Standards and Guides and BMP T-1, T-2 and T-3, the following activities were performed as part of the planning process: verifying the present SRI land type boundaries; determining the location of unsuited and unmanageable landtypes; prescribing slash treatment and suspension objectives for the possible units; and evaluating potential watershed impacts from management.

The following discussion and recommendations that follow are based on existing information from the Forest Soil Resource Inventory, professional judgement and experience, and extensive field investigation. The field investigation had three components: 1) a thorough reconnaissance of the proposed units including landtypes, soil and riparian condition, and slope stability; 2) a geotechnical review of existing unclassified roads needed to access the proposed units; and 3) an investigation of decommissioning needs for selected system roads, based on field work and analysis by the Forest Transportation Planner.

The Siuslaw National Forest Soil Resource Inventory (published in 1974) provides basic soil, bedrock, and landform interpretation for management descriptions. A copy is on file at the Hebo Ranger District. Soil descriptions are included in the Forest Plan, and the Drift (Siletz) Watershed Analysis. These documents and the Soils Report for the Diamond Peak Project describe the existing condition.

Existing Condition and Trends

Stability

Slope instability has been an active agent in the down slope movement of soil in most of the analysis area in the last hundred to 150 years. The Diamond Peak project area, located in the Coast Range physiographic province, lies on either steep, shallow-soiled side slopes or deeper stable gently sloping uplands of eroded Tertiary volcanic strata and/or bedded sediments of sandstones and siltstones. Both rotational (slump type) and translational (debris chute) failures are evident. Evidence of old and long stabilized, larger scale (hundreds of acres) rotational soil failures or slump type/earth flow terrain can be found in several units.

Productivity

The soils in the analysis area are highly productive silt to gravelly loams formed on a variety of bedrock materials from bedded sediments to marine volcanics. Side slopes and soil depths are highly variable, but soil moisture and temperature regimes are very favorable for soil biological activity and plant growth on most sites. An important ingredient to soil productivity is the presence of down wood. These stands were harvested 33 to 50 years ago when utilization was less intense than in more recent decades. Extensive concentrations of down logs are present in some areas. Many of the stands were also burned when duff retention standards were not in place. Consequently, in some areas, little or no decomposing organic matter remains.

Another aspect of long term nutrient availability and ectomycorrhizal formation is the amount of larger woody material retained on site. The amount of large, down wood in the proposed commercial thinning units is highly variable, ranging from low to high levels, as defined in LSRA. Each unit's management activities would be planned to maintain enough large wood (dead and down) to provide for a healthy forest ecosystem and ensure adequate nutrient cycling.

Increasing human activities in the Diamond Peak Project Area have led to increased levels of soil disturbance and reduced soil productivity. The one management activity that has the most direct impact on soils on the NFS land portion of the Diamond Peak Project Area is roads. Impacts from roads persist until the road is totally reclaimed, subsurface drainage patterns restored and organic matter again accumulates on the surface. Site productivity would remain somewhat less on reclaimed roads than on similar undisturbed sites for a period of time.

Road building affects soils by removing and displacing the topsoil layers from the road prism and compacting the road surface and shoulders. The surface of the road would not support trees and other forest vegetation as long as the road is used and maintained. Trees and shrubs would grow along the road bed, but site productivity is less here than in unaffected soils. Native surface roads would grow trees and other forest vegetation again when uses and maintenance ceases. However, site productivity would be less than similar undisturbed soils.

Direct and Indirect Effects

The major short-term impacts to soil productivity from harvest activity includes four factors used to evaluate the effects of the planned actions. They are displacement, compaction, nutrient loss, and instability. The primary analysis area for soils effects is the proposed unit boundary. Soils effects are generally evaluated by unit. To maintain long-term soil productivity the total acreage of all detrimental soil conditions will not exceed 15 percent of the total land within each harvest unit, excluding roads and landings. The following sections discuss in more detail 1) how the proposed action may affect the soil resource or 2) mitigations that can be utilized to avoid potentially undesirable effects.

Alternative 1 No Action

Stands would continue to develop. Most stands currently have little understory vegetation and bare soil is common in many units because of the lack of sunlight to the forest floor. Intermediate and suppressed trees would slowly be removed from the stand through mortality and decay. In areas of heavy stocking, stands would stagnate. In general, plant diversity would diminish as well as soil biota because of the lack of sunlight. In areas already compacted or disturbed by the initial entries, the soil building process

would continue to return the soil to near pre-harvest conditions. Short-term impacts from harvest, such as soil disturbance and slash accumulation, would not occur.

Alternative 2 Proposed Action

Displacement

The logging suspension requirement protects the soil from excessive disturbance or displacement. Unless otherwise stated or mitigated, all designated streams require full suspension or yarding away from the stream course during the yarding process. To adequately protect the soil resource, the primary yarding objective for all units would be skyline with partial suspension.

Ground based yarding systems, primarily tractor, could be utilized in the following units: 4, 5, 6, 7, 10, 11 and 16. In units 4, 5 and 16, ground based yarding systems may be employed on a few to several acres in each unit, where slopes are 30 percent or less. All areas where ground based yarding might occur, are away from active drainages.

Compaction

The major source of compaction (and also much disturbance) is ground based skidding equipment. Unrestricted tractor yarding and tractor piling are not considered an option on those landtypes where sideslopes are less than 30 percent to support tractor usage (BMP T-9 and VM-1, and FW-107). The silty nature of the fine grained soils, and evidence that significant soil moisture is available most of the year indicate that any type of unrestricted tractor yarding and piling (even low ground pressure) would lead to unacceptable soil compaction and/or disturbance. With tractor yarding, skid roads are predesignated and generally a minimum of 100 feet apart. With a processor/forwarder system the skid roads are usually 50 or more apart, but the number of trips on each individual road are substantially less than with skidding.

Monitoring has shown that when designated skid roads are properly utilized in conjunction with line pulling and directional falling, compaction from ground based tractor operations generally remains at about 9 to 13 percent. Skyline operations in thinning units with small wood and intermediate supports usually impacts less than 1 percent of the unit area. In most cases, the original units were harvested using ground based systems, especially on the flatter ground. However, little evidence now remains. The few evident skid roads would be reutilized in those units that have some ground based logging.

Residual compaction from the original harvest of these plantations needs to be considered. In most cases, the original units were cable yarded, though suspension may have been limited. However, little evidence now remains. Transects in several units indicated primary skid roads occupy 7 to 10 percent of the ground-based terrain. The few evident skid roads will be reutilized in those units that have some ground based logging. Almost no new spur road will be required. Since ground based yarding is not a primary component in any unit, compaction is not considered a cumulative concern. In addition, some scarifying is proposed in order to reduce compaction at heavily used haul roads, spur truck roads, and landings. Skyline landings are primarily planned at old existing landings, road turnouts, and road junctions.

Nutrient Loss

An important ingredient to soil productivity is the presence of down wood. These stands were harvested 33 to 50 years ago when utilization was less intense than in more recent decades. Extensive

concentrations of down logs are present in some areas. Many of the stands were also burned when duff retention standards were not in place. Consequently, in some areas, little or no down decomposing organic matter remains. The proposed action will provide 7 to 10 snags or down wood per acre in those units deficient of large wood.

In areas where slash has to be piled and burned due to fire management concerns, sufficient heat may develop to affect the underlying soil. However, pile burning is usually done in the spring or winter months when duff and soil moistures are higher, and this helps reduce the heat effects on the soil. Consequently, burning in this manner is considered a minor effect and not cumulative within each unit because of the limited overall acreage involved.

Another aspect of long term nutrient availability and ectomycorrhizal formation is the amount of larger woody material retained on site. Management activities would be planned to maintain enough large wood (dead and down) to provide for a healthy forest ecosystem and ensure adequate nutrient cycling (FW-110). At this time, site specific needs would be considered commensurate with wildlife objectives.

Instability

Slope instability has been an active agent in the down slope movement of soil in most of the analysis area in the last hundred to 150 years. Within the project area, both rotational (slump type) and translational (debris chute) failures are evident. The larger scale (hundreds of acres) rotational soil failures or slump type/earth flow terrain can be found in several units, though for the most part, old and long stabilized. Small (1 to 2 acres) active slump/earthflows are present in two units, 3 and 7. Here failure depths are such that tree root strength does not play a major role in slope stability.

Thinning promotes tree growth. Crowns increase in size and root systems expand. Evapotranspiration rates increase. These factors all promote greater slope stability. Field review of previously thinned units has shown no increase in slope instability in either the uplands or riparian reserves. Thinning within and through riparian reserves improves long-term slope stability as stand conditions change with release and increased tree growth. Thinning should emphasize the retention of a well-distributed stand of larger trees, both conifer and hard wood. These larger trees also provide the opportunity to better withstand the assaults of windstorms and floods over time.

Transportation System

Winter haul is considered only in units 1, parts of 4, 5, and 6, due to close proximity of units to paved Forest Service Road 1700 and extensive distance from active drainages. No ground based harvest would be performed in the winter months. Soil compaction assessed per unit would not exceed Standards and Guidelines and all units considered for winter haul would be accessed by existing temporary roads with added surface rock as necessary or the existing paved road.

Existing forest roads and closed temporary roads access almost all units. These existing temporary roads for the most part are native surface, overgrown with vegetation, and show little or no active erosion. They have no ditches or culverts, are often outsloped, and have few if any water bars. Most of these roads have solid subgrades, which are suitable for dry season haul with perhaps a little spot rocking in a few critical areas. All roads used in wet season would require rocking. No major problems were noted on any proposed spur access.

NFS 1784, is closed between the Rd 118 and 119 junction at a large fill failure that occurred during the 1996 storm event. No existing road width remains. This failure site has now stabilized and begun to revegetate. Two alternatives were considered to reestablish a road template at the failed section: 1) construct a retaining wall, or 2) move the alignment into the existing cut slope. Option 1 was not considered feasible because it is prohibitively expensive. Option 2 was dismissed because high, near-vertical cuts on steep side slopes in decomposed rock and soil would be required. Cuts of this magnitude could create potentially unstable slopes and would be difficult to decommission. In order to provide access between spur roads 1784-118 and 1784-119 to reconnect road 1784 around the failed segment, a new route along the ridgeline to the north is proposed. The route follows a stable ridge for the entire distance and side slopes are generally less than 35 percent. Much of this route already exists as an existing non-system road. No drainages are crossed and almost no full bench construction is required. This route is about 3,080 feet in length which about 1,000 feet would be new construction and 2,080 feet would be located on old skid or haul roads.

The total decommissioning of approximately 3,145 feet of NFS 1784 between Road 118 and 119 is planned. This segment of 1784 is primarily a full bench cut on steep side slopes with extensive sidecast. One major fill failure has already closed this route. Other small failures and numerous tension cracks are also present.

New temporary roads built to access some harvest units (approx. 0.70 mile) would be located on ridgetops with no ditches and culverts.

Skid trails within units would be developed where necessary for access where ground harvest operations are implemented. Designated skid trails would be used and where feasible remnant skid trails from previous entries would be reused.

At the completion of logging activities, the reopened existing temporary roads and new temporary roads would be water barred as appropriate to control storm run off and closed to vehicle travel. Experience has shown that these closed roads revegetate quickly, typically within 1 to 2 years after they are closed. In summary, development of the transportation system necessary for this project would maintain slope stability, and would produce little or no off site erosion.

Alternative 3 No New Temporary Roads

Under this alternative no new temporary roads would be built. This would reduce the soil area impacted by a linear length of 3,640 feet with an approximate width of 14 feet. There is no increase in permanent roads proposed for the Diamond Peak Project. Without building the temporary roads for this project, 45 acres of thinning to improve forest health would be excluded from the project. The remaining 302 acres will be accessible via existing forest roads.

Cumulative Effects

Alternative 1 No Action

Cumulative effects for soils would be the same as the indirect and direct effects discussed for soils under the no action alternative.

Alternative 2 Proposed Action

The effects of the Proposed Action on the soils resource are very limited in scope. In addition, no individual unit would have adverse impacts greater than 15 percent. In relation to the Forest Standard, this individually or cumulatively is well below the 15 percent threshold. Given the limited amount of ground-based operation and with the implementation of LTSR (Locate Tractor Skid Road) in the timber sale contract, this figure will be well below the 10 percent figure for the total impacted area of any given unit. With the deletion of numerous stability sensitive areas from the proposed units, slope stability will be maintained. Given the proposed road decommissioning and storm proofing of older system and spur roads, the potential for future slope instability will be reduced in the long term. This is the only project planned in this analysis area for the foreseeable future on National Forest land.

At this time, no single unit of measure of long-term soil productivity is widely used. Information on the survival and growth of planted seedlings may indicate short-term changes in site productivity. However, the relationship between short-term changes and long-term productivity is not fully understood at present. Experience indicates that the potential impacts on soils are best evaluated on a site specific, project-by-project basis. The major soils concerns –compaction, nutrient loss, displacement, and instability – are most effectively evaluated, for both short and long term effects, at the project level. With proper project implementation, unacceptable cumulative effects on the soils resource are not anticipated from any action alternatives. Consequently, the utilization of soil protection measures and best management practices precludes the need for additional cumulative effects analysis.

Alternative 3 No New Temporary Roads

Cumulative effects would be similar to the cumulative effects of the proposed action except in relation to the building of new temporary roads. No new temporary roads would be built with the implementation of this alternative. This would result in less soil compaction/displacement in an area 3,640 feet in length with an approximate impact width of 14 feet.

The proposed action, which includes snag creation and underplanting, and other foreseeable routine actions: noxious weed control, road maintenance, administrative road use, public recreational use, and small forest products gathering for personal use, do not involve the use of heavy equipment other than on existing road surfaces. Based on the types and extent of these uses in the Diamond Peak Project Area, no detrimental soil disturbance is anticipated.

Water Quality

Introduction

This information is summarized from the *Diamond Peak Project Soils and Hydrology Report, June 21, 2005*. This report is located in the Diamond Peak Project analysis file. The project area is located primarily in the Lower Drift Creek subwatershed of the Drift Creek (Siletz) Watershed. Drift Watershed includes a mixed ownership of county, small private, rural residential, private timber, industrial timber and Forest Service. Past activities associated with timber harvest, stream treatments, and road construction/failures have had the greatest effects on aquatic resources in the Diamond Peak Project Area. These effects include 1) Sediment delivery to streams from culvert failures during the 1996 and 1998 rain events. 2) Clear cut harvest with minimal buffer retention along stream channels, impacting solar input to streams in this area and possibly impacting stream temperature. Current practices are directed to improve dense overstocked stands planted following clear cut harvest and promote tree health by encouraging the larger trees to grow.

Existing Condition and Trends

For concerns related to water quality the 5th field watershed boundary including Lower Drift (Siletz) and Upper Drift (Siletz) were analyzed.

The Oregon Department of Environmental Quality's 303d list for water quality limited streams has included in the Drift (Siletz) Watershed; Drift, and North Creek for temperature from headwaters to the mouth. There are municipal water rights on Drift Creek and Gordey Creek.

Roads within in the Project Area include paved, graveled and dirt surfaces. The conditions of the roads range from those that pose a potential negative resource risk to others that pose minimal risk. Road maintenance in the Project Area would continue at a reduced level. Key roads identified in the Road Management Plan would continue to receive ditch/culvert cleaning, brushing and blading on a three year rotational basis. Road maintenance funding has decreased however, and those roads currently open that are not part of the National Forest Key Road System would eventually become overgrown and undriveable. The potential for undersized culverts on stream crossings to plug on such roads would also increase. Without proper maintenance or proper road closure, the potential for undersized culverts on stream crossings to plug could increase.

Analysis of Direct and Indirect Effects

Alternative 1 No Action

The direct and indirect effects of the existing condition would continue.

Alternative 2 Proposed Action

Road surfacing and maintenance along the haul route would be completed prior to thinning and haul. No negative impact on water quality is anticipated as a result of this project. The effect on water yield is unknown at this time; however, no significant changes are expected. Road use necessary to perform thinning operations and haul is not anticipated to result in increased road related negative impacts on water quality.

Thinning stands of this nature is expected to result in no negative impacts to water quality. Thinning smaller suppressed timber from overstocked stands would encourage healthy growth in the remaining large trees. This result is beneficial to slope stability and the actions required to perform the thinning would cause minimal impact to soil and have no affect on water quality.

No negative impact on water quality is anticipated as a result of building the necessary 3,640 feet of temporary road identified in the proposed action. All new temporary roads would be located ridge tops and not require ditches or culverts. They are a considerable distance from streams. All new temporary roads would be constructed during the summer months used to access timber in 7 different units and waterbarred where necessary, seeded with native grass seed and closed to vehicle travel. None of the new temporary roads built would be used for winter haul. The use of ground based equipment is restricted to the dry season, and it is expected that these travelways will revegetate quickly, so no sediment is expected.

No negative impact on water quality is anticipated as a result of building approximately 1000 feet of new road on a ridge top to replace the failed portion of the 1784 road. The ridge is a stable road bed

location and is a better location for a road of this type than midslope. A midslope road is often more susceptible to damage from intercepted hillside water than a road placed on the top of a ridge where no or minimal fill material would be required and/or where no drainages would be intercepted.

Alternative 3 No New Temporary Roads

Under this alternative no new temporary roads would be built. This would reduce the soil area impacted by a linear length of 3,640 feet with an approximate width of 14 feet. There is no increase in permanent roads proposed for the Diamond Peak Project. Without building the temporary roads for this project, 45 acres of thinning to improve forest health would be excluded from the project. The remaining 302 acres will be accessible via existing forest roads.

Cumulative Effects

There are no cumulative effects on water quality as a result of implementation of the proposed actions. This project proposes to thin 2 percent of the 19,722 acre Lower Siletz River/Drift Creek 5th field Watershed. The Forest Service owns 59 percent of this watershed. The Windjammer Project area shares one 6th field sub-watersheds the Lower Drift/Siletz with the Diamond Peak Project area, and the timing of implementation of these projects may overlap for several seasons. Road haul on about 5 miles of NFS Road 1700 will be the only haul activity of both projects that will overlap. The Design Criteria are the same for both of these projects, and are expected to result in minimal cumulative effects. Since the Forest Service is only conducting thinning sales for habitat enhancement high in the watershed, this type of activity should result in minimal cumulative effects.

Other Activities on National Forest System Land

Other foreseeable routine actions, may include noxious weed control, road maintenance, administrative road use, public recreational use, and small forest products gathering for personal use. These activities do not involve the use of heavy equipment other than on existing road surfaces. Based on the types and extent of these uses in the Diamond Peak Project Area, no detrimental soil disturbance is anticipated.

Aquatic Conservation Strategy

On March 22, 2004 the USDA Under Secretary for Natural Resources and the Environment signed Record of Decision (ROD) amending the Northwest Forest Plan. The decision clarifies provisions relating to the application of the ACS. Specifically, the amendment removes the need for deciding officials to certify that individual projects meet ACS objectives at the site-specific level and short time frames. Instead, the ROD requires individual projects to meet ACS standards and guides and that ACS objectives be met at watershed or larger scales (5th field hydrologic fields or greater) and over longer time periods of decades or more. Project records must also demonstrate how the decision maker used relevant information from watershed analysis to provide context for project planning.

Relevant information from the Drift (Siletz) Watershed Analysis (September, 1996), and the Fisheries Biological Evaluation for the Diamond Peak Project was incorporated by reference into this environmental analysis. Based on this information, all project activities will meet the ACS standards and guides, and all ACS objectives will be met at the 5th-field watershed scale and over longer time periods of decades or more.

Young Managed Stands

Introduction

The forests in the Diamond Peak Project Area are composed of a variety of vegetation. This vegetation occurs in diverse combinations and patterns of species, ages, sizes, shapes, and structure. These diverse forests provide a multitude of social, biological and ecological benefits, such as wildlife habitat, timber products, firewood, mushrooms, berries, clean air and water, and a pleasing setting for human enjoyment. Disturbance processes and logging have played major roles in shaping the current forest conditions. A thorough description of the vegetation is included in the Drift (Siletz) Watershed Analyses, and the LSRA. For a description of current conditions see Chapter 1, Purpose and Need, pages 2 and 3.

Direct and Indirect Effects

Alternative 1 No Action

No stand treatments would be done at this time. There is no immediate direct effect on the stands. In their current condition, the young managed stands would not develop late-successional habitat characteristics in the near future. This is due to:

- Declining diameter growth rates associated with these stands, thus increasing the time needed to develop large trees, snags and logs,
- The lack of species diversity both in the overstory and understory,
- The lack of spatial variability that contributes to the development of differing stand structures such as “wolf trees”.
- Stands that are primarily Douglas-fir would continue to have little species diversity and would be less resilient to diseases such as Swiss needle cast or *Phellinus*.
- An increased risk of the stand blowing down.

Another indirect effect of “no action” is that it limits options for future treatment. The tree crowns would continue to become smaller and over time thinning becomes less and less an option due to increased windthrow risk and the stand’s inability to respond to thinning.

The unthinned stands would contribute a steady input of small snags over a long period of time. Pockets of *Phellinus* and *Armillaria* root rot would also provide an on-going input of snags, contribute to stand diversity and provide some of the disturbance needed to further stand development towards a more “natural” condition. If windthrow restricted to relatively small areas (rather than blowing down entire stands) it would also provide for some diversity and “push” stand development forward.

Action Alternatives (Alternatives 2 & 3)

The difference between the action alternatives is the construction of the proposed temporary roads. If the roads are not constructed about 45 acres would not be commercially thinned. This acreage includes parts of some of the proposed units. Snags and CWD treatments could be done on these acres. However, funding for these types of projects is extremely limited.

Recent research (Carey, 2002; Franklin, 2001; Garman, 2003; Hunter, 2001; Muir, 2002; Tappeiner, 1997; and Thysell, 2001) shows that thinning can improve the probability that these stands would

develop late-successional forest characteristics within the next 100 years. Thinning would result in increased diameter growth, crown development, and understory diversity.

Following treatment (thinning, underplanting and CWD creation) direct affects would include:

- Fewer trees per acre
- A higher average stand diameter (because smaller trees have been removed)
- More light to the forest floor
- Different relative proportions of tree species (for instance, if only Douglas-fir is cut, there would be more western hemlock relative to the Douglas-fir than prior to thinning)
- More down wood and snags (in units where snag creation is planned)
- Greater variability in tree spacing
- An immediate increase in understory trees (in under planted units)

Thinning is not known to spread Swiss needle cast or increase the rate of infection in the tree. However, there is a concern that thinning infected stands may exacerbate the disease's effects on the remaining Douglas-fir, particularly by increasing the stress on needles exposed to the drying action of wind. Conversely, it is possible that because thinning increases the amount of resources available to the remaining trees, they would be more vigorous, develop larger crowns and be in a better position to maintain growth in spite of the disease. The stands under consideration are not considered to have a high Swiss needle cast severity rating. The objective of thinning these stands is to maintain or increase the growth rates of the remaining trees. It is certain that without thinning growth rates would decline. Thinning of Douglas-fir on the Hebo Ranger District has been demonstrated to improve growth rates and canopy development even with the presence of Swiss needle cast. Another objective, the development of an understory, particularly the initiation of a second canopy layer of shade-tolerant trees, can only be achieved by opening up the Douglas-fir canopy by thinning.

The harvest of trees would result in the loss of potential CWD and snags, in the short term. It is anticipated that some of this loss would be made up by mortality that may occur due to natural processes such as *Phellinus*, windthrow, logging damage, etc. Also, tops of harvested trees would remain in the units providing an immediate short term source of additional CWD. Untreated portions of stands and stands left unthinned would provide a gradual input of small trees dying from competition. Part of the purpose of the project is to increase tree growth so that larger trees would be available as snags and down wood sooner than if left unthinned.

Thinning would preserve options for future treatment. The thinned stands would remain in a much healthier, stable condition allowing for future treatments as more is learned about managing towards the desired conditions.

Cumulative Effects

The existing condition discussion in Chapter One, Purpose and Need, describes the cumulative effects of the past management based on clearcutting and planting back at high seedling densities. To summarize, currently in the Project Area, approximately 34 percent of the Forest Service land is in plantations that originated between 1956 and 1991. Although 65 percent of the Forest Service land is in mature, natural stands, much of it occurs in relatively narrow bands located between relatively large blocks of

plantations. It is assumed that all private land within the Project Area is being managed for timber production on short rotations and would not reach late-seral conditions.

The Forest Plan has changed the goals for the Diamond Peak Project Area from an emphasis on timber production to development of late-successional habitat. The District's precommercial thinning program over the last 3 years has concentrated on stands within Key Watersheds, including the Project Area. Over the past 3 years, 399 acres within the Project Area have been precommercially thinned. These stands originated between 1977 and 1991. Thinning emphasized variability with an average of about 150 trees per acre left after thinning. This essentially completed the precommercial thinning within the Project Area. Although records for stands planted prior to 1976 are not readily available, it is assumed that most of the acres planted between 1974 and the present were precommercially thinned, generally to stocking levels between 200 to 300 trees per acre. These stands would require commercial thinning between ages 30 to 45 years old approximately 15 years from now.

Alternative 1 No Action

It is difficult to quantify what the cumulative effect of not treating the stands would be. It is anticipated that the stands would develop some late-succession characteristics in the long term. However, recent research seems to indicate that most would not or, at least would take a very long time to develop the desired conditions. Because precommercial thinning has been completed, most managed stands would have stocking in the range of 150 to 300 trees per acre. Over time, as the stands grew taller, the risk of catastrophic blow down would increase. At the landscape level, two important opportunities would be lost. "Because of the existing owl pairs, importance to connectivity and the age of the late-seral stands [approximately 110 yrs.], this "southern block" of the Hebo Ranger District is the first priority to block up and connect late-successional habitat, primarily by thinning (density management treatments)" (LSRA, append. H) This includes all of the Project Area except the NE corner, which consists of predominately young plantations of Douglas-fir. The NE corner was included in the Project Area, because it is within the Key Watershed.

Action Alternatives (Alternatives 2 & 3)

Under the proposed action, about 57 percent of the stand acres currently available for commercial thinning would be thinned plus an additional 28 percent would be treated by creating snags and trees dropped for down wood. Under alternative 3, about 49 percent would be thinned and 36 percent would be treated by creating snags and trees dropped for down wood. However, the snag and down wood treatments would not accelerate late successional characteristics as quickly as commercial treatments as there would be less trees treated

Following the proposed treatments, barring an unforeseen occurrence, most vegetation management activities in the Project Area would be completed for approximately 10 years, assuming the proposed harvest would be completed by 2012. The next entry would be commercial thinning of stands that are currently less than 31 years old as well as possible re-entry into some of the currently proposed harvest units, to further their development.

Stands 6, 9, 10 and 12 would be thinned lighter due to wind throw or root rot concerns and would certainly benefit from another thinning. The other units are proposed for heavier thinning to limit the number of entries. However, at least one more entry at some point before age 80 would probably be desirable to keep these stands on a trajectory to reach the desired condition. Although certain attributes

(like deeply furrowed bark) are dependent on long time periods, cumulatively, the thinnings would leave the Project Area with healthier, more stable stands that would continue to develop towards the desired condition gradually merging with the conditions currently found in the adjacent late-successional stands.

Botany

The following information is summarized from the *Plant Biological Evaluation for the Diamond Peak Project, Hebo Ranger District, May 6, 2005* and the *Plant Botanical Resources Assessment, Diamond Peak Project, May 6, 2005*.

Threatened, Endangered and Sensitive Plants

Potential effects of the proposed action and alternatives to the proposed action on listed (threatened and endangered) and sensitive plants were evaluated by the Forest Botanist and documented in a Biological Evaluation (BE). The BE concluded that potential habitat for 23 sensitive species (15 fungi, 6 lichens, 2 bryophytes) is present in or adjacent to some of the proposed project locations. Potential habitat for sensitive lichens and bryophytes primarily occurs in mature forest habitat adjacent to proposed commercial thinning units, as well as riparian reserve areas where additions of coarse wood are proposed. Potential habitat for the fifteen sensitive fungi species is found within proposed units and adjacent mature forest.

Sensitive species identified as having potential habitat within or adjacent to the project area are thought to be associated with late-successional forest habitat. At present, this habitat is limited in the project area.

Direct, Indirect and Cumulative Effects

Alternative 1 No Action

Under the no action alternative, there would be no direct or indirect effect on sensitive species in the short-term. Densely stocked conifer plantations may, over time, develop habitat characteristics associated with late-successional forest. As a consequence of no action however, it is conceivable that some of these plantations would become more vulnerable to windthrow, insects and disease. Consequently, the long-term cumulative effect of no action will be to delay the development of potential high quality habitat for sensitive species.

Alternative 2 Proposed Action

Short-term direct and indirect adverse effects may occur to sensitive species. One of the goals of this alternative is to accelerate the development of late-successional forest characteristics and increase species diversity. Both of these outcomes will have a long-term beneficial effect for sensitive species. Because adverse impacts resulting from the project are expected to be limited in scope and short-term, they should be largely offset by the long-term beneficial effect of implementing this alternative. Other proposed activities including road realignment, decommissioning and construction, coarse wood creation and underplanting may affect individuals but are also of limited scope relative to the entire project area. Overall, this alternative may impact individuals but is not likely to adversely affect (NLAA) populations or the species. No cumulative effects to sensitive species are expected from implementation of this alternative.

Alternative 3 No New Temporary Roads

Risk of weed colonization under this alternative is the same as alternative 2. The elimination of 3,640 linear feet with a width of 14 feet of temporary roads provides a slight reduction in risk.

Survey and Manage plants

A review of the Inter-Agency Species Management System (ISMS) and Geographic Biological Observation (GeoBob) databases found the presence of one documented known site of *Ramaria aurantiisiccescens*, a Management Category B fungus, within the Project Area. Category B requires management (protection) of all known sites. The site is located 340 meters south of unit 10. No impacts from project activities under any of the alternatives are anticipated and no project specific protective measures are needed. A review of potential habitat within areas of proposed ground disturbing activities indicated that the young overstocked plantations are not likely to support habitat for Category A and C species. Given current habitat conditions, no surveys were conducted or required for these species. No direct effects to S&M plant species are anticipated under any of the fully developed alternatives. Indirectly, commercially thinned units under the proposed action are expected to develop late successional/old growth (LSOG) characteristics, which would provide suitable habitat for a number of S&M species.

Pre-disturbance surveys and management of known sites required by protocol standards to comply with the 2001 Record of Decision and Standard and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measure Standards and Guidelines (as the 2001 ROD was amended or modified as of March 21, 2004) were completed for the Diamond Peak Thin. Diamond Peak Thin also complies with any site management for any Category B, D, and E species as identified in the 2001 ROD (as modified).

Over the long term, indirect effects of the proposed action designed to promote development of LSOG characteristics in young managed stands could beneficially affect these species through development of complex and diverse LSOG habitats. Similar projects in adjacent areas could provide migration corridors for some S&M plant species to slowly begin colonization of the treated stands.

Invasive Plant Species

Common weed species in the vicinity of the Project Area include Scotch broom (*Cytisus scoparius*), Himalaya blackberry (*Rubus procerus*), evergreen blackberry (*Rubus laciniatus*), bull thistle (*Cirsium vulgare*), and tansy ragwort (*Senecio jacobaea*). An invasive species/noxious weed inventory of the Hebo Ranger District was conducted during the summer of 2004, which included survey of roads, landings and other areas likely support noxious/invasive species within the Project Area. The inventory identified a Scotch Broom population along the 1700 road in Section 28, no other weed infestations were found within the Project Area. Best Management Practices to prevent the introduction and establishment of invasive plant species and control existing infestations have been developed following standards outlined in the Region 6 Preventing and Managing Invasive Plants ROD (2005). These practices are incorporated into the project design criteria.

Alternative 1 No Action

No actions are proposed that would result in increased risk of weed colonization. Spread of weeds within the Project Area would continue at background levels, primarily along roads.

Alternative 2 Proposed Action

Under the proposed action, Units 1, 2, 3, 4, 5, 6, and 7 have a moderate risk of weed invasion and colonization. Units 9, 10, 11, 12, 13, 15 and 16 have a low risk. It is estimated that weed colonization could occur on 5 to 7 acres.

Cumulative Effect

Roads serve as the primary pathway invasive plants travel to colonize new areas. Seed and plant parts that are picked up in infested areas by vehicles, animals and people can be transported along roadways where habitat conducive to their establishment and growth is readily available. Under the proposed action, 0.7 miles of new road will be constructed, providing a new pathway for invasive species for a number of years following completion of the project. Conversely, the cumulative effect of decommissioning 0.6 miles of road, as proposed, will be to reduce the potential for invasive species establishment in this area because vehicles will be excluded as a transport vector in future years. Because there are both negative and beneficial cumulative effects associated with the proposed action, it is not possible to determine, on balance, whether the final outcome will be negative or beneficial. Other activities likely to influence weed population in the project area include ongoing weed control activities funded through Payments to Counties Title II, road management decisions to close and/or decommission roads and weed prevention practices incorporated into all Forest Service activities, permits and contracts. With the current and foreseeable future emphasis on weed/invasive species management, noxious weed infestations are expected to decline in the project area as tree-crown cover increases; open road miles decrease and weed management/treatment increases. Although new invader weed species are likely to arrive in the Coast Range of Oregon, the weed species, mode of spread, vectors for spread, available habitat and other factors are not predictable or foreseeable.

Wildlife

Introduction

The following information is summarized from the *Biological Evaluation and Wildlife Report for Diamond Peak Thin, February, 2006*. The purpose of this biological evaluation is to identify the likely effects of the alternatives including the proposed action to federally listed or proposed wildlife species, Forest Service Regional Forester sensitive species, and federally proposed or designated critical habitat. All necessary consultation with U.S. Fish and Wildlife Service (USFWS) is completed for effect determination (USFWS Biological Opinions 1-7-05-F-0664 and 1-7-05-F-0005), available in the Hebo District Office for review. All aspects of the proposed action comply with all standards and guidelines and stipulations in the USFWS BO and effect determinations are same as stated in the BO.

Table 3-1: Existing Condition and Trends

This table summarizes the existing condition and what is expected in the stands after treatments.

Unit Number	Harvest Acres	Current Trees Per Acre**	Current QMD*	Current Snags/ac	Current Ave. Snag DBH	Residual TPA**	Residual QMD*
1	7	210	13.4	5	10	60	15.5
2	9	205	12.9	3	13.1	62	15.3
3	48	209	12.4			59	14.8
4	35	233	12.9	2	9.6	62	16.0
5	46	200	14.0	4	9.4	60	17.0

6	51	224	14.3	0	0	70	17.8
7	18	184	15.0			66	18.0
8^	45	181	11.2	3	10.2	85	13.5
9	16	180	13.8	7	12.2	85	16.3
10	6	200	11.3	3	11.3	75	13.3
11	21	164	11.6	0	0	50	12.9
12	31	243	11.3	7	10.4	70	13.0
13	19	209	12.5	12	11.5	67	14.5
15	18	185	13.1	7	10.9	64	15.5
16	22	225	12.7	9	11.2	66	16.0
Total	347						
Wt. Ave		205	12.9	8	10	65	15.4

* Quadratic Mean Diameter – the diameter of the tree of ave basal area in each unit, quantifying the vol of trees before (current) and after (residual) thinning.

**Trees per acre – the ave number of all hardwood and conifer trees with 7” and greater DBH/ac before and after thinning

^ Unit 8 is analyzed in this report, but is not planned to be thinned during the implementation period of the other units in the project area. Total and ave. do not include Unit 8.

Species Considered and Evaluated

The following table includes federally listed or proposed species for the Siuslaw National Forest within the project area as provided in the July 2004 list from the Regional Office.

Table 3-2:

Common Name	Species	Status
Bald eagle	<i>Haliaeetus leucocephalus</i>	Threatened
Northern Spotted Owl	<i>Strix occidentalis caurina</i>	Threatened
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	Threatened

The following table includes Regional Forester Sensitive Species for the Siuslaw National Forest. Sensitive animal species are from Regional Office lists updated July 2004 and includes Federal candidate species (C).

Table 3-3

Common Name	Species
MAMMALS	
Baird's Shrew	<i>Sorex bairdii bairdii</i>
Pacific Fringe-tailed Bat	<i>Myotis thysanodes vespertinus</i>
Pacific Fisher (C)	<i>Martes pennanti</i>
AMPHIBIANS	
Southern Torrent Salamander	<i>Rhyacotriton variegatus</i>

Threatened, Endangered and Proposed Species and Critical Habitat

Northern Bald Eagle

The northern bald eagle nests in large old trees in mature or old growth stands near large bodies of water. History and trends in the status of bald eagle nests in Oregon are tracked annually by Isaacs and Anthony (2003). Bald eagles are known to be highly susceptible to disturbance, particularly during their nesting season (Stalmaster *et. al.* 1985; McGarigal *et. al.* 1991). This effect of disturbance is important

within 0.25 mile or 0.5 mile line of sight distance, of known nest sites during this period. The closest recorded nest site is located over five miles to the west of the Project Area on private land.

Direct & Indirect Effects

Alternative 1 No Action

In this alternative, none of the managed stands within the project area would be treated so no change from current condition would occur. This alternative does not meet the purpose and need to maintain or improve habitat for terrestrial species in the area by accelerating the development of late-successional forest habitat and by improving watershed conditions. Based on this analysis, a determination of “**No effect**” is made for this species.

Action Alternatives (Alternatives 2 & 3)

Species: Although no surveys have been conducted, there is a high likelihood that the Northern bald eagle utilizes the area for foraging activities and occurs in the vicinity of the proposed action. Temporary direct adverse effects, such as individual and prey displacement, may occur during commercial operation. Temporary indirect adverse effects, such as increased noise levels, could occur during operations. If the animal is in the treatment areas during implementation, individual bald eagles could be temporarily displaced by the mechanical operations, which is a “**May affect, not likely to adversely affect**” determination. Potential adverse impacts to individuals should not impact overall reproduction and survivability of any populations within the area. No cumulative impacts are expected.

Habitat: Based on this analysis, no suitable roosting or potential nesting habitat would be removed during projection implementation. Project design treatments would buffer riparian areas. This would protect most bald eagle perching habitat. Direct beneficial effects, such as improved habitat quality and quantity, are likely to occur as a result of the thinning. No cumulative impacts are expected.

Northern Spotted Owl

The northern spotted owl is strongly associated with dense mature and old growth Douglas-fir forests, which provide the structural characteristics required by the owls for food, cover, nest sites, and protection from weather and predation. Suitable habitat is defined by the Siuslaw National Forest as conifer dominated stands with at least 60 percent crown cover, greater than five acres in size with trees greater than or equal to 18 inches dbh comprising at least 50% of the canopy. The proposed thinning units do not have enough trees of this size to meet the criteria for suitable habitat. The habitat may be used by dispersing birds, but it does not have the complexity to be suitable habitat. The closest recorded location of an owl nest, located outside the Project Area, is approximately 100 yards to the south of unit 9 across road 1958 found in 2001. An owl pair was recorded using the site in 2001, a single owl in 2002 and an owl pair in 2003, no records were found for 2004 or 2005. Planned retention of large amounts of down wood would benefit some of the prey species of the spotted owl.

Northern Spotted Owl Reserve Pair Area

On federal lands within the Northern Coast Range AMA, Northern spotted owls are to be protected by establishing a RPA around each activity center. The RPA should be equal to the home range size for pairs in the Coast Range Province and encompass as much habitat as possible close to the owl activity center. All suitable habitat in the RPA would be reserved from timber harvest. Management of currently unsuitable areas should be consistent with LSR management standards and guidelines for silviculture.

The RPA which encompasses the entire Diamond Peak Thin Project Area was designated with the Drift (Siletz) watershed analysis in 1996 and finalized in 1998. The area includes most of the LSR RO269. The activities proposed within the RPA are consistent with management objectives in both owl critical habitat and LSR's.

Direct & Indirect Effects

Alternative 1 No Action

An indirect and cumulative effect of this alternative is the delayed or non-development of large blocks of late-successional habitat needed by this species for maintenance and expansion of the population. This alternative does not meet the desired goals of the Forest Plan, and in particular the goals described in the *Late-Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area*.

Action Alternatives (Alternatives 2 & 3)

Although no surveys have been conducted, there is a high likelihood that the Northern spotted owl utilizes the area for dispersal and occurs in the vicinity of the proposed action. Some of the individuals could be negatively affected by treatment activity. Temporary direct effects, such as individual and prey displacement, may occur during operation. Direct beneficial effects, such as improved habitat quality and quantity, are likely to occur as a result of the thinning. Temporary indirect effects, such as increased noise levels, could occur during operation. No cumulative impacts are expected.

Based on this analysis, "**May affect, not likely to adversely affect**" is expected for the proposed action for this species, due to disturbance if the birds are in the treatment areas after July 7th. Potential adverse impacts to individuals should not impact overall reproduction and survivability of any populations within the area.

Northern Spotted Owl-- Designated Critical Habitat

The entire Diamond Peak Thin Project area lies within CHU OR-43, designated for the Northern spotted owl in January 1992. For spotted owls, the primary constituent elements of critical habitat are the physical and biological habitat features that support nesting, roosting, foraging and dispersal. Attributes of good to high quality nesting and roosting habitat typically include 60 to 80 percent canopy closure, a multi-layered, multi-species canopy with large overstory trees (greater than 30 inches dbh), large snags, large accumulations of woody debris and fallen trees, trees with deformities, and subcanopy open space for flying. Foraging habitat is similar, but may not support successfully nesting pairs. The number of trees to be left after thinning would average 65 trees per acre. The thinning stands are currently averaging 205 trees per acre.

Dispersal habitat consists of trees with adequate tree size (at least eleven inches dbh) and canopy closure (at least 40 percent) to provide protection from avian predators (USDI-FWS 1992). The proposed thinning units do not contain nesting habitat, but would function as dispersal habitat as long as the canopy closure remains at or above 40 percent (50-60 trees per acre) stand average. The areas with CWD would provide habitat for owl prey species and could serve as foraging habitat for owls. Most of the units have moderate to high levels of CWD (1100 cubic feet per acre or more). Unit 8 has low volumes, so CWD and snags be created for future CWD.

Direct & Indirect Effects on Critical Habitat

Alternative 1 No Action

No change from current condition would occur. An indirect and cumulative effect of this alternative is the delayed or non-development of large blocks of late-successional habitat needed by this species for maintenance and expansion of the population. This alternative does not meet the desired goals of the Forest Plan, and in particular the goals described in the *Late-Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area*.

Action Alternatives (Alternatives 2 & 3)

As stated in the Habitat Modification B.O., heavy thinning of Unit 11, (21 acres) would reduce the canopy cover to 30-40% within the treatment unit, and therefore would eliminate spotted owl dispersal habitat. Current dispersal habitat occupies about seventy five percent of the 5th field analysis area. The proposed heavy thinning would reduce this amount by one percent to seventy four percent. However, on the actual 21 acres of critical habitat being thinned, the changes to the stand will affect critical habitat components, and as a result, **may effect, and is likely to adversely affect** critical habitat.

Light to moderate thinning would occur in the rest of the units within unsuitable or dispersal-only habitat. When thinning is implemented within dispersal habitat, the maintenance of at least 40% average canopy cover in each treatment unit would retain dispersal-quality habitat in the area but none the less degrade the quality of dispersal habitat. Direct beneficial effects, such as improved habitat quality and quantity, are likely to occur as a result of the thinning but in the short term some impacts to dispersal are anticipated as a result of the light to moderate thinning. As a result the light to moderate thinning proposed **may effect, but is not likely to adversely affect** critical habitat. No cumulative impacts are expected.

Marbled Murrelet

Marbled murrelet use older forest stands generally within 50 miles of the coast for nesting. More commonly, murrelets occupy old-growth forests compared to mixed-age and young forests in California, Oregon, and Washington. Suitable habitat for murrelets includes contiguous forested areas with conditions that support nesting murrelets. These forested areas are generally characterized by large trees greater than 32 inches dbh, multistoried stand, and contain a moderate canopy closure. Contiguous forests are likely to contribute to the conservation of the murrelet by reducing potential for windthrow during storms, provide protection from predation, and provide a landscape that has a higher probability of occupancy by murrelets (USDI 1996). Potential habitat is defined as forested stands that exhibit a forest canopy of 65 to 79 years of age with large remnant trees above the canopy. The most common tree species used for nests in the Pacific Northwest is Douglas-fir. Douglas-fir is the main species used in Oregon, followed by the western hemlock. Individual nest trees include large trees, generally greater than 32 inches dbh with the presence of potential nest platforms or deformities such as large or forked limbs, broken tops, dwarf mistletoe infections, witches' brooms, or other formations providing platforms of sufficient size to support adult murrelets. The diameter of nest branches ranges from 4 to 25 inches (USFWS 1997). Nest platforms are created typically on large branches with moss covering. Nests are typically located in the top third of the tree canopy and usually have a dense overhead canopy, presumably to provide protection from potential predators and weather. This cover may be provided by overhanging branches, limbs above the nest area, or branches from neighboring trees.

Direct & Indirect Effects

Alternative 1 No Action

No change from current condition would occur. There would be “**No effect**” on this species. An indirect and cumulative effect of this alternative is the delayed or non-development of large blocks of late-successional habitat needed by this species for maintenance and expansion of the population. This alternative does not meet the desired goals of the Forest Plan, and in particular the goals described in the *Late-Successional Reserve Assessment for Oregon’s Northern Coast Range Adaptive Management Area*.

Action Alternatives (Alternatives 2 & 3)

The coniferous stands proposed for thinning are neither suitable nor potential marbled murrelet habitat. Heavy, light or moderate thinning would have “**No effect**” on murrelets because these areas do not currently contain any potential nesting structure and therefore are not used by murrelets. No suitable nest trees would be removed and suitable nest trees would be protected by designing prescriptions for forest stands around them within 0.5 mile that: 1) provide protection from potential windthrow, 2) require no openings within one tree length surrounding a potential nest tree, and 3) ensure no damage to any potential nest tree limbs.

Although no surveys have been conducted, there is a high likelihood that the marbled murrelet occurs in the vicinity of the proposed action. Activities within 100 yards of a nest site that result in above ambient noise levels may disrupt reproductive behaviors of murrelets at inland forest sites by causing nest abandonment, aborted feeding visits or significant alteration of breeding success. The closest known recorded location of a murrelet siting that exists within the Project Area, outside of a unit, and is located on the other side of a ridge from the south edge of unit 11 across road 1980, recorded in 1989. Some of the individuals could be negatively affected by treatment activity. Temporary direct effects, such as individual displacement, may occur during operation. Direct beneficial effects, such as improved habitat quality and quantity, are likely to occur as a result of the thinning. Temporary indirect effects, such as increased noise levels, could occur during operation. If the animal is in the treatment areas during implementation, individual marbled murrelet could be temporarily displaced by the mechanical operations. Potential impacts to individuals should not impact overall reproduction and survivability of any populations within the area. No cumulative impacts are expected. Based on this analysis, “**May affect, not likely to adversely affect**” is expected for the proposed action, due to potential disturbance after August 5th.

Marbled Murrelet Designated Critical Habitat

All of the proposed Diamond Peak Project Area lies within critical habitat for the marbled murrelet (OR-02-c), designated in May 1996. The critical habitat rule for the marbled murrelet defined primary constituent elements of marbled murrelet habitat as: 1) individual trees with potential nesting platforms and 2) within one half mile of potential nest trees, forested areas which have a canopy height of at least one-half the site-potential tree height. Due to the age, diameter and growth form of the trees in this area, no Marbled Murrelet constituent habitat elements occur within Diamond Peak Thin units. No CWD would be created from trees along unit edges with whorls or deformities that could support nesting murrelets or that buffer a potential murrelet nest tree.

Direct & Indirect Effects on Critical Habitat

Alternative 1 No Action

No change from current condition would occur. An indirect and cumulative effect of this alternative is the delayed or non-development of large blocks of late-successional habitat needed by this species for maintenance and expansion of the population. This alternative does not meet the desired goals of the Forest Plan, and in particular the goals described in the *Late-Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area*.

Action Alternatives (Alternatives 2 & 3)

As stated in the Habitat Modification B.O., heavy thinning which would occur in unit 11 would reduce the canopy cover to 30-40% within the treatment unit, since only currently unsuitable would be thinned, and the thinning would promote more complex development of critical habitat, the overall impact does not adversely affect critical habitat at the local level over the short and long term. Light to moderate thinning would occur in the rest of the units and all potential nest trees in adjacent stands would be protected from incidental damage and windthrow. Direct beneficial effects, such as improved habitat quality and quantity, are likely to occur as a result of the thinning. No cumulative impacts are expected. Based on this analysis, the proposed action **may effect, but is not likely to adversely affect** murrelet critical habitat.

Sensitive Species

Baird's Shrew

The species is associated with Westside lowland conifer/hardwood forest, Westside oak and dry Douglas fir forests, and montane mixed conifer forests (Johnson and O'Neil, 2001). Important habitat features for this small insectivore include wet meadows, streambanks, marshes and decaying woody material. This habitat type exists within the Project Area.

Direct & Indirect Effects

Alternative 1 No Action

No change from current condition would occur.

Action Alternatives (Alternatives 2 & 3)

Although no surveys have been conducted there is a high likelihood that Baird's shrew occurs in the vicinity of the proposed action. Project design treatments avoid riparian and wet areas by a minimum of 30 feet and greater in some areas providing protection for the species if present. Some individuals however, could be negatively affected by treatment activity. Temporary direct effects, such as displacement, may occur during operation. Direct beneficial effects, such as improved habitat quality and quantity, are likely to occur as a result of the creation of more down woody material. Temporary indirect adverse effects, such as increased noise levels, could occur during operation. No cumulative impacts are expected. Therefore, it is expected that the proposed action would not impact the species viability nor cause the species to be driven closer to Federal listing.

Pacific Fringe-tailed Bat

This species inhabits caves, mines, rock crevices and buildings for hibernation, maternity, and solitary roosts. Little is known about foraging areas, but habitats where they have been documented are salmonberry in proximity to immature conifer (Maser, 1981, p94). They feed predominately on moths

along forest edges, roads, or open areas within the forest. Although no suitable roosting habitat exists within the Project Area, foraging activities can include wide areas, and can't be discounted as occurring within the Project Area.

Proposed treatments could potentially remove habitat suitable for fringe-tailed bat prey species (moths), but at such an indiscernible level that no negative impacts to individual bats or local bat populations are expected to occur.

Direct & Indirect Effects

Alternative 1 No Action

No change from current condition would occur.

Action Alternatives (Alternatives 2 & 3)

Although no surveys have been conducted, there is a high likelihood that Pacific fringe-tailed bat occurs in the vicinity of the proposed action. Some of the individuals could be negatively affected by treatment activity. Temporary direct adverse effects, such as individual and prey displacement, may occur during temporary road construction. Direct beneficial effects, such as improved habitat quality and quantity, are likely to occur as a result of the thinning. Temporary indirect effects, such as increased noise levels, could occur during operations. The proposed actions would alter habitats that this species could forage over, however the planned alteration would promote historic habitats. No negative cumulative impacts are expected. Therefore, it is expected that the proposed action would not impact the species viability nor cause the species to be driven closer to Federal listing.

Pacific Fisher

This species is listed as a candidate for Federal listing with the Fish and Wildlife Service and as such is included on the Regional Foresters Sensitive Species list. This species is closely associated with Westside lowland coniferous forests that contain medium to large diameter trees, snags for denning, and suitable prey habitat of logs and forage species.

Direct & Indirect Effects

Alternative 1 No Action

No change from current condition would occur.

Action Alternatives (Alternatives 2 & 3)

Although no surveys have been conducted, there is a high likelihood that Pacific fisher occurs in the vicinity of the proposed action. Some of the individuals could be negatively affected by treatment activity. Temporary direct adverse effects, such as individual and prey displacement, may occur during temporary road construction. Direct beneficial effects, such as improved habitat quality and quantity, are likely to occur as a result of the thinning. Temporary indirect effects, such as increased noise levels, could occur during operations. The proposed actions would alter habitats that this species could forage over, however the planned alteration would promote historic habitats. No negative cumulative impacts are expected. Therefore, it is expected that the proposed action would not impact the species viability nor cause the species to be driven closer to Federal listing.

Southern Torrent Salamander

This species lives in very cold, clear springs, seeps and headwater streams and is documented in the northern Coast Range south of the Little Nestucca River and the Grand Ronde Valley (Corkran and Thoms, 1996, p53).

Direct & Indirect Effects

Alternative 1 No Action

No change from current condition would occur.

Action Alternatives (Alternatives 2 & 3)

Although no surveys have been conducted, there is a high likelihood that Southern torrent salamander occurs in the vicinity of the proposed action. Project design treatments avoid riparian and wet areas by a minimum of 30 feet and greater in some areas providing adequate protection for the species if present. Some of the individuals could be negatively affected by treatment activity due to noise. Temporary direct adverse effects, such as displacement, may occur during temporary road and landing construction due to noise. Direct beneficial effects, such as improved habitat quality and quantity, are likely to occur as a result of the creation of more down woody material. If the animal is in the treatment areas and outside typical suitable habitat during implementation, some salamanders could be injured by the mechanical operations though this is not anticipated. No negative cumulative impacts are expected.

Table 3-4: Summary of Effects Determinations for PETS species and critical habitat

Common Name	Species	Status	Determinations of Effects		
			Alt 1	Alt 2	Alt 3
Bald eagle	<i>Haliaeetus leucocephalus</i>	Threatened	No Effect	NLAA	NLAA
Northern Spotted Owl	<i>Strix occidentalis caurina</i>	Threatened	No Effect	NLAA	NLAA
N.S.O. Critical Habitat, Heavy Thinning			No Effect	LAA	LAA
N.S.O. Critical Habitat, Light/Mod Thinning			No Effect	NLAA	NLAA
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	Threatened	No Effect	NLAA	NLAA
M.M. Critical Habitat			No Effect	NLAA	NLAA
Baird's shrew	<i>Sorex bairdii</i>	Sensitive	No Impact	No Impact	No Impact
Pacific fringe-tailed bat	<i>Myotis thysanodes vespertinus</i>	Sensitive	No Impact	No Impact	No Impact
Pacific fisher	<i>Martes pennanti</i>	Candidate	No Impact	No Impact	No Impact
Southern torrent salamander	<i>Rhyacotriton variegatus</i>	Sensitive	No Impact	No Impact	No Impact

Survey and Manage Species

Pre-disturbance surveys and management of known sites required by protocol standards to comply with the 2001 Record of Decision and Standard and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measure Standards and Guidelines (as the 2001 ROD was

amended or modified as of March 21, 2004) were completed for the Diamond Peak Thin. Diamond Peak Thin also complies with any site management for any Category B, D, and E species as identified in the 2001 ROD (as modified).

Vertebrates

The only Survey and Manage vertebrate on the Siuslaw National Forest is the red tree vole (*Abrorimus longicaudus*). Its habitat association is mature and old growth conifer forests. No habitat is found within the area.

Mollusks

There are two species of survey and manage mollusks on the Siuslaw National Forest. They are Puget oregonian (*Crytomastix devia*), and evening fieldslug (*Deroceras hesperium*). The Puget oregonian inhabits mature to late successional moist forest and riparian zones, under logs, in leaf litter, around seeps and springs, and often associated with hardwood debris and leaf litter and/or talus. It is often found under or near big-leaf maple and may be under sword-fern growing under these trees, or on the underside of big-leaf maple logs. The evening fieldslug is associated with wet meadows in forested habitats in a variety of low vegetation litter and debris; rocks also may be used. Little is known about this species and its habitat. There is no suitable habitat for *Crytomastix*, or *Deroceras*, therefore no surveys are needed.

Management Indicator Species

Siuslaw National Forest Plan (USDA 1990) MIS species are those that represent a larger group or guild of species that are thought to be indicators of habitat change. The MIS species on the Siuslaw Forest include American marten for mature older age stands, northern spotted owl for old growth conifer communities, pileated woodpecker for large snags and defective trees, primary cavity nesters (i.e. downy and hairy woodpeckers, red-breasted sapsucker, flicker, and red-breasted nuthatch) for small to medium size dead and defective trees, ruffed grouse for hardwood and deciduous mixed habitats, Aleutian Canada goose, bald eagle, brown pelican, Oregon silverspot butterfly, peregrine falcon, Roosevelt elk, and Western snowy plover.

Effects to MIS from the proposed action include: The proposed action occurs outside mature forest stands, management activities are not expected to have negative impacts on local populations or habitats of American marten or pileated woodpecker, which have been identified to indicate health of late and old growth forests. Primary cavity nesters and ruffed grouse and elk may be temporarily displaced by the disturbance activities of the mechanical operations but are not expected to abandon the Project Area. Beneficial effect is expected to occur as more snags would be created. Aleutian goose, brown pelican, Oregon silverspot butterfly, peregrine falcon and Western snowy plover occur outside the project area.

Neo-Tropical Migratory Birds (Land Birds)

Landbirds, including migrant and resident species, are those that generally use terrestrial and wetland habitats. Habitats these species could be found using include forest canopies, snags, understories, ground vegetation/structure, existing openings and a wide variety of structural types and successional stages. Some landbirds expected in the Project Area include olive-sided flycatcher, tree swallow, Swainson's thrush, varied thrush, winter wren, warbling vireos, and purple finches. Impacts to landbirds can come from either disturbance or habitat alteration or both. Impacts from disturbance are due to activities above normal ambient levels proximate to nesting or feeding areas. Alternative 1 would have

no disturbance impact on any landbirds because no activities are planned. Alternatives 2 & 3 have planned activities that could occur during the later portions of the breeding season for some species that would potentially be proximate to nesting and feeding sites. Since the planned activities would occur during the later part of the nesting season, and many of these species nest multiple times over the spring-summer period, only the very last nesting would potentially be disturbed allowing for at least one or possibly two clutches to be successful even during years of disturbance. Disturbance from flushing from feeding sites would have far less potential impact to landbirds than nesting disturbance. Feeding birds have much greater flexibility to locate and feed elsewhere when contrasted with fixed nest location. Overall, the number and location of alternative feeding sites in the geographic area described above further reduces the likelihood of actually incurring any measurable feeding disturbance.

Impacts to landbirds would also come in the form of habitat alternation. All alternatives would impact landbirds. The thirty three to fifty year old managed stands are dense, even-aged stands. The number of stems per acre range is 180 to 243. The trees are tall and thin, have relatively uniform bole diameters, and have few branches over one inch in diameter. These stands, typically have 85 to 95 percent crown closure, very little light reaches the forest floor, or the understory. The understory typically contains salmonberry, sword fern, huckleberry, Oregon grape and salal. Alternative 1 would impact landbirds that are adapted to a more open canopy and larger diameter trees. Alternative 2 & 3 would impact existing species associated with closed canopy and high density trees per acre. Landbirds that found an ecological niche in a more open habitat with smaller diameter trees would benefit from the action alternative. Landbirds that have specialized in only tightly closed canopy, small diameter trees, would be adversely impacted by the action alternative.

One neotropical bird has declined as evidenced by recent monitoring (Nott, et. al. 2005) and warrants specific attention. The Western flycatcher (*Empidonax difficilis occidentalis*) has declined significantly ($0.01=P<0.05$) at one or more monitoring stations. The suggested reason for the decline (Nott, et. al. 2005) is stated as:

“Our results strongly suggest that “Western” flycatcher is sensitive to proximal edges (i.e. patch size) of coniferous habitat. It may be sensitive to increased risks of nest predation and parasitism. The number of young and reproductive success are higher at those stations associated with a high total core area of coniferous forest habitat totaling 72% of the landscape. Large tracts of old-growth forest (large core areas of coniferous forest) and dry-upland and riparian sites (thinner canopy and some mixed habitats) are beneficial to the reproductive success of “Western” flycatchers.”

Given the above description of what is understood to be the cause of decline in Western flycatcher abundance (loss of large contiguous blocks of mature/old growth conifer habitat) and the minimal if any effect the proposed action would have on conditions causing Western flycatcher declines, there are no impacts to Western flycatchers anticipated due to the proposed action.

Since the project would occur during the land bird nesting season, there is potential for nesting disruption or harm to young of the year. However, due to the small number of individuals that might be impacted, negative impacts to local populations of land birds within the drainage are not expected. No intentional take of migratory birds would occur under this project.

Cumulative Effects

The Windjammer Project area shares the Lower Drift (Siletz) 6th field sub-watershed with the Diamond Peak Project area. The timing of implementation of these projects may overlap over several seasons. Overlapping haul routes are not planned because the Windjammer Project is projected to haul along the 1700 Road toward State Highway 101 and the Diamond Peak Project is projected to haul along this road in the opposite direction toward State Highway 18, and via the 1900 Road. The Forest Service is conducting thinning sales within previously harvested plantations for terrestrial and aquatic habitat enhancement and the low impact of this type of activity should result in no cumulative effects because both of these projects have very similar Design Criteria and Mitigations.

Fish

Introduction

The following information is summarized from the *Fisheries Biological Evaluation for Diamond Peak Project, February 3, 2006*. The Diamond Peak Project occurs within the area covered in the Drift (Siletz) Watershed Analysis (September, 1996). The area lies between the drainages of the Salmon River and Siletz River and drains into Siletz Bay. The Project Area is located in the Drift (Siletz) 5th field Watershed and the proposed actions would occur in portions of four 6th fields (Lower/Drift Siletz, Upper Drift/Siletz, Lower Siletz, and Lower Salmon/Bear). The analysis area is the Drift (Siletz) 5th field Watershed and consists of 48,000 acres which drain to the Pacific Ocean. The eastern part of this area is composed primarily of forest land of mixed federal and private ownership.

Existing Condition and Trends

The following table gives an estimated number of gravel-surfaced haul route crossings of perennial and intermittent stream crossings by 6th field watershed for the Diamond Peak Project.

Table 3-5

6 th Field Sub-watershed	*Perennial Crossings	*Intermittent Crossings	Total Crossings
Lower Drift/Siletz	2	5	7
Upper Drift/Siletz	1	0	1
Lower Siletz	2	3	5
Lower Salmon/Bear	0	0	0

*Developed from the Forest GIS database and field review.

Table 3-6: This section discusses the effects of the alternatives on the following fish species:

Common Name	Species	Status	EFH*
Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	Sensitive Species	X
Chum Salmon	<i>Oncorhynchus keta</i>	Sensitive Species	X
Coastal Steelhead	<i>Oncorhynchus mykiss</i>	Sensitive Species	
Coastal Cutthroat Trout	<i>Oncorhynchus clarki clarki</i>	Sensitive Species	
Coho Salmon	<i>Oncorhynchus kisutch</i>	Management Indicator, Sensitive Species	

*EFH-Essential Fish Habitat, as established by the Magnuson-Stevens Act (MSA), is defined as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.

Direct and Indirect Effects

Alternative 1 No Action

In this alternative, none of the managed stands in the project area would be treated to control density, and no riparian treatments would be done. This alternative does not meet the purpose and need to

maintain or improve habitat for aquatic species in the area by accelerating the development of late-successional forest habitat and by improving watershed conditions. Streams would likely remain deficient in Large Woody Debris (LWD) in the short term.

The Drift (Siletz) Watershed Analysis has identified degraded Fish Habitat as one of the Issues (3.3 p17) in the basin. The lack of LWD is a key component in this degraded habitat (Lower Siletz River/Drift Creek WA Issue 5.2 and Table 7.9-2). This lack of LWD could also be a root cause for the lack of pool structure in the streams. The delay in the development of large conifers would extend the duration of the LWD deficiency.

Alternative 2 Proposed Action

The project design criteria shall minimize the possibility of sediment impacting the spawning and rearing areas for the fish species listed below and also preclude adverse effects upon water quality and other aquatic habitat in the watershed.

Salmonids (Coho, Chinook, and Chum Salmon; Coastal Steelhead and Coastal Cutthroat Trout)

Coho salmon utilize the watersheds within the Diamond Peak Project area for both spawning and juvenile rearing. Fall Chinook salmon utilize the Siletz and Salmon watersheds for spawning and rearing. The project activities are occurring in the forested upper portions of the Lower Siletz River/Drift Creek watershed.

In freshwater, Coho salmon need clean gravel for spawning, cool temperatures, and suitable habitat for about 16 months of freshwater rearing. Ideal rearing conditions include off-channel rearing habitat, and pools with complex LWD. Coho numbers in the Oregon Coast have been depressed, but are showing signs of recovery. Coho are present in the Lower and Upper Drift, Lower Siletz, and Lower Salmon/Bear 6th fields.

Adult Fall Chinook spawn in the late fall in the mainstems of the streams in the basin. The eggs incubate in the gravel and in the spring the young migrate down to the Siletz estuary. The young reach the estuary by early summer and then spend the summer rearing in the estuary. Spring Chinook salmon, which exhibit different run timing, also exist in the Lower Siletz 5th field watershed, but not in the Lower Siletz River/Drift Creek 6th field watershed.

Chum salmon utilize the lower Siletz and Salmon watersheds for spawning. This area is on the southern fringe of the range of chum salmon. Chum salmon spawn in late fall and the juveniles migrate immediately upon emergence. They spend about two weeks in the estuary and then migrate into the ocean. The project activities are occurring in the forested upper portions of the Lower Siletz River/Drift Creek watershed. Therefore, adverse impacts to chum habitat are unlikely.

Coastal Steelhead and Cutthroat trout of all life history stages can be found in the project area at various times. Coastal Cutthroat trout have a complex life history pattern including both resident and anadromous populations. Steelhead and Cutthroat utilize these watersheds for both spawning and juvenile rearing. In freshwater, steelhead and Cutthroat need clean gravel for spawning, and cool temperatures. Ideal conditions include off channel rearing habitat, and pools with complex LWD.

The goal of the Diamond Peak Project is to accelerate the development of Late Successional habitat. This will facilitate the development of large trees in the riparian and upslope areas to increase the potential supply of future LWD. In the long term, this instream LWD recruitment should lead to improved habitat for Salmonids by helping to create off-channel areas and complex pools, among other beneficial functions. The project is designed to minimize the possibility of sediment impacting Salmonid spawning and rearing areas by suspending activities that may result in significant sedimentation of these areas, such as those occurring during periods of heavy rain (especially the few actions occurring in relatively close proximity to EFH, see Table 6). The project is also designed to preclude adverse effects of increasing water temperatures in the watersheds by designating non-harvested buffered areas that provide shade and thermal protection. Equipment operations will be actively monitored and any associated spills will be immediately contained and decontaminated. With these design measures, direct impacts involving contamination or physical disruption of Salmonid habitat is expected to be minimal and negligible.

Alternative 3 No New Temporary Roads

This alternative differs from the proposed action in that no new temporary roads would be constructed. This would affect portions of units 4, 5, 6, 7, 8, 9, 13, and 16 totaling about 45 acres. The only treatment of these areas would be to create about 10 snags and cut 10 trees for down wood per acre. The other commercial units that have existing access, including NFS roads and existing temporary roads, would be treated as described in the proposed action alternative.

Effects of this alternative would be similar to the effects of the proposed actions due to the similarity of the actions. The effects would be less due to the smaller amount of road activity. The lack of road building eliminates any possibility of mobilizing sediment from construction activities. This alternative would move the area towards Late Successional characteristics, but at a slower rate due to the smaller acreage thinned.

Cumulative Effects

This project proposes to thin five percent (about 347 acres) of the 19,722 acre Lower Siletz River/Drift Creek 5th field Watershed, including 1.62 acres of the 9,219 acre Lower Siletz River 6th field sub-watershed. National Forest land composes 59% of this watershed. The Windjammer Project area shares the Lower Drift (Siletz) 6th field sub-watershed with the Diamond Peak Project area, with multiple units in each project adjacent to North Creek and Drift Creek. The closest instream distance between a hydrologically connected (directly adjacent to a stream) unit of each project is about 0.5 mile. The timing of implementation of these projects may overlap over several seasons. Overlapping haul routes are not planned because the Windjammer Project is projected to haul along the 1700 Road toward State Highway 101 and the Diamond Peak Project is projected to haul along this road in the opposite direction toward State Highway 18, and via the 1900 Road. The Forest Service is conducting thinning sales for habitat enhancement and the low impact of this type of activity should result in no cumulative effects because both of these projects have very similar Design Criteria and Mitigations such as small relative acreages of ground-based activity and non-harvested buffered riparian areas to minimize adverse effects.

Essential Fish Habitat (EFH) Assessment

The Diamond Peak Project area contains EFH for coho and Chinook salmon, as described by the Magnuson–Stevens Act (MSA). Currently, this EFH is considered to be the same as coho distribution, as determined by the StreamNet database, and extends downstream from the uppermost reaches of

distribution to the Pacific Ocean. The project is designed to avoid adverse impacts on this habitat by minimizing disturbance to water quality and riparian habitat. Design measures include, but are not limited to: designation of non-harvested buffered areas that provide shade and thermal protection; suspension of activities that may result in significant sedimentation of these areas, such as those occurring during periods of heavy rain (especially the few actions occurring in relatively close proximity to EFH, see Table 7); and ensuring that any spills associated with equipment operations are immediately contained and decontaminated. Direct impacts involving contamination or physical disruption, such as possible sedimentation and water temperature increases are expected to be minimal and negligible. Indirect impacts such as a loss of prey or reduction in species fecundity are not expected to occur as a result of the proposed action. Other fish species utilizing this EFH are not expected to be adversely impacted by these activities.

Table 3-7. Closest estimated instream distance from unit boundaries and semi-permanent (temporary) road construction to Essential Fish Habitat, as determined from the Diamond Peak Project area GIS map based on StreamNet distribution of Coho. Currently, an EFH distribution map is unavailable.

Unit No.	Unit Boundaries to EFH (miles)	New Semi-Permanent Roads to EFH (miles)
1	1.70	
2	1.24	
3	1.38	
4	2.12	2.26
5	2.27	2.35
6	1.97	
7	1.18	1.45
8	0.10 (545 ft.)	0.49
9	0.70	0.90
10	0.70	
11	0.58	
12	0.35	
13	0.32	0.54
15	0.28	
16	0.54	0.55

The Diamond Peak Project area does not contain EFH for Pacific coast groundfish or coastal pelagic species, as designated by the MSA, and the proposed actions would not affect these areas.

Heritage

The following information is summarized from the *Pre-project Heritage Resource Inventory of Diamond Peak Project, February, 2005* report. For the proposed commercial thinning, and under planting, no cultural or historic sites were found in the commercial thin units by surveys conducted in 2004 and 2005. Surveys for road stabilization or new construction, are not needed because the sites have been previously disturbed.

Project implementation would cease if any cultural resource sites were located. Documentation, evaluation, and consultation with the Oregon State Historic Preservation Officer (SHPO) would be

required for the archaeological property before ground-disturbing activities would be allowed to proceed in the Project Area.

Economics

This section focuses on the money that may be generated from the commercial harvest and how this action may benefit the local communities and counties, and the road decommissioning costs. The information is a summary of the *Diamond Peak Economic Analysis, March, 2006*. For the commercial harvest, two harvest systems are planned: Skyline (cable) and ground based systems. In general, ground based system harvesting is the most cost efficient.

The wood manufacturing industry, including acquiring raw materials, is an important source of employment and income for residents of Lincoln County. These jobs, typically, pay a higher rate than the average and provide a way of life. Typically, commercial thin projects such as the proposed action are purchased by local industries and provide year around or nearly year around employment. In addition to predicted economic benefits, there are future monetary benefits that cannot be calculated in the present. For example, fisheries and riparian enhancement projects would affect the local economy by providing increased numbers of fish and wildlife, which would result in more recreational use of the area. It is also extremely difficult to establish a value of some of the project's direct and indirect benefits and costs (i.e. the value of providing habitat for nesting marbled murrelets)

For the purpose of this analysis, three factors would serve as indicators to compare the economic effects of the alternatives:

1. Acres Treated - Numbers of acres treated.
2. Volume harvested - The total volume being harvested.
3. Revenue generated—that includes a discussion of the net gain or loss that may occur.

Alternative 1

No revenues would be generated to fund programs such as forest road maintenance, watershed enhancement projects. Approximately 6 MMBF (million board feet) of timber, in need of thinning, would be unavailable to aid in meeting the public demand for wood products. In addition, loss of potential growth by not treating these forest stands would contribute to a future loss of federal timber receipts. In addition, approximately \$130,000.00 invested by the Forest Service for planning, public scoping, and environmental analysis would be lost.

Action Alternatives (Alternatives 2 & 3)

Alternative 2 would commercially thin about 347 acres and alternative 3 would commercially thin about 302 acres and yield approximately \$773,000 gross revenue. The estimated total costs are \$394,107. The estimated net gain of \$378,893 could be used for other watershed enhancement projects, road closures and NFS road improvements. The economy of the local area would also benefit by opportunities for employment.

Air Quality

Smoke emissions from slash burning would result in short term effects to visibility within the immediate proximity of the piles and to a lesser degree down wind. Initially smoke would be lofted up by

convective heat and be transported out of the area by wind currents. The effects of these emissions would depend largely on transport winds and mixing heights. These factors are analyzed daily and approvals to and burning instruction are issued by the Salem Smoke Management Office.

All burning activities would adhere to the requirements of the Federal Clean Air Act for the Prevention of Significant Deterioration and comply with the Nation Ambient Air Quality Standards, and visibility protection. Smoke production would not exceed PM10 emissions level described in the State Implementation Plan of the Oregon Smoke Management Plan. Dust from traffic associated with the proposed actions may temporarily decrease air quality.

Recreation

Introduction

For discussion purposes, recreation is divided into three categories: Developed, Dispersed and Wilderness/Roadless. Developed recreation examples are campgrounds, trails and trailheads, ski areas etc. Dispersed recreation includes those numerous activities that occur outside developed recreation sites. Examples are camping outside developed campgrounds, sightseeing, rock climbing, hunting, fishing, gathering special forest products etc. Wilderness areas are areas set aside by Congressional action. These areas are typically large primitive areas with limited access. Dispersed recreation activities can occur in these areas. Most do not have developed facilities within them. Roadless Areas may contain wilderness characteristics, but have not been officially designated by Congress. Typically, they are a Management Area in Forest Plans. The Forest Plan determines whether these areas should be recommended for wilderness designation. In the Diamond Peak Project Area there are no developed recreation sites, Wilderness or Roadless Areas. The characteristics of the Project Area were reviewed during the various Roadless Area reviews and determined not to have the characteristics of Roadless Areas. No developed recreation sites are planned for this Area.

Existing Condition and Trends

Paved state and county roads provide access to the Diamond Peak Project Area. This plus the relatively good condition of paved NFS road 17 and the other Key NFS roads make the Area relatively easy to access by a variety of vehicles.

The factors that affect recreational use in the area are weather, condition of roads, and the type of activity. Types of activities include a variety of dispersed recreation activities, one developed trail system, Drift Creek, and one organizational camp. Presently, the existing open Forest road system makes about thirty percent of the area accessible for dispersed recreation activities. This estimate assumes that most activities are restricted to within an average of 200 feet of the roads, due to the steep, brushy terrain that limits cross-country or off road travel.

The amount of use and quality of the recreation experience is difficult to quantify, because of the variety uses that occur in the area. However, several patterns are evident:

- Most of the use occurs during the summer and fall months. However, the Drift Creek trail system and the camp see use year around. Dispersed camping occurs on or along most of the open Forest roads. Most of this use is centered around fishing in Drift Creek and hunting along NFS roads 1700 and 1900.

- The conditions, maintenance and location of the roads greatly influences dispersed recreational uses, use of the Drift Creek and the organizational camp. The relatively good condition of the Key NFS roads allows a variety of vehicles to use them. The 17 Road for example is in good enough condition for passage by trucks towing trailers, and cars. The Maintenance Level 2 and those Maintenance Level 1 roads that are not closed are, generally, only passable by two and 4-wheel drive high clearance vehicles. ATVs and motorcycles can use most of the open roads in the area. The extensive road system and its condition provide the opportunity for people to find some solitude.
- Climate and terrain influence the conditions of the roads in the Area. Due to high amounts of the rainfall, steep slopes with unstable soils, requirements to protect aquatic and wildlife resources and rapid growth of vegetation the roads need regular maintenance.
- The demand for recreational opportunities is expected to increase an estimated 1 to 2 percent per year on the Siuslaw National Forest. Exactly how much this affects the Diamond Peak Project Area is not quantifiable.

Direct and Indirect Effects

The amount and kinds of recreational uses that may occur in the Project Area is directly related to the amount and condition of the NFS roads.

Alternative 1 No Action

In this alternative, NFS roads would be maintained as available funds allow. It is expected that some of the roads would close due to rapid vegetation growth as there is not enough funds to maintain all of the drivable NFS roads in the Project Area. The Key NFS roads should receive some maintenance, but there may not sufficient funds to maintain them to existing condition in the long term. As roads become closed some recreational opportunities would be reduced. Exactly how much is not quantifiable because it is impossible to determine which roads would close or to what extent, and what influence this would have.

Action Alternatives (Alternatives 2& 3)

The effects of these alternatives are about the same as the No Action alternative. There may be slight improvement in the condition of those NFS roads used for timber haul as some of the funding from the commercial sale(s) would be used to maintain these roads in their present condition. Additional funds may available from these sale(s) to make slight improvements in these roads. These improvements may include replacing old culverts, cleaning drainage ditches and resurfacing the some of the gravel travel surfaces.

Cumulative Effects

The cumulative effect on recreation over time depends how many drivable NFS roads become closed. It is expected that amount drivable NFS roads would decrease over time. Exact amount of this decrease or its total effects are difficult to quantify as it is uncertain which roads would become closed.

Fire and Fuels

The following information is summarized from the *Fire and Fuels report for the Diamond Peak, June 6, 2005*. This report is located in the Diamond Peak Project analysis file. The fire occurrence in the sale area is relatively low, but the potential for a very damaging wildfire does exist when conditions are

right. The highest potential for ignition is the human factor, for example fires are more likely to be started by recreational users of the forest, commercial activity, and arson. Most if not all lightning is accompanied by a significant amount of rainfall, sufficient to reduce the probability of wildfire ignition.

Direct and Indirect Effects

Alternative 1 No Action

In this alternative no thinning would be done. The closure, over time, of some of the NFS roads may hinder fire management and suppression actions if there is a fire.

Alternative 2 Proposed Action

Thinning in the managed stands would result in an increase of fuels on the forest floor from the harvest activities. The fuels are expected to decay over time, decreasing the risk of wildfires. Past thinnings have had a window of three to four years in which the stand is capable of supporting a surface fire. The expected amount of logging slash and coarse woody debris created would be low to moderate.

Typically, thinning slash levels are sufficient to support a surface fire for several years following harvest. In addition, with the reduced overhead canopy the brush is likely to increase growth, which adds to the live fuel loading. Similarly, as the canopy is opened up, dead fuels, duff, and surface vegetation would be dried out, lowering the fuel moisture and increasing the flammability.

Fire behavior coming from these types of fuel loadings under dry late summer time conditions, would put off fireline intensities and flame lengths that would most likely be beyond the capability of direct attack by initial attack resources.

Since human caused fires are the primary ignition source in the sale area the main travel routes (secondary low clearance) would be the focus for hazard abatement. This project is not adjacent to any secondary low clearance roads therefore a 50 foot fuel break will not be needed. The units adjacent to secondary high clearance roads will require a 33 foot fuel break. These areas in Unit 9 along the 1980 road, Unit 11 along the 1958 road and Unit 5 along the 1784 road will require a 33 foot fuel break. Such fuel breaks can be created by hand piling and burning the piles. In some instances where travel routes have activity fuels on both sides of the road, the fuel breaks will also be needed on both sides of the road. This effectively doubles the amount of treatment acres. Such fuel breaks can be created by hand piling and burning the piles. If there are piles on the landings they will be burned.

Alternative 3 No New Temporary Roads

In this alternative about 45 acres would not be thinned. Therefore, the effect of this alternative is somewhat less than the Proposed Action alternative.

Cumulative Effect

The highest risk of an unplanned ignition would occur when the thinning slash is present near drivable NFS roads. The highest risk would occur if all the units were thinned in the same year or two. However, this is not the case. These thinnings are planned to occur over a 5 to 7 year period which lessen the risk over time. Also, the risk is reduced further by piling and burning the slash along these NFS roads. The cumulative effect of the NFS roads closing over time is not quantifiable.

Expected fire intensity is likely to be higher as the fuel loading is increased. As a result, cumulative impacts to other resources would also increase with higher fire intensities. There could be damage to soils by burning off nutrients and organic matter, which would increase the potential for overland flow. The severity of the damage is directly linked to the intensity of the fire.

Accomplishing activity fuel treatment projects in the units adjacent to major travel routes would reduce the threat to wildfire as would additional fire prevention, warning signs, and a higher emphasis during fire watch and patrolling while interacting with the public.

Environmental Justice

The action alternatives were assessed to determine if there would be a disproportionately impact to minority or low income populations, in accordance with Executive Order 12898. The area that may be influenced by the proposed activities is Lincoln County, Oregon. Based upon census information from the State, Native Americans are the only minority group in these counties whose population level is higher than the state average. They were contacted about the proposed activity during the scoping process. They did not comment on the project. Since these activities are small in size and duration, it appears that Native Americans would not be adversely affected.

The poverty level in Lincoln County, based upon State information, is above the state average. This means the number of families in the county that have incomes below the state's poverty level is higher than the state's average. These activities if done may provide some employment to these families. However, the effects would be temporary, because these activities are small in size and duration.

Unavoidable Adverse Effects

Implementation of any alternatives may result in some adverse environmental effects. The severity of the effects can be minimized by adhering to the Design Criteria listed in Chapter 2, Forest Plan Standards and Guidelines and Best Management Practices. If management activities occur, however, some effects cannot be avoided. Even the No Action alternative has effects.

Cultural Resources

There is no assurance that every cultural resource site would be located in advance of all planned management activities. Some ground-disturbing activity may affect an undiscovered historic or prehistoric site. Sites discovered in this manner would be immediately protected from further disturbance.

Wildlife

Some disturbance may occur due to activities occurring during the murrelet and spotted owl nesting seasons. The continual use of open NFS roads may disturb some wildlife species. The quantity and quality of late-successional habitat may be reduced due to delayed development and/or no change in stand structure of those young managed stands that are not treated.

Air Quality

Temporary seasonal effects on air quality are unavoidable under any of the action alternatives, due to dust from traffic associated with them and smoke from burning slash piles. These effects would be temporary.

Soil Resources

Under the action alternatives, some soil displacement and compaction is expected due to road stabilization, temporary road construction, hauling logs on roads, maintenance of open NFS roads and ground based equipment.

Relationship between Short-Term Use and Long-Term Productivity

Short-term uses are those uses that generally occur annually. Long-term productivity refers to the ability of the land to produce a continuous supply of a resource.

Soil Resources

As described in the Soil Resource section of this chapter, proposed activities would result in a decrease in long-term soil productivity for areas where soil is compacted or heavily disturbed. Over time productivity is expected to increase as compaction is reduced and stand treatments improve vegetation growth.

Water Quality

The results of effects analysis indicates that stream channel conditions are expected to be protected, and quality is not expected to be impacted by proposed activities. Short-term effects may occur as described in the Water Quality section of this chapter, however no long term impacts are expected, and the trend on NFS land over time is expected to improve.

Wildlife

Short term—May be disturbance of nesting, and/or fledging murrelets and/or spotted owls by commercial thin activities are anticipated to occur for about 10 years once the operations begin. Long term development of late-successional habitat should improve murrelet and spotted owl habitat. If the young managed stands are not treated, late-successional “productivity” would be delayed and may not occur.

Vegetation

Harvest of timber would reduce snag and down recruitment in the smaller size classes for several decades in return for speeding up recruitment in the larger size classes and the potential for these stands to be occupied by the northern spotted owl and murrelets sooner.

Irreversible and Irretrievable Commitments of Resources

An irreversible commitment of resources refers to the loss of production or use of a resource due to a land use decision that once executed cannot be changed. An irretrievable commitment of resources applies to losses of production or use of renewable resources for a period of time.

Soil Productivity

Soil compaction and erosion caused by road building and by timber ground based harvest operations could reduce soil productivity. The time lost in this state of lower productivity is irretrievable, but the soil resource can be rebuilt over long periods of time. None of the alternatives would result in an irreversible commitment of this resource.

Vegetation

Timber harvest would change plant succession, stand development, and species composition. If some of the stands are not treated, the time lost for them to develop late-successional characteristics is irretrievable. If the stands are damaged or destroyed, the time lost for replacement is irretrievable.

Cultural Resources

Any activity that disturbs a cultural resource may be an irreversible and usually irretrievable commitment of these resources.

Other Disclosures

- None of the alternatives would affect minority groups, women, and consumers differently than other groups. These groups may benefit from employment opportunities and by-products that proposed actions will provide; the no-action alternative would have neither adverse nor beneficial effects. None of the alternatives adversely affects civil rights. All contracts that may be awarded as a result of implementation would meet equal employment opportunity requirements.
- None of the proposed actions will affect known prehistoric or historic sites because no new disturbance on previously undisturbed ground is expected. As outlined in the American Indian Religious Freedom Act, no effects are anticipated on American Indian social, economic, subsistence rights, or sacred sites.
- No adverse effects on wetlands and flood plains are anticipated; and no farm land, park land, range land, wilderness, or wild and scenic rivers will be affected.
- This environmental assessment is tiered to the Siuslaw Forest Plan FEIS, as amended by the Northwest Forest Plan, and is consistent with those plans and their requirements.
- The proposed project is not in or adjacent to an inventoried roadless area.
- None of the proposed actions are expected to substantially affect human health and safety.
- Proposed activities are consistent with the Clean Air Act because effects from activities such as log hauling (dust) and prescribed burning are localized and short-term.
- Because of the design criteria to be applied, this project is expected to be consistent with the Clean Water Act.
- The proposed project is not expected to measurably affect global warming. The USDA Forest Service will continue an active leadership role in agriculture and forestry regarding the reduction of greenhouse gas emissions (Joyce and Birdsey 2000).
- These actions do not set a precedent for future actions because they are similar to actions implemented in the past.

Chapter 4 Agencies and Persons Consulted

Introduction

As described in chapter 1, public comment on the proposed action was solicited through letters, local newspapers, and the Siuslaw National Forest's quarterly "Project Update" publications. The results of specific consultations are summarized below.

Federal Agencies

US Fish and Wildlife Service

The US Fish and Wildlife Service (FWS) is responsible for the wildlife species listed under the Endangered Species Act. Listed species that may occur in the project area include the bald eagle, northern spotted owl, and marbled murrelet. The Forest Service is responsible for supporting recovery of these species, and meets this obligation by working with the FWS through a required consultation process and by implementing their terms and conditions. These terms and conditions are included in appendix A. Consultation for this project is completed, and the FWS concurred with our finding that this project will not jeopardize the continued existence of the bald eagle, northern spotted owl, or marbled murrelet (FWS references: 1-7-05-F-0005 and 1-7-05-F-0664).

Local Confederated Tribes

The Confederated Tribes of Siletz, and the Confederated Tribes of the Grand Ronde Community were informed of the Project's proposed actions during the initial public-notification process. No comments on the proposed actions were received from them.

State of Oregon

All proposed actions were evaluated under the programmatic agreement (2004) with the State Historic Preservation Office (SHPO). No further consultation with SHPO was needed.

Oregon Department of Forestry, and Oregon Department of Fish and Wildlife were notified about the proposed project. No comments were received.

Local Governments

City Manager of Lincoln City; county soil and water districts; were notified, with no responses.

Watershed Councils

Members of the Salmon Drift watershed council were contacted. The project was discussed during the general meeting in October and at least two technical-team meetings. Project support was expressed by the group.

List of Preparers

Forest Service Interdisciplinary Team

Nathan Pearson	Hebo RD, Siuslaw NF	Fuels/Fire Management
Janet Moser	Hebo RD, Siuslaw NF	Wildlife/Team Leader/EA Writer
Kami Ellingson	Hebo RD, Siuslaw NF	Soils/Hydrology
Brent Erskine	Hebo RD, Siuslaw NF	Team Leader/ EA writer/ Recreation
Wayne Patterson	Hebo RD, Siuslaw NF	Silviculture
Dan Johnson	Hebo RD, Siuslaw NF	Logging Systems/Economics
John Casteel	Hebo RD, Siuslaw NF	Fisheries
Jason Wilcox	Hebo R.D, Siuslaw NF	Fisheries
Doug Shank	Sweet Home RD, Willamette NF	Soils/Geology
Ken McCall	Supervisor Office, Siuslaw NF	Transportation Planner
Maurice Jeffries	Hebo RD, Siuslaw NF	Sale Administrator
Donald Clauson	Hebo R.D., Siuslaw NF	Cultural Heritage
Dan Segotta	South Zone, Siuslaw NF	Botanist
Martin Stein	South Zone, Siuslaw NF	Botanist
Pat Babcock	Supervisor Office, Siuslaw NF	Sale appraisals

Additional support and review provided by:

Frank Davis	Supervisor Office, Siuslaw NF	NEPA Coordinator
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Appendix A: Public Comments to Scoping Document Summary Table

Project Name: Diamond Peak

Name/Address	Disposition of Comments	
<p><i>Letter No. 1</i> Jack Booth 861 Three Rocks Road Otis, OR 97638-9635</p>	<p>Go for it</p>	<p>Not a significant issue. This is a comment.</p>
<p><i>Letter #2</i> Kernville Gleneden Beach- Lincoln Beach Water District Mark Snyder, Superintendent P.O. Box 96 Gleneden Beach, OR 97388 Ph: (541) 764-2475 Ph: (541) 764-2459</p>	<p>The concern of the KGBLB water district is the protection of the Drift Creek Watershed. It appears that the riparian areas will receive adequate concern and protection.</p>	<p>Not a significant issue. This is a comment.</p>
<p><i>Letter #3</i> Or.Natural Resources Council P.O. Box 11648 Eugene, OR 97440 Ph: 541-344-0675 Fax: 541-343.0996</p>	<ol style="list-style-type: none"> 1. In general ONRC supports thinning that enhances forest health. In Late Successional Reserves we support variable density thinning of these young stands if there is no road construction. 2. In young stands in Riparian Reserves, we support thinning activities that enhance the development of trees of trees to shade streams or become sources of coarse woody debris, as long as these activities do not result in yarding corridors, roads or other yarding activities impacting water quality and aquatic habitat. 3. Please be sure your objectives include controlling the spread of invasive weeds and reducing populations of these weeds. 4. Reducing fuel loads where thinning activities create slash, especially near roads will be important as well. 	<p>An alternative that proposes not to construction the proposed temp roads is in the EA</p> <p>Not a significant issue. Project designed so there would be minimal effects to water and aquatic habitat.</p> <p>Mitigation included in the EA. Not a significant issue</p> <p>Mitigation included in the EA. Not a significant issue.</p>

Letter #3(cont)
Or.Natural Resources
Council
P.O. Box 11648
Eugene, OR 97440
Ph: 541-344-0675
Fax: 541-343.0996

5. **Roadless/Wilderness Areas and Road Building Issues:** Avoid timber harvest, roads, mining, development and motorized recreation in roadless areas ≥ 1000 acres or any roadless area adjacent to existing wilderness or parks and all inventoried roadless areas. The EA/EIS should clearly state whether the project is in any portion of a roadless area inventoried during the RARE II process, or in a non-inventoried roadless area \geq acres or adjacent to inventoried roadless or designated wilderness. A full EIS should be prepared for this project if it involves entry into an inventoried or inventoried roadless area.

6. **Old-growth:** Avoid commercial timber harvest, roads and mining in late-seral forests. Impacts on old-growth species should be discussed in detail in the EA/EIS. This should include a functionality analysis of dispersal for the northern spotted owl between LSR's and analysis of effects on such species as the goshawk, bats, Canada Lynx, woodpeckers, Pine Marten, California Wolverine, Red Tree vole, Great Gray Owl, Pygmy Nuthatch, bald eagle and other special status species listed in applicable management plans. Special attention to snag habitat is needed.

7. **Water Quality:** Project analysis should separately discuss each of the Aquatic Conservation Strategy objectives. Any commercial harvest activities or road construction in key watersheds or municipal watersheds should be avoided in order to protect water quality.

8. **Roads EA:** The Forest Service is required to justify the need to for new roads and prioritize efforts to maintain and decommission roads considering environmental and economic implications. (The EA/EIS must clearly state whether any roads are proposed for construction or reconstruction within Riparian Reserves, and which of these if any will require stream crossing(s).

The planned project would build 3,500 feet of new "temporary" roads. 1,000 feet would be in the Riparian Reserve areas. ONRC **does not** support this construction, despite its general support of the variable density thinning proposed in this project. Please consider the negative impacts of this road activity on riparian and water quality before planning to build these roads. Effects of "temporary" roads are far from short term-especially in riparian reserves. Please find a way to do this project without this 1,000 feet of new road.

Not a significant issue. There are no inventoried roadless areas in or adjacent to the project area.

Not a significant issue. All project activities would be done in young plantations.

Not a significant issue. Meeting ACS objectives is determined at the watershed scale not project scale. Mitigations would be included in the EA to protect riparian areas.

The need for and effects of the proposed road construction will be included in the EA. Not a significant issue. This is a comment.

The effects of planned road construction is considered a significant issue. An alternative will be included in the EA to address this issue.

Name/Address	Comments	Disposition of Comments
Or.Natural Resources Council (cont)	<p>9. Fish & wildlife: Special status species surveys must be completed prior to developing NEPA alternatives and before the decision is determined. On-the-ground field reconnaissance surveys must be done and used to develop NEPA alternatives.</p> <p>10. NEPA Documentation: a full range of action alternatives should be considered for this sale. These alternatives should include wildlife enhancement, restoration, old-growth protection (minimum fragmentation) and non-motorized recreation.</p>	<p>Not an significant issue. Assume presence. Design project to mitigate.</p> <p>Not a significant issue. This is a comment. EA will include a full range of reasonable alternatives.</p>
<i>Letter No. 4</i> Marilyn A. Burkhardt P.O. Box D Hebo, OR 97122-0420 Phone: 503-392-3333	I understand that a thinning operation is currently underway in the same area as the operation you are proposing. I suggest that you finish the current operation before you being another, to minimize the impact on the wildlife in the area.	Not a significant issue. This will be addressed in the EA in the Consequences chapter.
<i>Letter #5</i> Carol Bickford P.O. Box 408 Neskowin, OR 97149 Ph: (503) 392-3637 Fax: same	<ol style="list-style-type: none"> 1. When would the sale be cut in relation to Windjammer Project? Seems like if they're done simultaneously, it could be quite a disturbance impact for owls and murrelets. 2. Entire sale is within a Reserved Pair Area for spotted owls. Reference the Reserved Pair Area document approved 1999(?), which documented appropriate activities within RPAs 3. Entire sale is within LSRA and critical habitat for owls and murrelets. 4. Wasn't unit 17 covered under Schooner Sales? 	<p>Not a significant issue. Cumulative effects will be addressed in the EA.</p> <p>Not a significant issue. Addressed in the EA/BA/BE</p> <p>Not significant issue. Mitigation will be included in the EA.</p> <p>Stand 17 was included in the Schooner Sales project as a control unit for a research project. The project has concluded. This stand lies in both the Schooner and Drift watersheds. Only the portion in the Drift watershed would be affected by this project.</p>

Name/Address	Comments	Disposition of Comments
<p><i>Letter #5 (cont)</i> Carol Bickford P.O. Box 408 Neskowin, OR 97149 Ph: (503) 392-3637 Fax: same</p>	<p>5. Unit 10 and spur road are probably within 1/4 mile of an owl nest.</p> <p>6. Do any trees need to be cut to realign the road? How old are they?</p> <p>7. Restricted season for owls was March 1- July 7 and for murrelets, April 15-August 5th. Have these been changed (see operating season paragraph—scoping document).</p> <p>8. CWD creation paragraph: If torrent salamander is a sensitive species, need to protect microclimate (riparian buffer) within 50 plus feet of rocky streambeds, headwaters (1st and 2nd order streams) according to research by Dede Olson.</p>	<p>Not a significant issue. Effects on northern spotted owl will be addressed in the EA.</p> <p>The road realignment will go through a 25 year old plantation, some young trees will be cut.</p> <p>No significant issue. Seasons are the same and will be included as mitigation in the EA.</p> <p>Not significant issue. Mitigation will be included in the EA to protect salamanders if there is a need to do so.</p>

