
Speaking Coyote Project Environmental Assessment

DOI-BLM-OR-M070-2012-0002-EA

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT

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Abstract: The Speaking Coyote Project is located on Bureau of Land Management managed lands near the communities of Wolf Creek and Sunny Valley. The Proposed Action would commercially thin approximately 818 acres of overstocked stands and remove vegetation on approximately 14 miles of roadway for daylighting maintenance. To facilitate timber harvesting activities approximately 2.6 miles of new temporary routes would be constructed and 0.21 miles of existing temporary routes re-constructed. These routes would be decommissioned after use.

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Chapter 1.0 Purpose and Need

1.1 Introduction

The Speaking Coyote Project Environmental Assessment (EA) discloses proposed forest management activities on the human environment in the Speaking Coyote Project Planning Area. Chapter 1 discloses to the reader:

- What the BLM proposes to do (Proposed Action).
- Location and description of the Planning Area.
- Why the BLM is proposing these forest management activities (Purpose and Need).

The analysis utilizes field data, ground verification by resource specialists and Geographical Information System (GIS) technology to estimate acres, road miles and produce reference maps. Estimates are intended to aid the reader in understanding the Proposed Action. The reader should be aware that electronic technology can produce information that appears precise but is still dependent on further field work.

1.2 Project Location

The Speaking Coyote Project Planning Area (PA) is located near the communities of Wolf Creek and Sunny Valley. The PA delineates the geographical area where all proposed activities would occur within. Watershed boundaries and geographical features such as ridgelines are used where practical. The Speaking Coyote Project PA is contained within portions of the Rat Creek-Grave Creek, Wolf Creek, Last Chance Creek-Grave Creek and Shanks Creek-Grave Creek 6th field sub-watersheds, which drain into the larger Grave Creek 5th field watershed (See Map in Appendix). Specific forest management activities are proposed near London Peak west of Interstate-5, Speaker road and Coyote Creek road east of I-5, and Mackin Gulch west of I-5.

Table 1. Legal description of the Speaking Coyote Project Planning Area

Township	Range	Sections
33 S	4W	19, 30-33
33 S	5W	3-11, 13-32, 34, 35
33 S	6W	1, 12, 13, 21-29, 32-36
34 S	4W	4-8
34 S	5W	1-3, 11,12
34S	6W	2-5, 9, 10

Willamette Meridian, Josephine County, Oregon

1.3 Proposed Action

The Speaking Coyote Proposed Action includes approximately 818 acres of commercial thinning in overstocked conifer stands and approximately 14 miles of roadway daylighting maintenance. The 30 conifer stands proposed for harvesting range from 30 to 120 years of age. The majority of harvested timber ranges from 7 to 30 inches diameter at breast height (dbh).

Commercial harvests would generally thin from below and retain the most dominant and co-dominant trees. These treatments would generally retain the desired canopy cover of 40%, 50%, or 60% canopy cover. Trees per acre will vary greatly and is dependent on average tree diameter and average tree crown width. The residual trees per acre would include all conifer species and hardwood trees greater than 12" DBH. It is expected that the average trees per acre after harvest would be 200 trees per acre. Treatments within the Riparian Reserve, outside of the no cut buffer, would retain canopy cover above 50%.

Within harvest units, snags and hardwoods would be retained, where feasible, to meet other resource objectives. Existing snags and hardwoods greater than 12 inches dbh and larger would be retained unless hazardous to thinning operations. Two units contain large diameter remnant mature pine. Competing conifer trees around the bole of the pine would be removed.

Removal of commercial trees would be accomplished by ground-based yarding on 290 acres, and cable yarding on 528 acres. To facilitate yarding, approximately 2.6 miles of new temporary routes would be constructed across 17 separate segments and 0.2 miles of temporary routes would be reconstructed across 4 separate segments. These new temporary routes would be constructed along ridge tops and then decommissioned after use. Some of these new routes are being proposed to avoid using the existing haul routes from the previous harvest entry. The existing routes are inconsistent with the Oregon Occupational Safety and Health Standards (Division 7) due to restrictions on roads exceeding 20% and the Resource Management Plan (RMP) direction to minimize road and landing locations within Riparian Reserves.

1.4 Purpose and Need of the Proposal

The Speaking Coyote Planning Area is within O & C lands administered by the Department of the Interior, BLM National System of Public Lands "for permanent forest production... in conformity with the principles of sustained yield for the purposes of providing a permanent source of timber supply" (O&C Act).

The Speaking Coyote Proposal is designed to meet BLM's obligation to implement the RMP and to address two primary needs identified for lands in the Planning Area. The two primary needs identified for lands in the Planning Area are: 1) the need for

production of commercial and non-commercial forest products; 2) the need for improved forest health and vigor. The Proposed Project is designed to address each of the needs and achieve each of the associated objectives which would assist in moving the current conditions found on the Speaking Coyote PA toward desired forest conditions for lands within the Matrix land allocation

Forest Management is appropriate at this time in order to reduce stand density thereby improving residual tree development and vigor and provide an entry that is economically feasible (RMP pp. 179-180; RMP/EIS p. 2-62).

Objectives for production of commercial and noncommercial forest products

Harvest proposals under this alternative are designed to meet the following objectives for Matrix lands:

- Produce a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability.
- Control stand density, maintain stand vigor, and place or maintain stands on developmental paths so that desired stand characteristics result in the future.
- Maintain road system infrastructure to provide adequate sight distance for motorist safety, reduce road failures by having longer durations of dry roads, potentially extend dry condition road use, and reduce road maintenance costs by reducing vegetation decomposition on road surfaces and to recover side cast rock.

1.5 Decision Factors

The following decision factors will be weighed, along with environmental effects of each alternative. The Field Manager will consider the extent to which each alternative would:

- Provide for social and economic benefits to local communities.
- Manage for desired stand characteristics
- Maintain road system infrastructure

1.6 Conformance with Land Use Plans and Other Documents

The actions proposed and analyzed in this EA were developed to be consistent with the management objectives for public lands identified in the following documents:

- *Final Supplemental Environmental Impact Statement and Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning*

Documents Within the Range of the Northern Spotted Owl (Northwest Forest Plan FSEIS 1994 and ROD 1994);

- *Final-Medford District Proposed Resource Management Plan/Environmental Impact Statement and Record of Decision* (EIS 1994 and RMP/ROD 1995);
- *Final Supplemental Environmental Impact Statement: Management of Port-Orford-Cedar in Southwest Oregon* (FSEIS 2004 and ROD 2004);
- *Final SEIS for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (2000), and the *Record of Decision and Standards and Guidelines for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (2001);
- *Medford District Integrated Weed Management Plan Environmental Assessment* (1998) and tiered to the *Northwest Area Noxious Weed Control Program* (EIS 1985).

Court Rulings

Survey and Manage

On December 17, 2009, the U.S. District Court for the Western District of Washington issued an order in *Conservation Northwest, et al. v. Sherman, et al.*, No. 08-1067-JCC (W.D. Wash.), granting Plaintiffs' motion for partial summary judgment and finding NEPA violations in the *Final Supplemental to the 2004 Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines* (USDA and USDI, June 2007). In response, parties entered into settlement negotiations in April 2010, and the Court filed approval of the resulting Settlement Agreement on July 6, 2011. Projects that are within the range of the northern spotted owl are subject to the survey and management standards and guidelines in the 2001 ROD, as modified by the 2011 Settlement Agreement.

The Speaking Coyote Project is consistent with the Medford District Resource Management Plan/Forest Land and Resource Management Plan as amended by the 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (2001 ROD), as modified by the 2011 Settlement Agreement.

Project Consistency

The Speaking Coyote Project applies the Survey and Manage species list in the 2001 ROD (Table 1-1, Standards and Guidelines, pages 41-51) and thus meets the provisions of the 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines*, as modified by the 2011 Settlement Agreement (Survey and Manage Species Tracking Forms, Appendix D)

Pechman Exemptions

The Speaking Coyote Project applies a 2006 Exemption from a stipulation entered by the court in litigation regarding Survey and Manage species and the 2004 Record of Decision related to Survey and Manage Mitigation Measure in *Northwest Ecosystem Alliance v. Rey*, No. 04-844-MJP (W.D. Wash., Oct. 10, 2006). Previously, in 2006, the District Court (Judge Pechman) invalidated the agencies' 2004 RODs eliminating Survey and Manage due to NEPA violations. Following the District Court's 2006 ruling, parties to the litigation entered into a stipulation exempting certain categories of activities from the Survey and Manage standards and guidelines, including both pre-disturbance surveys and known site management. Also known as the Pechman Exemptions, the Court's Order from October 11, 2006 directs:

“Defendants shall not authorize, allow, or permit to continue any logging or other ground-disturbing activities on projects to which the 2004 ROD applied unless such activities are in compliance with the 2001 ROD (as the 2001 ROD was amended or modified as of March 21, 2004), except that this order will not apply to:

- a. Thinning projects in stands younger than 80 years old;*
- b. Replacing culverts on roads that are in use and part of the road system, and removing culverts if the road is temporary or to be decommissioned;*
- c. Riparian and stream improvement projects where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement large wood, channel and floodplain reconstruction, or removal of channel diversions; and*
- d. The portions of project involving hazardous fuel treatments where prescribed fire is applied. Any portion of a hazardous fuel treatment project involving commercial logging will remain subject to the survey and management requirements except for thinning of stands younger than 80 years old under subparagraph a. of this paragraph.”*

Per the 2011 Settlement Agreement, the 2006 Pechman Exemptions remain in force:

“The provisions stipulated to by the parties and ordered by the court in Northwest Ecosystem Alliance v. Rey, No. 04-844-MJP (W.D. Wash. Oct. 10, 2006), shall remain in force. None of the following terms or conditions in this Settlement Agreement modifies in any way the October 2006 provisions stipulated to by the parties and ordered by the court in Northwest Ecosystem Alliance v. Rey, No. 04844-MJP (W.D. Wash. Oct. 10, 2006).”

The Speaking Coyote Project meets Exemption “a” because it entails no regeneration harvest and entails thinning in stands less than 80 years old. These stands include units 10-1,10-2,10-3,11-1,14-1,15-1,15-5,17-2,20-1,23-2,23-3,23-4,24-1,25-2,27-2, LP 27-1, LP 27-2, LP 27-3, and LP 27-4.

1.7 Permits and Approvals Required

The following permits and approvals are required prior to project implementation:

- License agreements and/or other authorization with adjacent landowners to have a third party haul timber and use of landings.
- All prescribed burning activities on the Grants Pass Resource Area, Medford District would comply with the Oregon Smoke Management Plan administered by the Oregon Department of Forestry.

1.8 Scoping and Alternative Use of Resources

1.8.1 Public Scoping

An initial Speaking Coyote Project map, along with a request to the public for sites to visit for a proposed field trip, was mailed to 720 residents within the Wolf Creek and Sunny Valley communities on October, 20, 2011. A public field trip took place on November 5, 2011. The BLM issued a 24 page Speaking Coyote Scoping Report which was available for public comment between December 15, 2011 and January 11, 2012.

1.8.2 Alternative Use of Resources

A variety of issues and concerns were raised during project scoping by interested individuals and groups outside the BLM. In some cases, an issue was initially considered by the planning team and then eliminated from further analysis because it was not within the scope of the project or was determined to be irrelevant to making a decision on the project.

Conflicts with the Proposed Action were considered (Appendix 1) and were analyzed to determine if an alternative action would be developed. Appendix 1 also explains why some alternatives were considered but not analyzed in detail and eliminated from further study.

1.9 Decisions to be Made

The Speaking Coyote Project EA will provide the information needed for the Authorized Officer, the Grants Pass Resource Area Field Manager, to render a decision regarding the selection of a course of action to be implemented for the Speaking Coyote Project. The Field Manager will decide whether to implement the Proposed Action, or aspects of the Proposed Action, or whether to select the No Action Alternative.

If the Proposed Action is selected, the decision will also include a determination whether or not the impacts of the action alternatives are significant to the human environment. If the impacts are determined not to result in significant effects beyond those disclosed in the 1994 PRMP/FEIS, or otherwise determined to not be significant, a Finding of No Significant Impact (FONSI) would be issued and a decision implemented.

Chapter 2.0 Alternative Ways of Accomplishing the Objectives

2.1 Introduction

This chapter presents alternative ways of meeting the project objectives identified in Chapter 1, by describing and comparing Alternative 1 (No Action Alternative) and Alternative 2 (Proposed Action) as specified in 40 CFR (Code of Federal Regulations) § 1502.14. Descriptions summarize potential environmental consequences and focus on potential actions and outputs. Best Management Practices (BMPs) and Project Design Features (PDFs) were identified and are included in this Chapter to ensure project compliance with the federal Clean Water Act and higher-level National Environmental Policy Act (NEPA) documents, laws and BLM guidelines.

2.2 Description of the Alternatives

2.2.1 Alternative 1 (No Action)

The No Action Alternative provides a baseline for the comparison of the Proposed Action and describes the existing condition and the continuing trends within the Planning Area. The No Action Alternative would not meet the purpose and need of the project as described in Chapter 1.

Future vegetation treatments would not be precluded and could be analyzed under a subsequent EA. Harvesting would not occur at this time, nor would the associated employment opportunities for local communities or the opportunity to fund and implement maintenance projects. Under the No Action Alternative, the present environmental conditions and trends will continue.

2.2.2 Alternative 2 (Proposed Action)

The Proposed Action would commercially thin approximately 818 acres of overstocked conifer stands and daylight approximately 14 miles of roadway through road roadway daylighting maintenance. The 30 conifer stands proposed for harvesting range from 30 to 120 years of age. The majority of harvested timber ranges from 7 to 30 inches diameter at breast height (dbh).

Commercial harvests would generally thin from below and retain the most dominant and co-dominant trees. These treatments would generally retain the desired canopy cover of 40%, 50%, or 60% canopy cover. Trees per acre will vary greatly and is dependent on

average tree diameter and average tree crown width. The residual trees per acre would include all conifer species and hardwood trees greater than 12" DBH. It is expected that the average trees per acre after harvest would be 200 trees per acre.

Removal of commercial trees would be accomplished by ground-based yarding on approximately 290 acres, and cable yarding on 528 acres. Approximately 2.6 miles of new temporary routes would be constructed across 17 separate segments and 0.2 miles of temporary routes would be reconstructed across 4 separate segments. These new temporary routes would be constructed along ridge tops and then decommissioned after use. Some of these new routes are being proposed to avoid using the existing haul routes from the previous harvest entry. The existing routes are inconsistent with the Oregon Occupational Safety and Health Standards (Division 7) due to restrictions on roads exceeding 20% and the Resource Management Plan (RMP) direction to minimize road and landing locations within Riparian Reserves.

Description of Treatments proposed under Alternative 2

Commercial Thinning

Thinning is a silvicultural practice generally applied to control stand density, maintain stand vigor, and place or maintain stands on developmental paths so that desired stand characteristics result in the future. Thinning would promote improved stand health, as well as increased vigor and crown development on retained trees. Mortality of remaining conifers would decrease. Over time, crowns of remaining trees would become fuller and overall stand vigor and growth would improve. Growth and yield are important considerations in applying commercial thinning treatments. Production of some wood volume at the present time and an increase/maintenance of growth rates for wood volume production in the future are primary objectives. Residual stands would maintain at least:

- 40% canopy cover or greater in dispersal spotted owl habitat.
- 50% canopy cover or greater in Riparian Reserves.
- 60% canopy cover or greater in nesting, roosting, and foraging habitat (NRF) of northern spotted owl habitat.

Visual Representations – Current conditions and Post-treatment



Figure 1. Photograph at left depicts a representative existing canopy cover of approximately 95%. The photograph at right depicts a representative post treatment at approximately 60% canopy cover.

Canopy Visual Representations – Current conditions and Post-treatment



Figure 2. Photograph at left depicts a representative existing canopy cover of approximately 60%. The photograph at right depicts a representative post treatment at approximately 40% canopy cover.

Riparian Thinning

Alternative 2 would thin within the Riparian Reserves that are outside the variable width Ecological Protection Zone (EPZ). Canopy closures would remain above 50%, and species diversity would be maintained. See Figure 3 below.

Riparian thinning would improve or maintain stand vigor, promote larger future woody debris, enhance species diversity, reduce the existing fire hazard, and promote fire resiliency. Ecological Protection Zones (EPZ) would be established within Riparian Reserves and would be based on field stream survey information. EPZ width would be measured from the stream bankfull width (by slope distance) and would be applied along

streams and perennial springs and seeps to protect stream channel structure and water quality. The EPZ would be a no harvest buffer.

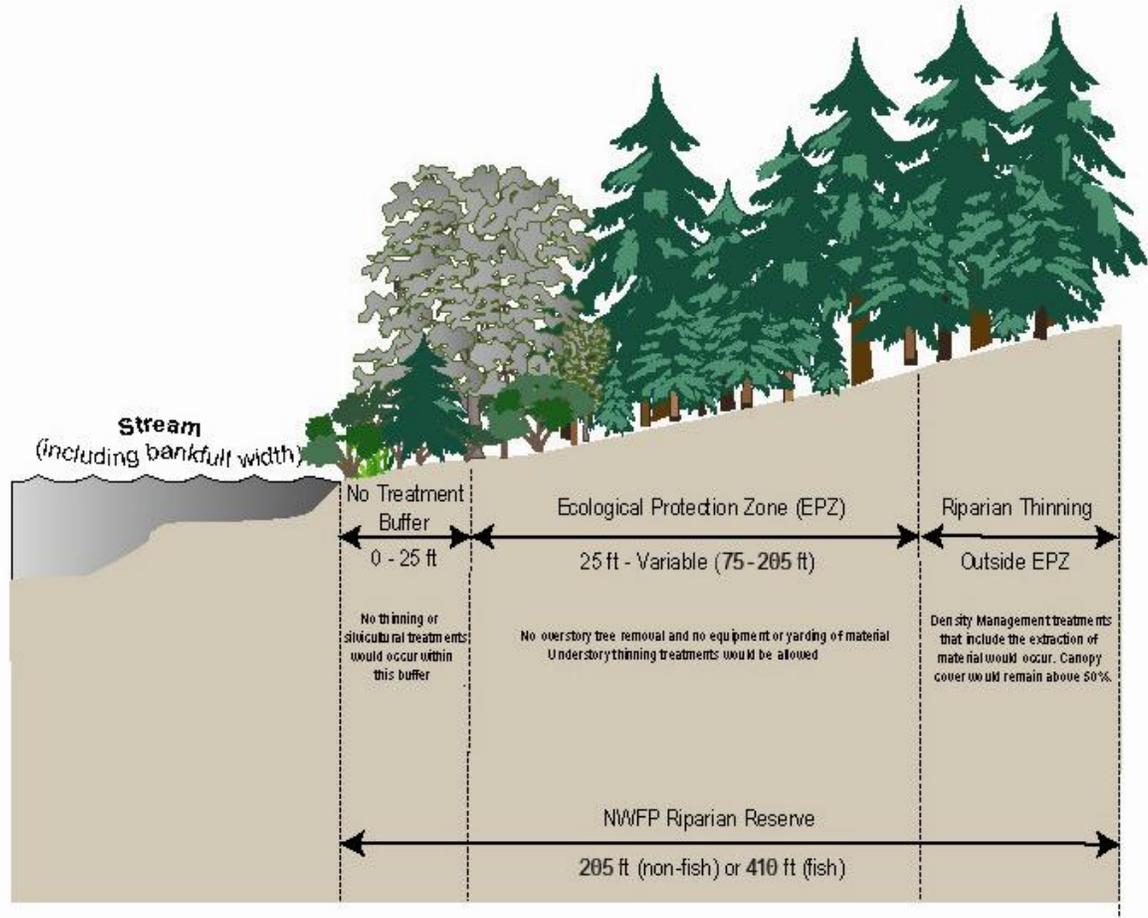


Figure 3. Stream Buffers for Riparian Treatments

Activity Slash

Slash created from thinning under Alternative 2 would be treated by underburning, lop and scatter, chipped on site and/or removed, or handpiled and burned to reduce the fire hazard. Treatment selection would depend on the amount of slash and its distribution within a unit.

Low intensity underburns may occur within 7 years of initial project implementation to reduce fuel loading, ladder fuels and reduce sprouting hardwoods and/or other brush vegetation.

Biomass Removal

Under Alternative 2, whole-tree yarding is the preferred harvest method and would facilitate biomass removal to existing roads and landings. Biomass removal would occur via whole-tree yarding or yarding with attached tops to reduce ground disturbance and fuel loading.

Temporary Route Construction

Under Alternative 2, approximately 2.6 miles of temporary spur route construction would occur to facilitate the removal of commercial products and biomass. Temporary spur routes are not intended to be part of the permanent or designated transportation network system and would be decommissioned after use. Temporary spur routes would be returned as close as possible to pre-treatment conditions by ripping, mulching, and seeding. Temporary spur routes would be barricaded after use. No construction of permanent roads would occur under Alternative 2.

Temporary Route Reconstruction

Approximately 0.2 miles of temporary route reconstruction would occur. Reconstruction restores an existing road to its original or modified condition. Reconstructed routes would be decommissioned after harvesting and activity fuels are treated for this project.

Road Maintenance

Activities would occur on existing roads to keep the road at its original design standard. Work would include road blading and reshaping, spot rocking and surface replacement, ditch cleaning, culvert inlet and outlet cleaning, culvert replacement, removing vegetation along roadsides to improve site distance, and daylighting of approximately 14.3 miles of existing haul roads.

A subset of road maintenance work, referred to as “daylighting” would occur within the Speaking Coyote Project Area where vegetation (including trees) are inhibiting road maintenance.

The roads identified for this treatment were constructed in the 1950s to the 1970s and are generally rocked or surfaced. The original road right-of-way clearing widths were a minimum of 60-100 ft to allow for roadway construction.

Outside Riparian Reserves, daylighting road maintenance could remove vegetation up to 15 ft from the center line of the ditch up the cutbank and up to 15 ft from the road shoulder, down the fill slope. Within Riparian Reserves, overstory vegetation removal would be less than 10 ft from the center line of the ditch up the cutbank and 10 ft from the road shoulder, down the fill slope. Understory removal in the Riparian Reserves would be limited to standard road maintenance (4 ft of brushing off both sides of the road). All proposed daylighting road maintenance would be designed to not exceed Oregon water quality standards.

Removing vegetation would improve the following conditions:

- Motorist safety. Trees and other brush species are currently shading roadways or inhibiting adequate sight distance around corners. The Medford District RMP identified the need to remove trees along rights-of-way if they are a hazard to public safety (RMP, p.34).
- Daylight and create air flow. Vegetative removal would allow the roadbed to dry faster and be drier for longer periods thereby reducing road failures and extending dry weather road use on rocked roads.
- Reduce future road maintenance cost by allowing mechanical maintenance of road side vegetation, such as reducing the amount of leaves, needles, and other vegetative material that drop and decompose onto the road surface.
- Create a fuel break to decrease a potential fire's spread and intensity
- Recover side cast rock that has been overgrown with vegetation.

The proposed maintenance activities would mechanically cut all vegetation greater than 12 inches in height. Intact roots and re-sprouting vegetation would continue to stabilize slopes and retard erosion. This would consist of mechanically falling all trees within the treatment area and removing merchantable logs. Slash created by this operation could be treated by a combination of chipping and broadcasting into the residual stand; utilized at a biomass facility; or lopped and scattered; or piled and burned within units.

The hydrologist for this project made on-site evaluations to determine the importance of each individual tree in protecting water quality. Subsequent to this assessment, a determination would be made by the hydrologist as to which trees could be safely removed without having any measurable direct, indirect, or cumulative impact to water quality.

All remaining brush and stumps that interfere with road grading operations would be flush cut or ground down. All mechanized equipment for daylighting road maintenance would be limited to operating on the road surface.

In sections 10, 15, 17, 18, and 20, daylighting maintenance would be limited to the downslope side of the road. Additionally, on roads 33-5-7 and 33-5-18 in sections 17 and 18, downslope daylighting maintenance actions would be intermittent, and would be marked in accordance with on the ground recommendations of the geotechnical engineer. Daylighting maintenance actions would also not include the slide areas identified in sections 17 & 18 by B.G. Hicks (Hicks, 2008). There would be up to 0.9 acres of daylighting maintenance that would occur outside of Riparian Reserves on the FNR restricted classification.

2.3 Best Management Practices and Project Design Features

Best Management Practices (BMPs) are required by the Federal Clean Water Act to reduce nonpoint source pollution to the maximum extent practicable. The BMPs are methods, measures, or practices selected from Appendix D of the 1995 ROD/ RMP and Instruction Memorandum No. OR-2011-074, “Incorporating Road and Sediment Delivery Best Management Practices into Resource Management Plans” to minimize or prevent sediment delivery to the waters of the United States. BMPs in this Section are noted by an asterisk *. Project Design Features (PDFs) are measures included in the site specific design of the Proposal to eliminate or minimize adverse impacts on the human environment. This section first identifies measures that apply to all proposed activities followed by measures for individual activities.

2.3.1 Measures Common to All Projects

- **Where any form of the term “rehabilitate” is utilized below within a PDF/BMP for this project, please refer to the “Rehabilitation and Winterization” section for a full description of rehabilitation requirements.
- Productivity loss resulting from topsoil disturbance and soil compaction would not exceed a combined calculated total of 5%.
- *Suspend any project related activities if conditions develop that cause a potential for sediment laden runoff to enter a wetland, floodplain or waters of the state. Cover or otherwise temporarily stabilize all exposed soil. Properly install sediment trapping devices to disconnect site. Resume operations when sediment control devices are in place and conditions allow turbidity standards to be met.
- During construction, rehabilitation, and winterization of roads, temporary routes, skid trails, and landings divert runoff water away from headwalls, slide areas, high landslide hazard locations or steep erodible fill slopes.
- In order to prevent the potential spread of noxious weeds into the Medford District BLM, the operator would be required to clean all logging, construction, chipping, grinding, shredding, rock crushing, and transportation equipment prior to entry on BLM lands. Cleaning shall be defined as removal of dirt, grease, plant parts, and material that may carry noxious weed seeds into BLM lands. Cleaning prior to entry onto BLM lands may be accomplished by using a pressure hose.
- Only equipment inspected by the BLM would be allowed to operate within BLM lands. All subsequent move-ins of equipment as described above shall be treated the same as the initial move-in.
- Prior to initial move-in of any equipment, and all subsequent move-ins, the operator shall make the equipment available for BLM inspection at an agreed upon location off federal lands.
- Noxious weeds within BLM lands would be surveyed and treated for noxious weeds as funding is available. Treatments would primarily consist of herbicide

application, hand pulling, and mechanical cutting methods as analyzed in the Medford District Integrated Weed Management Plan and Environmental Assessment (USDI 1998).

- Prior to any project implementation under this EA, a cultural resource survey would be completed and site-specific protection measures would be implemented to preserve the integrity of all recorded cultural sites, referred to as Historic Properties in cultural resource protection laws and regulations.
- If cultural resources are found during project implementation, the project would be redesigned to protect the cultural resource values present, or evaluation and mitigation procedures would be implemented based on recommendations from the Resource Area archaeologist, with input from Tribes, and with concurrence from the Field Manager and State Historic Preservation Office.
- Contractors must prepare a Spill Prevention, Control, and Countermeasure Plan for all hazardous substances to be used in the contract area, as directed by the Authorized Officer. Such plan shall include identification of Purchaser's representatives responsible for supervising initial containment action for releases and subsequent cleanup. Such plans must comply with the State of Oregon DEQ OAR 340-142, Oil and Hazardous Materials Emergency Response Requirements.
- Any of the following measures may be waived in a particular year if nesting or reproductive success surveys conducted according to the U.S. Fish and Wildlife Service (USFWS) - endorsed survey guidelines reveal that spotted owls are non-nesting or that no young are present that year. Waivers are valid only until March 1 of the following year. Previously known well established sites/activity centers are assumed occupied unless protocol surveys indicate otherwise.
- Work activities (such as tree felling, yarding, temporary route construction, road renovation/improvement, hauling on roads not generally used by the public, and prescribed fire) would not be permitted within specified distances (see Table 2 below), of any nest site or activity center of known pairs and resident singles between March 1 and June 30 (or until two weeks after the fledging period) – unless protocol surveys have determined the activity center to be not occupied, non-nesting, or failed in their nesting attempt. March 1 – June 30 is considered the critical early nesting period; the restricted season may be extended during the year of harvest, based on site-specific knowledge (such as a late or recycle nesting attempt). The buffer distance to the prescribed area may be modified by the action agency biologist using topographic features or other site-specific information. Buffer distance for prescribed fire may be reduced if substantial smoke from prescribed fire would not enter the nest stand March 1 – June 30. The restricted area is calculated as a radius from the assumed nest site (point).

Table 2 Disturbance distances from various activities for spotted owls

Activity	Buffer Distance around Northern Spotted Owl Sites
Heavy Equipment (including non-blasting quarry operations)	105 feet
Chain saws	195 feet
Prescribed fire	0.25 miles

2.3.2 Yarding and Equipment

2.3.2.1 Measures Common to All Yarding and Equipment

- Whole tree yarding with tops attached to the last log would be permitted as long as contractor can operate without causing unacceptable damage from bark slippage, girdling, broken tops, or damage to live crowns. If it is determined by the Authorized Officer that unacceptable amounts of damage is occurring, trees would be required to be bucked and limbed as directed by the Authorized Officer. Delivered log length not to exceed 41 feet.
- Merchantable sawlogs would be removed from yarded material, and any remaining debris at the landing sites would be piled and burned on the immediate downhill side of existing roads, chipped, or removed for biomass utilization.
- Usage of recreation areas and trailheads for operation, parking or staging of equipment should be avoided

Yarding and Equipment Operation on Fragile Suitable Restricted Nutrient (FNR)

- Minimize whole tree yarding and biomass removal

Yarding and Equipment Operation in Riparian Reserves

- Hydraulic fluid and fuel lines on heavy mechanized equipment would be in proper working condition in order to minimize potential for leakage into streams. No refueling of heavy equipment would occur within 150 feet of streams or stream crossings. Absorbent materials would be required to be onsite to allow for immediate containment of any accidental spills.
- Refueling of chainsaws and pumps would be done no closer than 150 feet of any stream or wet area. Spilled fuel and oil would be cleaned-up and would be disposed of at an approved disposal site.

2.3.2.2 Ground Based Yarding

- Existing skid trails would be utilized whenever practical. New skid trails would be pre-designated and approved by the Authorized Officer.

- Total compaction, including compaction associated with pre-existing skid trails within the unit, would be reduced to less than 12% within thinning units, upon completion of harvest (RMP, p. 166)
- Ground based logging, including the construction and rehabilitation of skid trails, would not be allowed when soil moisture at a depth of 4-6 inches is wet enough to maintain form when compressed, or when soil at the surface would readily displace, causing rills and ruts along equipment tracks. These conditions are generally found when soil moisture at a depth of 4-10" is between 15-25%, depending on soil type.
- Ground based yarding would generally be limited to slopes less than 35%.
- Harvest equipment used off of designated skid trails would operate on ground less than 35% slope, have an arm capable of reaching at least 20 feet and minimize turning. When practical, the harvest equipment must walk on a mat of existing or created slash. To prevent operations from exceeding the maximum 5% soil productivity loss or 12% compaction levels across the harvest unit, equipment use may be restricted depending on soil type, soil moisture, ground pressure of the equipment, and presence of slash to operate on.
- Tractors would be equipped with an integral arch to minimize soils disturbance and compaction.
- To minimize soil disturbance and root damage, the use of blades while tractor yarding would not be permitted in order to keep soil organics on site.

Fragile Suitable Restricted Groundwater (FWR) for ground based yarding

- All logging operations would be limited to the dry season (May 15-Oct 15). This season may be further restricted to the latter portion of the dry season (July/Aug – Oct) if it is determined by the authorized officer that unacceptable damage would occur as a result of wet soils and/or high water tables.
- No skid trail construction would occur on soils classified as FWR.
- Rehabilitate** all existing skid trails utilized during this harvest entry that are determined by the Authorized Officer to be blocking natural drainages.

Ground Based Yarding in Riparian Reserves

- Upon completion of harvest, all existing skid trails utilized during this harvest activity within Riparian Reserves would be rehabilitated**.
- Where new skid trail construction is necessary within the Riparian Reserve, new skid trails would either be 1) constructed and used during dry conditions and fully rehabilitated (as per described above for upland skid trails); or 2) construction would be restricted to the driest time of the year (generally Aug 1st-Oct 15th, as determined by the Authorized Officer), equipment would be required to walk on slash and, as necessary to prevent offsite erosion, skid trails would be scarified, seeded, mulched, slash cover placed, and water-barred prior to Oct 15th of the harvest year.

2.3.2.3 Cable Yarding

- Lateral yarding would be required on all units to protect residual leave trees and existing conifer regeneration. Yarding carriages would be required to maintain a fixed position during lateral yarding to reduce damage to the residual stand.
- The number of cable yarding corridors would be minimized to reduce soil compaction and displacement from cable yarding. Cable yarding corridors would be located approximately 150 feet apart at the tail end.

Fragile Gradient Restricted for cable yarding

- Yard with full suspension (year-round) or one-end suspension during the dry season (generally May 15th – Oct 15th). For dry season operations, this season may be further restricted to a portion of the dry season if it is determined by the authorized officer that unacceptable damage would occur.
- Hand waterbars would be constructed within the cable yarding corridors of these units immediately following use on slopes in excess of 65%, and in areas where bare soil occurs on slopes under 65%. Activity slash would be placed on bare soils within yarding corridors and below landing sites. Slash depth would not exceed 18 inches and would be left on site during fuels reduction treatments.
- Landing construction would not occur on slopes over 70%. If existing or constructed landings must be utilized on slopes over 70% or above dry draws, silt fencing, hay bales, or other sufficient sediment control devices will be properly installed and maintained.

Cable Yarding in Riparian Reserves

- *Prior to winter rains, cable yarding corridors that are above or nearly perpendicular (approximately 60-90 degrees) to stream channels within Riparian Reserves, or are hydrologically connected to streams via ditchlines, would be water-barred and have slash placed over them to protect water quality (Best Management Practice, RMP p.167).

2.3.3 Landings

- *To the greatest extent practicable, avoid locating new landings in areas that can contribute eroded fines to dry draws and swales. If location cannot be avoided, ensure properly installed sediment control measures are placed and maintained, as needed, to keep eroded material onsite.
- Avoid locating new landings within known noxious weed infestations.
- When utilizing existing landings that have the potential to release eroded fines into a stream or wet area, directly or via draws or ditchlines, ensure that silt fencing or other sediment control measures are properly placed and maintained during use and periods of non-use, to keep eroded material onsite.

2.3.4 Harvesting

- All non-hazardous snags would be retained within harvest units. If it is necessary to fall snags for safety reasons, they would remain on site as down wood. All existing naturally occurring dead and down woody debris would remain on site.

2.3.4.1 Harvesting in Riparian Reserves

- *On all units, a minimum 25 foot no treatment buffer, from bankfull width, would be used to protect streambank stability.
- *Outside of the 25ft no treatment buffer, streams would have a variable width ecological protection zone (EPZ). Within the EPZ, no commercial harvest or yarding activities would occur. Non-commercial understory thinning and fuel reduction activities would be allowed, but canopy closure would remain at existing levels and vegetative species diversity would be maintained.
- *Treatments within the Riparian Reserve that are outside the variable width ecological protection zone would maintain canopy cover above 50%, and retain the structural diversity of the stand.
- Springs and perennial wet areas would receive a radial buffer that would prohibit any overstory canopy removal or ground disturbance. This buffer would extend outward from the edge of the riparian vegetation for a distance equal to the EPZ width designated for that unit, or 100 feet (whichever is smaller), in order to protect the ecology of these sites.
- *Slumps, intermittent seeps, and other unstable areas would be buffered (no treatment) by leaving one row of overstory trees or a 25 foot radius (whichever is greatest), from the outer edge of instability around these areas for soil stabilization (RMP, p. 154).
- *Trees in no-harvest portions of Riparian Reserves that are accidentally knocked over during falling and yarding operations would be retained on site for fish /wildlife habitat.
- *Unless unsafe, trees within Riparian Reserve boundaries (205'/410' fish) would be directionally felled away from the stream, and adjacent trees would not be felled into Riparian Reserves.

2.3.5 Roads

2.3.5.1 Haul

- Haul would not occur on all hydrologically connected roads when water is flowing in the ditchlines or during any conditions that would result in any of the following; surface displacement such as rutting or ribbons; continuous mud splash or tire slide; fines being pumped through road surfacing from the subgrade and resulting in a layer of surface sludge; road drainage causing a visible increase in stream turbidities, or any condition that would result in water being chronically routed into tire tracks or away from designed road drainage during precipitation events. Hauling on natural surface or rocked roads would not resume for a minimum of 48 hours following any storm event that results in ½ inch or more precipitation within a 24 hour period, and until road surface is sufficiently dry to

prevent any of the above conditions from reoccurring, and as approved by the authorized officer.

- *Prior to wet season hauling activities, implement structural road treatments as needed to prevent discernible stream sedimentation from occurring during off season use, such as: increasing the frequency of cross drains, installing sediment barriers or catch basins, applying gravel lifts or asphalt road surfacing at stream crossing approaches, and cleaning and armoring ditchlines.
- *Maintain road surface by applying appropriate gradation of aggregate and suitable particle hardness to protect road surfaces from rutting and erosion for wet weather haul where runoff drains to wetlands, riparian management areas, floodplains and waters of the state. If appropriate gradation of aggregate and suitable particle hardness to protect road surfaces cannot be achieved to protect water quality, limit haul to the dry season and/or install and maintain sediment control devices.
- *Apply water or approved road surface stabilizers/dust control additives as necessary where haul roads are located near residences and where needed to reduce surfacing material loss and buildup of fine sediment that can enter into wetlands, floodplains and waters of the state. Prevent entry of road surface stabilizers/dust control additives into waters of the state during application.

2.3.5.2 Construction and Rehabilitation

- Construction and rehabilitation of temporary routes, and road and route renovation/improvement, would not occur when soil moisture, at a depth of 4-6 inches, is wet enough to maintain form when compressed; or when soil at the surface would readily displace, causing ribbons and ruts along equipment tracks. These conditions are generally found when soil moisture at a depth of 4-10 inches is between 15-25% depending on soil type.

2.3.5.3 Maintenance

- *Avoid blading and vegetation removal during road maintenance unless necessary to remove drainage impediments when maintaining ditches. Sediment control measures will be evaluated and implemented if necessary, where ditchline blading is required within 200 feet of streams.
- Flowing water would be diverted around each culvert or cross drain installation or replacement site whenever there is sufficient water volume. Diverted water would be returned to the channel immediately downstream of the work site. Effective erosion control measures would be in place at all times during installation or replacement, and would be removed from the channel prior to October 15th of the same calendar year. Stored sediment behind erosion control devices would be removed from channel and disposed of in a stable location outside the EPZ.
- *During roadside brushing remove vegetation by cutting rather than uprooting, whenever practical. Where uprooting is necessary to remove undesirable species from the ditchline or roadside on hydrologically connected roads, ensure that

sediment control devices are installed and properly maintained until the site re-stabilizes.

- Non-emergency road maintenance work shall occur during the dry season (generally between May 15 and October 15). Certain activities (blading of aggregate roads, rocking, brushing, cross drain installation) would be permitted during the wet season (generally Oct 15 -May 15) when conditions are dry. If these activities would occur within 200 feet of streams, sediment control devices would be placed and maintained as necessary to prevent action related stream sedimentation. When dry conditions are experienced outside seasonal restrictions, coordination with area specialists for agreement on the activity needs to occur.
- No ditch maintenance shall occur during the wet season unless for safety or resource protection. Work shall be suspended during precipitation events or when observations indicate that saturated soils exist to the extent that there is visible runoff or a potential for causing elevated stream turbidity and sedimentation. Emergency road work may be permitted during the wet season.
- *Prior to the wet season, provide effective road surface drainage through practices such as machine cleaning of ditches, surface blading including berm removal, constructing sediment barriers, cleaning inlets and outlets.
- *Blade and shape roads to conserve existing aggregate surface material, retain or restore the original cross section, remove berms and other irregularities that impede effective runoff or cause erosion, and ensure that during road improvement activities surface runoff is directed into vegetated, stable areas to the extent practical.
- *Inspect and maintain culvert inlets and outlets, drainage structures and ditches before and during the wet season to diminish the likelihood of plugged culverts and the possibility of washouts.
- Avoid blading and vegetation removal unless necessary to remove drainage impediments when maintaining ditches. Sediment control measures will be evaluated and implemented if necessary, where ditchline blading is required within 200 feet of streams.
- *Avoid undercutting of cut-slopes when cleaning ditchlines. Seed with native species and use weed free mulch on bare soils including cleaned ditchlines that drain directly to wetlands, floodplains and waters of the state.
- *Retain low-growing vegetation on cut-and-fill slopes (e.g., grasses, ferns).
- Waste material from road maintenance and excavation activities would be placed in stable disposal areas a minimum of 200 feet from any stream and in a location where sediment laden runoff can be confined. Where necessary, provide erosion control to minimize sediment delivery to streams.
- *Implement sediment reduction techniques such as settling basins, brush filters, sediment fences and check dams to prevent or minimize sediment conveyance to streams.
- All natural surface or rocked roads that are re-opened for harvest operations or log haul would be re-closed prior to the wet season, or would receive adequate surfacing for winter use (generally 6-12 inches of clean, compacted rock). If road

- is closed using a method that would not allow regular restricted access (such as a gate), the road would be blocked and stabilized in such a way that no future maintenance would be necessary to prevent road failure or stream sedimentation.
- In areas of roadside clearing, grass seeding will be done on areas susceptible to imminent noxious weed establishment
 - As a safety standard, local residents would be advised of logging and haul through news releases.
 - Place warning signs stating “truck traffic ahead” or similar on Wolf Creek residential roads where hauling would occur.
 - Provide signage on hauling/activity roads leading to recreation areas such as London Peak and Burma Pond if there are delays due to project implementation.

2.3.5.4 Roads on Fragile Grade Restricted (FGR)

- Temporary routes proposed on FGR areas would not be located on or above a headwall or on slopes in excess of 70%.
- Routes on FGR areas will be constructed, utilized, and decommissioned during the dry season of a single year (FGR).
- On FGR areas, routes would be located on the upper slope or ridge, and would not cross through any Riparian Reserves.
- All temporary routes would be blocked and decommissioned following use on FGR areas, including sub-soiling, mulching, water-barring, and placement and stabilization of fill material back over the route bed where cut and fill construction was needed.
- Additional drainage features that are added during road maintenance activities on FGR would be located away from steep draws and would be designed to disperse water back into the hillside.
- Downspouts or energy dissipaters would be utilized for drainage outlets on FGR soils areas.

2.3.5.5 Roads on Fragile Suitable Restricted Groundwater (FWR)

- No temporary route construction would occur on soils classified as FWR.

2.3.5.6 Roads on Fragile Suitable Restricted Nutrient (FNR)

- Minimize building temporary natural surfaced roads.

2.3.6 Rehabilitation and Winterization

- ****All areas that require rehabilitation would be rehabilitated per the following.** Rehabilitated areas would be discontinuously sub-soiled, seeded, mulched, have slash placed over, water-barred, and blocked. For all sub-soiling, a winged ripping device would be used to sub-soil the full width of the skid trail, rips would be no more than 36 inches apart, and would be to a depth of 18 inches or to bedrock, whichever is shallower. All rehabilitation activities that utilize heavy equipment would be required to take place at same time as sub-soiling to prevent machinery

from driving back over sub-soiled ground. Waterbar spacing and drainage angles would be based on the NWFP Standards and Guidelines erosion control measures for timber harvest which considers slope and soil series (RMP, p. 167). All rehabilitation would occur within 24 months of harvest, and during the dry season when soils at 4-6" no longer maintain form when compressed, and soils on the surface do not readily displace under pressure to form ribbons or ruts.

- *Prior to October 15 of the same operating season, winterization would occur on temporary routes, landings, yarding corridors, skid trails, and other areas of exposed soils by properly installing and/or using water bars, berms, sediment basins, gravel pads, hay bales, small dense woody debris, seeding and/or mulching, to reduce sediment runoff as directed by the Authorized Officer.
- All temporary routes and landings would be rehabilitated**.
- Existing skid trails utilized for harvest outside the Riparian Reserve would be rehabilitated** as needed to reduce compacted area per unit to less than 12%. All existing skid trails utilized for harvest within the Riparian Reserve would be rehabilitated**.
- New skid trails would be scarified and winterized (as per described above) as necessary to prevent chronic erosion and, would be intermittently rehabilitated** in areas where the roots of leave trees would not be significantly affected.
- Where cut and fill construction is utilized for temporary route construction, fill material would be placed back over the route bed prior to the implementation of the rehabilitation measures.
- Temporary routes would not be located on or above a headwall or on slopes in excess of 70%.
- Seed and straw used for restoration, planting of bare soil, and post treatment throughout the Planning Area would be approved species and certified weed free to prevent the further spread of noxious weeds. All seeding would be contingent on seed availability.

2.3.6.1 Fragile Suitable Restricted Nutrient (FNR)

- Do not scarify temporary routes and skid trails

2.3.6.2 Riparian Reserves

- Upon completion of harvest, all existing skid trails utilized during this harvest activity within Riparian Reserves would be rehabilitated (as per described above for upland skid trails).
- Where new skid trail construction is necessary within the Riparian Reserve, new skid trails would either be 1) constructed and used during dry conditions and fully rehabilitated (as per described above for upland skid trails); or 2) construction would be restricted to the driest time of the year (generally Aug 1st-Oct 15th, as determined by the Authorized Officer), equipment would be required to walk on slash and, as necessary to prevent offsite erosion, skid trails would be scarified, seeded, mulched, slash cover placed, and water-barred prior to Oct 15th of the harvest year.

- *Prior to winter rains, cable yarding corridors that are above or nearly perpendicular (approximately 60-90 degrees) to stream channels within Riparian Reserves, or hydrologically connected to ditchlines, would be water-barred and have slash placed over them to protect water quality (Best Management Practice, RMP p.167).

2.3.7 Activity Fuels and Prescribed Fire

- All prescribed burning would be managed in a manner consistent with the requirements of the Oregon Smoke Management Plan administered by the Oregon Department of Forestry and the regulations established by the Air Quality Division of the Oregon Department of Environmental Quality.
- Local residents would be advised of prescribed burning prior to seasonal burning through news releases.
- Landing piles and handpiles located on temporary routes, skid trails, or landings would be burned, chipped, or otherwise removed from these sites within 18 months of unit harvest completion.
- Merchantable sawlogs would be removed from yarded material, and any remaining debris at the landing sites would be piled and burned on the immediate downhill side of existing roads, chipped, or removed for biomass utilization.
- Activity slash remaining in units would be lopped-and-scattered, chipped, or handpiled and burned to prevent an increase in fire hazard.
- Firelines would be constructed by hand.
- Snags identified for retention (approximately 20" in diameter) would have all slash and duff cleared around base prior to underburning.
- A minimum of 10% of each hazardous fuels treatment unit greater than 10 acres would remain untreated. The no treatment areas should be ¼ to 1 acre, unless they are linked to other no treatment areas designated for other resource concerns.
- Approximately 10% of handpiles during hand pile and burn treatments units would be left untreated.
- A minimum 20 foot distance on the ground would be cleared of activity slash around each landing pile to prevent escaped fire. Each landing pile would be covered with a large enough piece of 4 mil black plastic to ensure a dry ignition spot (not to exceed 10 ft x 10 ft). To minimize scorch and mortality, landing piles would not be placed adjacent to or within 15 feet of leave trees. To facilitate desired consumption, landing piles would be as free of dirt as reasonably possible.
- Each hand pile would be covered with a large enough piece of 4 mil black plastic to ensure a dry ignition spot (generally 5 ft x 5 ft or large enough to cover 90% of the pile). Handpile size not to exceed 8' diameter and 8' height and minimum 6' diameter and 5' in height. All 4 corners and the middle of plastic sheets shall be anchored with slash or other debris. To minimize scorch and mortality, hand piles would not be placed adjacent to or within 10 feet of leave trees or large woody debris.

- Piles would be burned in the fall to spring season after one or more inches of precipitation have occurred. Patrol and mop-up of burning piles would occur when needed to prevent treated areas from reburning or becoming an escaped fire.
- Prescribed fire burn plans would be completed before ignition, as would smoke clearance to minimize impacts on air quality.
- Slash piles would not be allowed on roadways, turnouts, shoulders, or on the cut bank.

2.3.7.1 Fragile Gradient Restricted for burning (FGR)

- Lop-and-scatter activity slash over yarding corridors then across remaining FGR soils in unit. Where slash quantity is such that lop-and-scatter treatment alone would result in an increase in the fire hazard classification, handpile and burn high concentration areas outside yarding corridors.
- Underburning operations would be restricted to spring-like conditions when the maximum duff layer retention can be attained and minimum course woody debris and snag retention requirements (as described in C-40 SEIS ROD) can be achieved.

2.3.7.2 Fragile Suitable Restricted Nutrient (FNR)

- Minimize burning on these units. No broadcast burning and minimize underburning on slopes greater than 70% and southerly aspects.
- Do not mechanically pile slash
- Minimize biomass removal
- Lop-and-scatter activity slash over yarding corridors then across remaining FNR soils in unit. Where slash quantity is such that lop-and-scatter treatment alone would result in an increase in the fire hazard classification, handpile and burn high concentration areas outside yarding corridors during spring like conditions.

2.3.7.3 Riparian Reserves

- Under-burning operations would be allowed to back into Riparian Reserve EPZ and no-treatment areas, but no ignition would take place within the EPZ or no-treatment areas.
- Fire suppression foam would not be used within 150 feet of streams and wetland.
- Handpile burning operations within the EPZ would not occur concurrently with the implementation of adjacent upslope cable and ground based yarding activities. Underburning would occur one season after handpile burning operations to ensure that ground vegetation capable of trapping erosion from yarding activities is onsite.
- Refueling of chainsaws and pumps would be done no closer than 150 feet of any stream or wet area. Spilled fuel and oil would be cleaned-up and would be disposed of at an approved disposal site.

Chapter 3.0 Affected Environment and Environmental Consequences

3.1 Introduction

In accordance with law, regulation, executive order, policy and direction the interdisciplinary team reviewed the elements of the human environment to determine if they would be affected by the alternatives described in Chapter 2.0. The Affected Environment portion of this chapter describes the current conditions in the Speaking Coyote Project Planning Area and the relevant resources that could be potentially affected. The Environmental Consequences provides the analytical basis for the comparisons of the alternatives (40 CFR § 1502.16) and the reasonably foreseeable environmental consequences to the human environment that each alternative would potentially have on the relevant resources. Impacts can be beneficial, neutral or detrimental. This analysis considers the direct impacts (effects caused by the action and occurring at the same place and time), indirect impacts (effects caused by the action but occurring later in time and farther removed in distance but are reasonably foreseeable) and cumulative impacts (effects caused by the action when added to other past, present and reasonably foreseeable future actions on all land ownerships). The temporal and spatial scales used in this analysis may vary depending on the resource being affected.

Cumulative Effects

As the Council on Environmental Quality (CEQ), in guidance issued on June 24, 2005, points out, the “environmental analysis required under NEPA is forward-looking,” and review of past actions is required only “to the extent that this review informs agency decision-making regarding the proposed action.” A description of current conditions inherently includes the effects of past actions and serves as a more accurate and useful starting point for a cumulative effects analysis than by “adding up” the effects of individual past actions. “Generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.” (CEQ Memorandum ‘Guidance on the Consideration of Past Actions in Cumulative Effects Analysis’ June 24, 2005.)

When encountering a gap in information, the question implicit in the Council on Environmental Quality regulations on incomplete and unavailable information was posed: is this information “essential to a reasoned choice among the alternatives?” (40 CFR §1502.22[a]). While additional information would often add precision to estimates or better specify a relationship, the basic data and central relationships are sufficiently well established that any new information would not likely change relationships or conclusions. Although new information would be welcome, the team did not identify any missing information as essential for the Decision Maker to make a reasoned choice among the alternatives.

The IDT weighed the scientific evidence offered through public comments, as well as that gathered by each resource specialist. Scoping for this project did not identify any need to exhaustively list individual past actions or analyze, compare, or describe the

environmental effects of individual past actions in order to complete an analysis which would be useful for illuminating or predicting the effects of the proposed action.

Planning Area Overview

The Planning Area is located within the Lower Rogue Sub-basin, in the Grave Creek Watershed. A watershed is defined as the 5th field hydrologic unit level. The Grave Creek Watershed is approximately 104,529 acres or 163.3 mi². A sub-watershed refers to a smaller, 6th field hydrologic unit. For affected sub-watersheds in this Planning area, the sub-watersheds vary from about 20-44 square miles. Table below includes 6th field watersheds that are within the Speaking Coyote Planning Area.

Table 3 6th Field sub-watersheds

Watershed (5th field)	Sub-watershed (6th field)	Area (Mi ²)	Area (Acres)	Commercial Thinning (Acres) (includes Riparian)	Riparian Thinning <i>outside EPZ</i> (Acres)	Temporary Route Construction and Reconstruction (Miles/Acres)	Roadside Daylighting (Mile/Acres)	Percent of Sub-watershed Affected
Grave Creek	Rat Creek-Grave Creek	30.6	19,581	54.8	2.6	0.08 / .12	.12 / .44	0.3%
	Wolf Creek	44.3	28,358	597.7	56.7	2.69 / 3.9	9.0 / 32.7	2.4%
	Last Chance Creek-Grave Creek	31.1	19,922	165.7	21.6	0	5.2 / 18.9	1.0%
	Shanks Creek-Grave Creek	(20.0) not included in total	(12,825) not included in total	0	0	0	0	Not impacted following project refinement
	Totals	106	67,861	818	81	2.77 / 4.0	14.3 / 52	1.4%

The Planning Area is located in the Inland Siskiyous of the Klamath Mountains Ecoregion. This area has a Mediterranean type of climate characterized by cool, wet winters and warm, dry summers. Temperatures range from 0 degrees (F) on King Mountain in January to 110 degrees in the interior valleys in August. Extended summer drought is common. The majority of precipitation is in the form of rain; however, snow is likely at higher elevations in most years. Precipitation varies from near 30 inches per year in the interior eastern valleys to approximately 60 inches/year in the western portions. Approximately 90 percent of the yearly total falls in the months October to May. The volume of stream flow closely parallels the precipitation pattern. Peak stream flows occur from November to March, and low stream flows occur from July to October. Small 1st and 2nd order headwater streams are often intermittent and have no surface flow during the dry season in most years. Intermittent and perennial streams are located within or adjacent to several of the proposed treatment units (Appendix, Map).

The Grave Creek Watershed Analysis (WA) and Grave Creek Water Quality Restoration Plan (WQRP) cover the Grave Creek HUC 5 watershed. These documents can be reviewed on the Medford District BLM website at <http://www.blm.gov/or/districts/medford/plans/inventas.php> and <http://www.blm.gov/or/districts/medford/plans/activityplans.php>, respectively.

3.2 Fire Hazard

3.2.1 Background Information on Fire Hazard

Fire is the primary natural disturbance agent in the Klamath Siskiyou province forests, influencing vegetation structure, species composition, soil properties, nutrient cycling, hydrology and other ecosystem processes (Agee 1993). Forests with high stem density and fuel loading combined with extreme fire weather conditions has led to severe and large wildfires that have put a number of important values at risk. Homes in the path of a wild fire are perhaps the most immediately recognized value; however these wildfires also put numerous other human and ecological values at risk such as power grids, drinking water supplies, firefighter safety, critical habitat, soil productivity, and air quality (Graham et al. 2004, p.43).

3.2.2 Affected Environment for Fire Hazard

Fire Regimes

Fire regimes refer to the combination of fire frequency, predictability, intensity, seasonality, and extent of characteristic of fire in an ecosystem. A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee1993, Brown 1995). Coarse scale definitions for natural (historical) fire regimes have been developed by Hardy et al. (2001) and Schmidt et al. (2002) and interpreted for fire and fuels management by Hann and Bunnell (2001). As scale of application becomes finer these five classes may be defined with more detail, or any one class may be split into finer classes, but the hierarchy to the coarse scale definitions should be retained.

According to LANDFIRE data the Speaking Coyote Project Area is 88 percent Fire Regime I and 12 percent Fire Regime III.

Table 4 Fire Regime, Fire Return Interval, Fire Severity with the Speaking Coyote Project.

Fire Regime	Fire Return Interval	Fire Severity	Vegetative Examples
I	0-35 years	Low	Ponderosa pine, other long needle pine species, and dry site Douglas- Fir
II	0-35 years	Stand Replacement	Drier grassland type, tall grass prairie, and some Pacific chaparral & southern rough ecosystems
III	35-100	Mixed	Interior dry site shrub communities such as sagebrush and chaparral ecosystems
IV	35-100	Stand Replacement	Lodge pole pine and jack pine
V	200 + years	Stand Replacement	Temperate rain forest, boreal forest and high elevation conifer species.

USDA/USDI et al. 2003

Fire Regimes Condition Class

Fire Regime Condition Class (FRCC) has become a measure of ecological departure used by the BLM, as well as other federal agencies, to describe resource conditions. This measure involves two pieces of information: (1) historic fire regime, and (2) the condition class. Condition classes classify the amount of departure from the natural regime (Hann and Bunell 2001). Coarse-scale FRCC classes have been defined and mapped by Hardy et al. (2001) and Schmidt et al. (2001) (FRCC). They include three condition classes for each fire regime. The classification is based on a relative measure describing the degree of departure from the historical natural fire regime.

Condition Class 1 – (31% of the Speaking Coyote Project Area):

Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire; fire frequency, severity and pattern; and other associated disturbances.

Condition Class 2 – (17% of the Speaking Coyote Project Area):

Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire; fire frequency, severity and pattern; and other associated disturbances.

Condition Class 3 – (52% of the Speaking Coyote Project Area):

High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire; fire frequency, severity and pattern; and other associated disturbances.

Fire Hazard

Fire hazard is a fuel complex, defined by volume, type condition, arrangement, and location, that determines the degree of ease of ignition and of resistance to control. This fuel complex determines the ability of fire spread once ignition has occurred. Fire behavior dictates which fire suppression strategy may be effectively employed, and therefore the extent to which a fire may grow and the subsequent damage it may cause.

Because fire behavior is critical in fire suppression strategy selection, it serves as the threshold used for this analysis. The unit of measure for determining the threshold is considered in terms of flame length. Typically flame lengths less than four feet can generally be managed by fire suppression personnel using direct attack on the fire edge. Flame lengths greater than four feet generally require firefighting equipment and utilize an indirect attack strategy, where personnel back off to a defensible position away the fire edge.

Fire hazard ratings were developed for the Speaking Coyote Project area utilizing data from the Josephine County Risk Assessment. An estimated 17% of the Speaking Coyote Planning Area is low hazard, 23% of the Planning Area is moderate hazard and 60% is high hazard.

Fuel Models

Fire behavior fuel models are grouped by fire-carrying fuel type. Fuel models are used to predict the potential behavior and effects of wildland fire. The majority of the Planning Area can be identified within the timber understory (TU) and the timber litter (TL) fuel models. Table 5 shows the typical flame lengths associated with each of these fuel models during fire season weather conditions given a 5 mph midflame wind speed.

Table 5. Fuel Models

Fire Behavior Fuels Model	Fuel Model Group	Flame Length (Feet)
TU2	Timber Understory	3-5
TU5	Timber Understory	7-9
TL5	Timber Litter	1-3
TL7	Timber Litter	1-2
TL8	Timber Litter	2-4

(Scott and Burgan 2005 USDA, GTR-153)

3.2.3 Environment Effects on Fire Hazard

3.2.3.1 Alternative 1 (No Action) – Direct and Indirect Effects on Fire Hazard

In the short-term (1-2 years), there would be no increase in fire hazard as no landing piles would be constructed of activity slash since there is no vegetation treatment proposed under this alternative.

In the long-term, the fuel hazard would increase as vegetation continues to develop. Surface fuels would increase due to tree mortality in dense stands as higher levels of insect and disease mortality are expected. The Planning Area would remain in high to moderate fire hazard, resulting in a higher potential of increased fire behavior if a wildfire occurs. The departure from the historical fire regime would continue to trend toward condition class 2 and 3.

3.2.3.2 Alternative 2 (Proposed Action) – Direct and Indirect Effects on Fire Hazard

The majority of cut vegetation would be extracted from the commercial thinning and riparian thinning units. Daylighting road maintenance activities also extract the majority of cut vegetation from these areas. The commercial thinning, riparian thinning, non-commercial density management, and daylighting activities have very similar effects on fire hazard. The remaining slash in the units may cause an initial shift from a timber type fuel model to a slash/blowdown fuel model. The cut vegetation may be recommended for lop & scatter in units to prevent concentration of slash and to arrange the material in a discontinuous pattern where the average fuel bed depth is less than 1 foot. Where post-harvest field review indicates a shift of the fuel model, due to heavy concentrations of slash (greater than 1 foot in depth), the recommended treatment would be to hand pile and burn and or chip the slash to decrease the fire hazard by keep the fire behavior from exceeding the four foot flame length threshold. Underburning may also be used to reduce activity fuels and may be used in conjunction with lop and scatter or handpile and burn treatments.

The slash fuel loads would have an initial increase following proposed activities. Immediately following thinning activities and prior to slash disposal, fire behavior potential would increase from the current potential fire behavior due to increased surface fuels. Within 4 to 6 years the amount of woody fuels (slash) would return to pre-treatment levels due to fuels mitigation measures and decay that incorporates the slash into litter and duff layers.

Cut vegetation extracted from commercial thinning, riparian thinning, and daylighting road maintenance would be piled as landing piles, handpiles, or chipped into the unit. If biomass is not extracted from these piles they would be burned under conditions that maximize consumption while minimizing potential for escape. The piles would need to cure (dry out) to burn thoroughly to achieve these conditions. This curing process generally take over a year, during which time there would likely be a short term increase in fire hazard because the piles have the potential to produce flame lengths that exceed the fire behavior threshold (greater than four foot flame lengths) and increase spotting distance. There are no long term effects to fire hazard since the short term increase would be negated once the landing and/or hand piles are burned and or removed. If the cut vegetation is chipped into the unit there are no long term effects to fire hazard due to the reduction of fuel bed depth and discontinuous arrangement of chipped fuels.

The majority of the Speaking Coyote Project units are identified in the Southwest Oregon Fire Management Plan as Fire Regime I, with low to mixed severity historically occurring roughly every 0-35 years. This fire regime has be interrupted due to past fire and forest management practices, resulting in a current Condition Class 2 and 3 with

moderate to high departure in natural vegetation characteristics and fuel loading. The FRCC within the proposed thinning units would remain unchanged following harvest.

3.2.3.3 Alternative 2 (Proposed Action) – Cumulative Effects on Fire Hazard

The Speaking Coyote Planning Area boundary is defined by ridgelines and road systems which may serve as strategic locations to construct firelines. In the event of a wildfire, these strategic locations may be utilized to contain a fire within the Area, or conversely, to prevent a fire from entering it. As such, the Speaking Coyote Planning Area boundary lends itself to a logical scale to conduct fire hazard cumulative effects analysis.

When compared to the No Action Alternative, the cumulative impact of the proposed action on Fire Regime Condition Classes within the watersheds and the Planning Area would be minimal. The departure from the historical fire regime would continue to trend toward condition classes 2 and 3. The cumulative impact would be an initial increase in fire hazard due to activity slash from the thinning activities until the fuels mitigation work is completed.

Hazardous fuels reduction treatments have occurred throughout the Speaking Coyote Planning Area boundary. Some of these units may require an additional maintenance treatment in order to maintain their viability to slow the spread of a wildfire or to be used as a strategic control point for fire suppression personnel.

3.3 Soil Erosion and Sensitive Soils

3.3.1 Affected Environment Soil Erosion and Sensitive Soils

Methodology

The affected environment for soil erosion and sensitive soils includes proposed treatment units and the area 15 foot on either side of road maintenance haul roads. These potential impacted areas will be referred to as the “treatment areas.” If the analysis shows an unexpected impact resulting in soil impacts outside the treatment areas the extent of this analysis will be expanded. Where this analysis identifies that soil erosion would be transported offsite into streams or other hydrologically connected conduits, impacts will be analyzed within Section 3.4 Water Quality: Stream Sedimentation. Providing an analysis for this element at a larger scale would remove all measurable impacts, and eliminate any meaningful discussion of the effects.

Assumptions

For this analysis it is assumed that non-federal actions will continue to follow current trends, and that actions will be consistent with the Oregon Forest Practices Act and all state, federal, and local laws. It is also assumed that most harvest operations will have

little rehabilitation in terms of sub-soiling and erosion control, and that harvesting would continue to occur on a 40-80 year rotation in the foreseeable future.

Soil Types

Typical soils and soil complexes in this Planning Area formed in residuum (i.e., weathered in place) and colluvium (i.e., material rolling downhill) from sandstone, siltstone, volcanic and metamorphic rock. Soils vary from clay loam to extremely gravelly loam in the surface horizon, with a moderate erosion hazard on slopes under 30%, and a moderate to high hazard of erosion on steeper slopes. Soils are generally well-drained and of moderate depth (20-80+ inches to bedrock), with some local areas of shallow soils on ridgetops and rock outcrops. Soils are suited primarily for growing mixed conifer/Douglas fir stands. Soil maps and descriptions of project soil characteristics are available and at the USDA Natural Resource Conservation Service web site; http://www.or.nrcs.usda.gov/pnw_soil/or_data.html. Predominant soil types, soil characteristics, and current assessed conditions are also described in the Geotechnical Assessment in Appendix 9 of this document. The major management limitations, soil characteristics, and field reconnaissance information for the soils and soil complexes found within the Planning Area were used in the selection of proper Best Management Practices (BMPs) and Project Design Features (PDFs) that have been incorporated into the Speaking Coyote Project.

Sensitive and Fragile Soils

Portions of the Planning area are classified as having fragile soils under the Timber Production Capability Classification (TPCC) Handbook (BLM 1986). These soils require harvest or reforestation, techniques or timing to be altered, or protection measures to be implemented to be capable of meeting minimum stocking and to minimize productivity loss from erosion, mass wasting, nutrient loss, a reduction in moisture supplying capability, or a rise in water table (BLM 1986).

TPCC fragile classifications within the Planning Area include Fragile-Slope Gradient-Suitable (FGR), Fragile-Nutrient-Suitable (FNR), and Fragile-Groundwater- Suitable (FWR). Some sites have a combination of these classifications such as (FGNR, FNWR, etc). Fragile-Slope Gradient-Suitable sites are considered suitable for commercial harvest actions but if implemented without site specific PDFs or BMP's, can have higher instances of debris type landslides and unacceptable levels of surface erosion. Without the application of specific protection measures, these sites can be prone to excessive soil displacement, and where hydrologically connected, stream sedimentation. Burning on these sites is also restricted under the Medford RMP. Sites classified as Fragile-Nutrient-Suitable have inherently low nutrient levels or a nutrient imbalance that inhibits tree growth. Site productivity on FNR classified lands would still meet the commercial harvest land thresholds, but prescriptions should be site appropriate. Sites that are

classified as Fragile-Groundwater- Suitable contain water at or near the surface for sufficient durations to result in vegetative growth and survival affects. Without the application of specific protection measures, these sites can be prone to excessive soil displacement, compaction, and where hydrologically connected, stream sedimentation.

TPCC reforestation classifications within the Planning Area include Reforestation-Temperature-Suitable (RTR), Reforestation-Moisture-Suitable (RMR), Reforestation-Surface Rock and Moisture-Suitable (RSMR), Reforestation-Temperature and Surface Rock-Suitable (RTSR), Reforestation-Temperature and Animal-Suitable (RTAR), and Reforestation-Frost and Temperature-Suitable (RFTR). These sites have environmental, physical, and biological factors that have the potential to reduce the survival of commercial seedlings. All action treatments that do not require tree planting to meet the minimum restocking guidelines under the NWFP, would be appropriate without further PDF's. Site specific PDF's may be needed where seedling planting is necessary to rehabilitate or reforest the site. Since all harvest treatments under the Speaking Coyote Project are thinning actions, leave trees and natural reforestation would meet the minimum restocking guidelines under the NWFP, and tree planting on these sites would not be needed. "These sites will meet or exceed minimum stocking levels of commercial species within 5 years of harvest using operational practices," (BLM 1986). Burning is not restricted on these sites unless they overlap category 1 or 2 soils (see below). These soils will only be discussed for alternatives in this section where vegetation removal could impact restocking. See section 3.5; Soil Compaction and Productivity for additional information.

In addition to the TPCC suitable classifications listed above, there are isolated areas within this Planning Area that are TPCC fragile and TPCC reforestation, non-suitable. For fragile non-suitable classifications, these sites have been determined to be unsuitable for commercial harvest operations but are to be considered for restorative treatments and some non-commercial actions. For reforestation non-suitable classifications, any harvest action that would reduce the number of trees below minimum stocking levels would not be appropriate. Further information on all TPCC classifications can be found in the BLM Handbook 5251-1 (BLM 1986). For TPCC classifications within proposed treatment areas, see table 6 below.

Table 6 TPCC soil classifications in Speaking Coyote Units

Unit #	TPCC Classification	Unit #	TPCC Classification
9-1	RTR	21-2	RTR
10-1	RTR, RSW	22-1	RSTR
10-2	RTR, RMR	23-2	RSTR, LSW, RTR, FNR
10-3	RTR	23-3	RSMR, RSTR, RTR
11-1	RMR	23-4	RSMR, RSTR, RTR

13-2	RSTR	24-1	RTR, RSTR
14-1	RMR, RSMR	25-2	RTR, RMR, FNR
14-2	RSMR, RMR	25-3	RTR
15-1	RMR, FNR, FWR	27-2	RMR, FNR
15-5	RTR	LP27-1	RMR
17-1	RMR, RTR	LP27-2	RMR
17-2	RTR, RMR	LP27-3	RTR, RMR
20-1	RTR	LP27-4	RMR
20-2	RTR	LP34-1	RMR, RTR
21-1	FGR, RMR, RTR	21-2	RTR

* These units have been designed with special protection measure

Approximately 99% of the Planning Area has Category 1 and 2 sensitive soils as described in the Medford RMP. These soils have moderate to severe burn damage potential as classified by NRCS . Category 1 and 2 soils are described within the Medford RMP in respect to silvicultural site preparation and prescribed burning. These classes of soils need to be burned during spring-like conditions when maximum duff layer retention can be attained and minimum coarse woody debris and snag retention requirements (as described in C-40 SEIS ROD) can be achieved.

Map 8 of the Grave Creek Watershed Analysis (WA) identifies areas that may have unstable soils within this Planning Area. This information is compiled broadly and is not based on site specific field review. As such, these areas were cautiously assessed during multiple site specific field reviews. Additionally, due to the known and assessed potential for instability on some slopes within this Planning Area, a certified geotechnical engineer was brought in to evaluate the stability of the proposed treatment areas. This report can be viewed in Appendix 9 of this document. The field data collected ultimately determines the specific areas where timber management is suitable. The remaining proposed treatment areas for this project were selected based on information in the Geotechnical Report and data collected during field review.

Erosion

Primary sources of accelerated erosion (above natural levels) in the Planning Area are present and past forest management activities and roads. Soil displacement refers to the moving of the surface soils as a result of some applied force. When soil displacement occurs, soil horizons may become mixed, essential soil nutrients, water, and soil organisms may be rearranged or removed, and topsoil may become rutted. These alterations to the soil profile or soil characteristics may result in accelerated erosion. As defined in Section 3.5, soil compaction is the packing together of soil particles by physical pressure at the soil surface that results in an increase in soil density and a decrease in pore space. A decrease in soil pore space results in restricted movement of water, nutrients, air, and plant roots, and as such generally decreases site productivity in

most soil types. Reduced pore space also reduces infiltration, causing an increase in surface runoff that can result in accelerated erosion rates.

Soil displacement and compaction occurs during forest management operations when mechanized harvesting or yarding equipment is driven over or yards timber across poorly vegetated, weak, or wet soils. Vegetative cover reduces the particle detachment rate, and through the binding capacity of root masses, the sediment transport rate (NOAA Fisheries, 2004, Larson and Sidle, 1981; Harvey. 1994). Therefore surface erosion, from disturbed soils that are not compacted, is normally greatly diminished within 1-3 years, following the regrowth of vegetation. Soils protected by litter are also less prone to erosion (SOLO, 2006; Rothacher and Lopushinsky 1974). Decommissioning that includes sub-soiling can greatly reduce the recovery period for compacted soils. Erosion from decompact sites would be similar to those discussed for soil displacement. In cases where compacted soils have not been rehabilitated, erosion and other soil impacts can persist for 40- 80 years, or more (Wert and Thomas, 1981). Based on current satellite imagery (2009) the Speaking Coyote Planning Area currently has compaction and accelerated surface erosion as a result of timber management, and public use of unsurfaced or poorly surfaced roads during wet conditions.

Roads

Within the Planning Area, there are approximately 203 miles of system roads that are currently used and maintained as funding allows. Most of these roads are open to the public and are periodically used and maintained as haul routes for forest management operations. Due to limited funding for maintenance and multiple ownerships, some of these roads show evidence of surface erosion, inadequate drainage, inadequate stream crossings or unstable cut-banks and fill slopes. All roads contribute to accelerated erosion at different levels depending on the surface type, type of use, location, maintenance frequency, and moisture levels of the road surface during use. Existing roads proposed for haul and maintenance are rocked and native surface. Approximately 7% of roads in this Planning Area are Bituminous Surface Treatment (BST) surfaced. Rocked roads account for approximately 56% of the roads, and when used for wet condition haul, are generally upgraded where needed to provide adequate surfacing to prevent excessive erosion and road damage. Unless upgraded, rocked and natural surface roads on hydrologically connected BLM lands are only used for log hauling during dry conditions. Approximately 10% of the roads within the Speaking Coyote Planning Area are unsurfaced. These roads are generally the largest sources of erosion, especially if they are open to year round public motor vehicle use. The remaining 27% of roads within this Planning Area are unclassified surface type. Nearly all of these roads occur on private lands. The

percentage of these roads that are rocked or natural surface is unknown. Road densities are currently 4.14 mi/mi². This is above the NMFS target of 3 mi/mi².

Poorly located roads can additionally cause accelerated erosion as a result of the channelization of flow on hillslopes, and in some cases mass wasting (Wemple and Jones, 2003). Some historic roads on both public and private lands within this Planning Area are poorly located and have contributed to excessive erosion and mass wasting. On public lands these roads are managed to reduce erosion and risk of mass wasting, closed, or when appropriate and financially possible, decommissioned. For the Speaking Coyote Project, existing roads that are not ideally located will be maintained to restore or improve drainage patterns and reduce the risk of accelerated erosion.

Ditchline maintenance includes the removal of debris and vegetation where it is impeding water flow, and the digging out or “pulling” of ditchlines where they are lacking the ability to carry the volume of water that is entering them without spilling out across the road surface. This maintenance results in an increase in erosion within ditchlines for the first season until protective vegetation re-grows and bare soils regain stability. Following the first season, ditchline maintenance results in an overall reduction in chronic erosion of the road surface. Proper cross drain spacing and vegetated ditchlines can greatly reduce the amount of sediment that enters streams as a result of roads. In this Planning Area, cross drain spacing on publicly maintained roads is generally adequate except during some high flow events. Ditchlines are only “pulled” as necessary to protect road integrity. As a result most ditchlines in this watershed have sufficient vegetation growing to slow erosion and filter a portion of the sediment.

Cross drain culverts on road systems in the Planning Area are generally spaced further apart than recommended under the Oregon Administrative Rules for forest roads (OAR 629-625-0330). However, upgrading this spacing is only necessary to prevent exceeding water quality standards. Roads proposed for haul and maintenance have been inventoried and based on the Geotechnical Report, most are functioning, but would benefit from the installation of energy dissipaters to reduce outlet erosion. There were two roads identified within the Geotechnical Report as having existing cross drain culverts with accelerated erosion present at culvert outlets. On road 33-5-7 at milepost 2.5 there was a culvert identified that has an area of deep scour at the outlet. Following further conversations with the geotechnical engineer, it was concluded that this site is a pre-existing condition that needs to be monitored periodically by the engineering staff for signs of continued erosion. Road 33-6-24 was also reported to have moderately high erosion at all culvert located at milepost 1.0. Road 33-5-18 in section 17 was

additionally identified as having tension cracks in two locations that will likely result in shoulder failures under wet conditions and heavy loads. Before operations begin, resource area specialists and engineering will together identify whether and where sites exist that should be monitored during operations, and if so, to develop predetermined action triggers and remediation plans. The monitoring sites should be representative of the site conditions of concern, and should be in locations where they can disclose impacts due to the project (Geotechnical Report).

For the most part, ditchlines in this Planning Area appear to be functioning properly, having adequate movement of water, and little scour. In isolated areas where ditchlines are not properly functioning, the pulling of the ditch would be adequate to correct these problems. Downspouts of some cross drains and stream culverts could be upgraded by installing splash pads or downspouts to reduce existing stream draw erosion.

Rocked roads proposed for haul in the Speaking Coyote Project overall have good surface conditions and adequate drainage. Many have been recently graded and resurfaced with clean rock. These roads would be expected to have low levels of erosion unless utilized for hauling under wet conditions. Native surface and some low use rocked roads proposed for haul tend to have weak soil bases that become vulnerable to excessive erosion when wet. The geotechnical engineer identified roads in the Planning Area as having soft subgrades that are suitable for dry condition use, but that would likely become muddy during wet weather haul. She specifically identified roads within sections 17, 18, and 30 as having soft subgrades that may be vulnerable to deformation and erosion during the winter. She also identified roads in sections 11 and 15 as having excessively rocky subgrades that could be easily eroded. There was also one specific location identified by the geotechnical engineer as having a moderately high erosion hazard due to the erodibility and rocky characteristics of the soil and roads subgrade. This location is segment 2 of the 33-5-10.1 road. All haul roads are adjacent to TPCC restricted classifications on BLM lands.

Timber Harvest

It was calculated that approximately 6,567 acres (21%) within the Planning Area have had soil compaction and displacement that has led to subsequent increases of erosion as a result of the construction and use of landings, skid trails, and yarding

corridors during timber management operations between 1964 and 2009¹. Many of these disturbed acres are no longer visible on the ground and appear to have recovered as a result of the re-growth of vegetation. In addition there has been ongoing forest harvest on non-federal grounds that has occurred since the most recent satellite data (2009) and now. Active erosion is observable on these acres, however non-federal harvest is required to operate within the bounds of the Oregon Forest Practices Act, and as such would be compliant with all state and federal laws. Based on past trends it would be expected that approximately 500 acres were harvested within this Planning Area between 2009 and March 2012.

Within previously harvested units in the Planning Area, evidence of past compaction is still present along tractor skid trails, and within stream channels intersected or bordered by these trails. Based on field surveys, erosion from past timber management actions within the treatment units has generally subsided. Evidence of past actions is essentially only visible within units where skid trails or landings were not rehabilitated following use. This area is estimated to account for roughly 90 acres within the proposed treatment units.

The Geotechnical Report identified several areas with existing or past signs of slope instability within sections 10, 17, 18, 21, 27, and 30. She also noted the importance of trees in the stability of high cuts along roads in sections 10, 15, 17, 18, and 20. Original treatment units were modified or deferred as recommended in the Geotechnical Report. Final units were selected based on the Geotechnical Report and field data to ensure that slope instability or unacceptable levels of accelerated erosion would not occur as a result of this project. See the full Geotechnical Report in Appendix 9 for further details.

Wildfire, Prescribed Fire Fuels Reduction, and Silvicultural treatments

There are approximately 2000 acres of hazardous fuel reduction treatments that have occurred in the past five years within the Planning Area. These treatments were designed to limit the extent and magnitude of onsite erosion (retained within

¹ Medford Change Detection (2002), 2009 satellite imagery, and field data was used to estimate units that have been harvested in the past 38 years. Though this does not account for all potentially affected soils, it is the extent of the data that is presently available. This lack of data is not considered to be a measurable source of error since compaction recovers naturally over time, and it is expected that those soils that may have been unaccounted for during this analysis (as a result having been harvested prior to the first available year of data) would be in an advanced stage of recovery. This is based on average natural recovery for the soil types, climate, and elevation of this watershed, and on the skid trail conditions observed during field visits to units within this Planning Area.

the vegetation of each unit and would not be transported to streams), and to protect from offsite erosion. These treatments help to reduce the probability of an intense, large scale wildfire occurring by reducing fuel loading and horizontal continuity within the stand. Based on field reconnaissance there is no evidence within treatment units of any persisting accelerated erosion as a result of these treatments.

Heat resulting from large scale and intense fires can damage soil biology such as mycorrhizae, nitrifying bacteria, and other soil organisms in proportion to burn intensity, adversely affecting soils for up to 10 years (Barnett, 1989). GIS data indicates that there have been 15 wildfires in the Planning Area in the last 10 years. Thirteen of these were less than 0.25 acres in size. The remaining two fires were less than 3 acres each. The extent of offsite erosion from these fires, though expected to be negligible, has not been measured

Silvicultural understory thinning and fuels reduction treatments have occurred in this Planning Area under the Young Stand Management Categorical Exclusions. These treatments included pre-commercial thin, brushing, handpile burning, and pruning on approximately 1500 acres throughout the Planning Area in the last 5 years. These treatments resulted in low levels of onsite erosion. Based on field review there is no evidence within treatment units of any persisting accelerated erosion as a result of these treatments.

3.3.2 Environmental Consequences Soil Erosion and Sensitive Soils

3.3.2.1 Alternative 1 (No Action) Effects to Soil Erosion and Sensitive Soils

Erosion from land management actions across all ownerships within this Planning Area would be expected to remain consistent with current levels over the long term, but may vary from year to year. While some new roads would be constructed, erosion from roads is likely to remain at current levels or may even decrease in the future since road design and construction practices have been greatly improved from the practices used when legacy roads were constructed. Older legacy roads in poor locations, or that were poorly constructed would likely continue to be decommissioned and rerouted, or upgraded in the future as projects and funding occurs.

It would be expected that new harvest actions implemented across all ownerships that would result in erosion and compaction. Based on past harvest trends, acres impacted by non-federal harvest would be expected to be between 700 and 1,000 acres during the next 5 years. Where compacted acres from past road construction and timber extraction are

not associated with actively maintained road systems, soils would continue to improve slowly over time as tree roots and other natural processes begin to break apart soil particles, eventually resulting in a reduction in compaction on these acres. During this period, some areas would experience an increase in erosion due to gullies and rills that form on compacted and unmaintained skid trails. These acres would likely reestablish full hydrologic and soil functions within 40-80 years, depending on soil type and condition at the time of harvest (Wert and Thomas, 1981).

Broadcast burning, pile burning, and other activity fuels treatments would be expected to continue on non-federal lands under the No Action Alternative. All actions would be required to be done in accordance with Oregon Forest Practices Act requirements. Treatment of activity fuels and site preparation of units will likely result in accelerated erosion, stream sedimentation, and localized chemical alterations to the soil and water.

The extent of the impact to soils from non-federal harvest related actions is not known. However, due to improved practices the magnitude of these impacts would be expected to be equal to, or less than, those that have occurred during past timber management activities and would be expected to be compliant with the Oregon Forest Practices Act.

Under Alternative 1, erosion would occur in conjunction with scheduled and emergency road maintenance activities under the Medford Road Maintenance Categorical Exclusion. These actions would be limited to within the road right of way and would be done using BMP's to protect from offsite erosion. These road activities are ongoing actions on Medford BLM lands, and have been further refined to reduce the instances and magnitude of offsite or excessive erosion. These actions would therefore be expected to maintain or reduce current erosion levels from roads in the future.

Areas of short-term erosion could potentially occur as a result of proposed road maintenance and hauling activities that would be associated with the Five Rogues and Five Rogues Thin Timber Sales in this Planning Area. As discussed at the beginning of Chapter 3, these sales are currently un-awarded pending a USFWS biological opinion and red tree vole surveys. As such, it would not be expected that these sales would occur concurrently with the Speaking Coyote Sale. If implemented, erosion would be minimized and any resulting stream sedimentation from these actions would be regulated using BMP's to protect water quality (See Section 3.4: Water Quality).

There are no other current or future federal timber sale projects planned at this time within this Planning Area. However, this does not imply that future projects would not be considered at a later date if stand conditions warrant treatment. There are 39 silvicultural understory thinning projects that will occur in this Planning Area. The

Young Stand Management project will pre-commercial thin, brush, and prune approximately 518 acres. These treatments would result in low levels of onsite erosion and due to BMPs would not affect water quality and treatments would not occur within Speaking Coyote proposed treatment units.

Soil impacts resulting in erosion as a result of all federal projects discussed above are consistent with the impact analysis and conclusions provided in the 1994 Medford RMP EIS.

3.3.2.2 Alternative 2 Effects to Soil Erosion and Sensitive Soils

Management actions proposed under Alternative 2 would result in soil displacement and erosion within the treatment units and along roads. A certified geotechnical engineer was brought in to assess treatment units and roadside treatment areas within the high to medium risk portions of the Planning Area. A full Geotechnical Report is available in Appendix 9 of this document. Based on recommendations in this report treatment areas were altered or deferred. Additionally, field stream and upland surveys were conducted in all units to identify and defer any additional areas that have the potential to result in chronic erosion, excessive soil displacement, or landslides. BMPs and PDFs were then identified and incorporated into the Speaking Coyote Proposed Action to address remaining treatment areas and the general management concerns that were identified for each soil type. Below is a table identifying some of the major changes that were made to units as a result of the information obtained through the Geotechnical Engineering Report and that acquired through field reconnaissance.

Table: 7

Unit #	In Unit Channel Stability Rating	Hydrologic/Soils Conditions Unique to Unit	Actions Taken During Planning
9-1	Good	Extensive mining ditches and multiple ponds in unit. Additional stream/springs found.	South portion of unit deferred-Unit size decreased by ~1/3
10-1	Fair	Pond wetland in SW of unit	Deferred SW portion of unit
10-2	Fair	Instability in NNE portion of unit	Deferred NNE portion of unit
10-3	Good	Instability found S of stream- Multiple stream channels located	Deferred S portion of unit-Decreased unit size by ~1/3
11-1	Good	Multiple hydrologically connected skid trails-Serpentine soils in E portion of unit	Site specific BMP to disconnect hydrologically connected skids-Deferred a portion of E side of unit
15-1	Fair	Extensive mining ditches, streams, and multiple wet areas/ponds in S portion of unit.	Harvest of the S portion of unit would require equipment to cross streams and mining ditches -Deferred entire S portion of unit-Unit sized decreased by ~3/4

15-5	Good	Unit within designated fragile soils withdrawn area	Unit size decreased to ~1/2 to exclude designated fragile soils area
18-1	Fair	Unit found to be in an area of instability-evidence of previous slide activity	Entire unit deferred
23-3	Good	Wet meadow found in SW corner of unit	Deferred SW portion of unit
25-3	Good	Multiple streams and wet areas located	Harvest would require equipment to cross streams -Deferred entire unit
27-1	Good	Unit found to be in an area of instability-evidence of previous slide activity	Entire unit deferred
30-1	Fair	Multiple streams located and unit found to be in an area of instability	Entire unit deferred
LP27-1	Fair	Unit within designated fragile soils withdrawn area	Unit size decreased by ~1/4 to exclude designated fragile soils area

^[1] Best Management Practices are incorporated into the Proposed Action (Section 2.3)

Following incorporation of these BMPs and PDFs, offsite erosion would be limited to hauling and maintenance activities on hydrologically connected roads. Erosion would be transported offsite via ditchlines to streams, and at stream crossings. All other road use, temporary route construction and reconstruction (including associated decommissioning), skid trail construction and decommissioning, landing construction and rehabilitation, yarding operations, and activity fuels proposed under Alternative 2, would result in localized increases in accelerated onsite erosion that would persist for 1-3 years. Below is the description of all activities that would result in accelerated onsite erosion. Offsite erosion and stream sedimentation from road maintenance and haul is discussed in Section 3.4 Water Quality: Stream Sedimentation. All other critical environmental elements, related to soil erosion and water resources, not affected by Alternative 2 are addressed within Appendix 2 of the EA.

Roads

- ***Temporary Route Construction, Reconstruction, and Decommissioning***

There is a total of 2.81 miles of temporary route construction/reconstruction, and subsequent decommissioning proposed for access to units and extraction of materials using uphill cable yarding. Of these, 0.10 miles is proposed on FNNW to allow for extraction of materials from a portion of unit 11-1. Specific placement of all proposed temporary routes would address accelerated erosion and raveling concerns through the following PDFs.

- Proposed temporary route would not be located on or above a headwall or on slopes in excess of 70%.

- Routes would be located on the upper slope or ridge, and would not cross through any Riparian Reserves.
- The proposed route would be discontinuously sub-soiled, seeded, mulched, have slash placed over, water-barred, and blocked.

The table below identifies unit accessed, approximate temporary route length, location on the slope, soil type/TPCC fragile classification, and type of construction.

Table 8 Temporary Routes

Unit Accessed	Temporary Route Length (~miles)	Location on Slope	Soil Type/TPCC fragile classification	Type of Construction
10-2	0.08	Within 100 feet of ridge	6F	New
11-1	0.10	Within 100 feet of ridge	21F/FNNW	New
17-2	0.13	Ridge	6F, 7F	Reconstruction
17-2	0.36	Ridge	6F, 7F	New
20-1	0.48	Upper slope, ~500' from ridge	6F, 7F	New
20-1	0.32	Ridge	6F, 7F	New
21-2	0.18	Midslope	72F	New
23-2	0.13	Upper Slope, ~250' from ridge	87F	New
23-3	0.03	Upper Slope, ~250' from ridge	45F	New
23-3	0.04	Upper Slope, ~250' from ridge	45F	New
23-3	0.04	Upper Slope, ~250' from ridge	45F	New
LP27-1	0.38	Within 150 feet of ridge	6F, 61E	New
LP27-3	0.02	Within 100 feet of ridge	6F	New
LP27-3	0.11	Within 100 feet of ridge	6F, 72F	New
LP27-4	0.28	Within 100 feet of ridge	6F	New
LP27-4	0.10	Within 100 feet of ridge	6F, 72F	New
LP27-4	0.08	Within 100 feet of ridge	6F, 72F	Reconstruction

Through implementation of project design features (Section 2.3), impacts to soils from temporary route construction, reconstruction, and decommissioning would be minimized. There would be a short term impact to soil function on approximately 10.2 acres, as well as an increase in onsite erosion for 1-3 years until ground vegetation recovers. For 0.21 miles of reconstructed routes, required sub-soiling would help to rehabilitate sites with long-term damage from past actions. This would result in a net improvement to soil

resources on approximately 0.25 acres. Since all temporary routes would be sub-soiled, stabilized, and blocked, and none of these routes would be hydrologically connected to streams, proposed temporary routes would not result in any measurable change to watershed hydrology or water quality.

- ***Haul Activities and Road Maintenance***

There are 67.5 miles of existing road and 2.81 miles of new temporary routes proposed for haul. Of these, approximately 39 miles are paved surface county roads within the Planning Area. These roads are maintained by the county and would not be maintained as part of this action. There are an additional 29 miles of bituminous (paved), 33 miles of rocked, and 5.5 miles of native surface roads that would be used for haul and maintained as necessary. Because all access routes to treatment areas are hydrologically connected, hauling would be restricted to the dry conditions on all rocked and natural surface roads. Additionally, in locations where the 34-6-3.2, 33-5-7, and 33-5-10 roads cross, or are within 50 feet of critical habitat for SONC Coho, sediment barriers would be installed as necessary to ensure that no sediment reaches the stream.

Under Alternative 2, rocked and native surface haul roads would receive road surface, ditchline, and culvert maintenance as necessary to protect the integrity and drainage of the road during use. Newly constructed or reconstructed temporary roads would be utilized and decommissioned with little or no maintenance activities. The proposed haul and road maintenance on rocked and natural surface roads would contribute to accelerated erosion at different levels depending on the moisture levels of the road surface during haul, and the type of maintenance applied. Utilizing roads for haul only during dry conditions would minimize the amount of erosion. All roads would be maintained as necessary to prevent road damage and excessive erosion.

All haul routes are located on TPCC restricted soils. Primarily TPCC soils adjacent to haul roads are for reforestation restrictions that require PDF implementation to meet forested stocking levels. There would be no impact to these reforestation soil classifications from road maintenance or haul actions because road right-of-ways are permanently excluded from the timber base, and stocking levels do not need to be maintained.

On approximately 0.9 miles of FNR and 0.15 miles of FG NW (Withdrawn) lands, road maintenance actions could be performed where needed. Road maintenance activities such as road and ditchline shaping, blading, brushing, and spot-rocking, in areas where subgrades, surfacing, or ditchlines are in poor condition, would result in episodic instances of accelerated erosion within the first season, but would result in an overall improvement of existing drainage and reduce chronic erosion. To minimize the amount

of erosion from hauling and road maintenance activities on FGR soils the following PDFs would be used.

- Additional drainage features that are added during road maintenance activities on FGNW would be located away from steep draws and would be designed to disperse water back into the hillside.
- Downspouts or energy dissipaters would be utilized for drainage outlets on FGNW soils.
- Ground cover would be retained to the greatest extent possible during maintenance on both FGNW and FNR lands to protect from excessive erosion.

In addition to the general blading, spot rocking, culvert cleaning, and ditchline maintenance activities that would take place, daylighting road maintenance would occur on approximately 14.3 miles of haul roads. Consistent with the recommendations in the Geotechnical Report, in sections 10, 15, 17, 18, and 20, daylighting maintenance would be limited to the downslope side of the road. Additionally, on roads 33-5-7 and 33-5-18 in sections 17 and 18, downslope daylighting maintenance actions would be intermittent, and would be marked in accordance with on the ground recommendations of the geotechnical engineer. Daylighting maintenance actions would also not include the slide areas identified in sections 17 & 18 by B.G. Hicks (Hicks, 2008). There would be up to 0.9 acres of daylighting maintenance that would occur outside of Riparian Reserves on the FNR restricted classification. Due to the retention of ground cover and the exclusion of Riparian Reserves on this TPCC restricted soil, effects of daylighting maintenance on FNR would be consistent with that on other land types.

Daylighting road maintenance would result in an increase in the intermittent occurrence of upslope erosion within this Planning Area on up to 52 acres, instead of the 14 acres that would be sporadically affected during typical roadside brushing maintenance. This erosion would primarily remain onsite within the hillslope vegetation. It would be expected as with typically ditchline or soil disturbing road maintenance that there would be a small amount of sediment that would move offsite via roadside ditches that connect cutbank actions to streams.

Project PDF's and BMP's would minimize offsite erosion and subsequent impacts to water quality from all hauling and maintenance actions. Daylighting maintenance actions would not exceed other road maintenance and hauling activities. Where hydrologically connected, maintenance and hauling activities on rocked and natural surface roads would result in localized instances of offsite erosion at stream crossings, and where roads are adjacent to and in close proximity to streams. These effects will be discussed further in Section 3.4 Water Quality: Stream Sedimentation.

Density Management (Timber Harvest)

- ***Yarding Corridors, Skid Trails, and Landing Construction***

Under Alternative 2, the construction, use, and rehabilitation of landings, skid trails, and whole tree and cable yarding corridors would result in up to 69.4 acres of compaction and 87 acres of accelerated on-site erosion within treatment units. There are a total of 818 acres within 30 density management units that are proposed for overstory thinning and product extraction under Alternative 2. There are 6 units proposed for treatment that partially overlap TPCC fragile restricted classifications. A total of 10.2 acres within density management units 11-1, 15-1, 23-2, 25-2, and 27-2 would occur on FNR soils. There is also 7 acres within unit 21-1 that is located on FGR soils and 0.6 acres that are located on FWR soils. These soil classifications are discussed in the Affected Environment portion of this element. These TPCC restricted areas have been surveyed in the field to ensure site stability, and were found to be suitable for partial suspension logging with the following conditions. To protect these sites and minimize potential erosion consistent with the Medford RMP and Standard Operating Procedures for soils the following PDF's would be implemented.

- Yard with full suspension (year-round) or one-end suspension during the dry season (generally May 15th – Oct 15th). For dry season operations, this season may be further restricted to a portion of the dry season if it is determined by the authorized officer that unacceptable damage would occur.
- Hand waterbars would be constructed within the cable yarding corridors of these units immediately following use on slopes in excess of 65%, and in areas where bare soil occurs on slopes under 65%.
- Activity slash would be placed on bare soils within yarding corridors and below landing sites. Slash depth would not exceed 18 inches and would be left on site during fuels reduction treatments.
- Landing construction would not occur on slopes over 70%. If existing or constructed landings must be utilized on slopes over 70% or above dry draws, silt fencing, hay bales, or other sufficient sediment control devices will be properly installed and maintained.

Implementation of PDF's would greatly reduce the amount of compaction, surface disturbance, and the amount of exposed soil following treatments that would occur as a result of Alternative 2. This would minimize the impacts of this action on soils. PDFs would also eliminate offsite transport mechanisms and keep erosion from yarding, skid trails, and landings onsite and out of streams.

- ***Activity Fuels within Density Management Units***

Activity fuels treatments within density management units will occur as necessary to maintain or reduce the fire hazard on up to 628.4 acres of Matrix and 81 acres of Riparian Reserve. The remaining 108.6 of unit acres would be located within the no treatment EPZ. Activity fuels treatments would be any combination of lop-and-scatter, hand-piling and handpile burning, or underburning. Lop-and-scatter would not adversely impact sensitive or fragile soils, and would provide additional erosion protection. Handpile burning and underburning would have a localized impact to soils that would be reduced through regulation of the burn intensity and moisture conditions outlined in the burn plan. All but one acre of treatments would occur on Category 1 and 2 soils. There are additionally 11.5 acres of TPCC FNR soils within units that may be treated.

To ensure that erosion remains onsite, and soil damage and erosion are minimized and consistent with those impacts analyzed in the 1994 Medford RMP EIS, all burning activities would be implemented under a burn plan that would be designed to meet Category 1 and 2 soils requirements by using the following;

- A low intensity burn under spring-like conditions;
- maximizes duff layer retention;
- allows for minimum coarse woody debris and snag requirements under C-40 of the SEIS ROD and;
- ignition of units would cease immediately if conditions change during burning and are no longer within the identified range in the burn plan.

Additionally, consistent with the RMP and recommended by the Standard Operating Procedures Guide for soils, the following PDF would be implemented on FNR soils to further reduce impacts to soils and reduce erosion.

- Lop-and-scatter activity slash over yarding corridors then across remaining FNR soils in unit. Where slash quantity is such that lop-and-scatter treatment alone would result in an increase in the fire hazard classification, handpile and burn high concentration areas outside yarding corridors during spring like conditions.

The above protection measures incorporate the recommendations for operations on fragile and sensitive soils as advised by the Medford RMP and the BLM standard operational procedures guide for soils (BLM, 2010).

Riparian Reserve Treatments

Streams in the Planning Area are dependent on large wood to help reduce stream energy, capture sediment and smaller organic debris, create aquatic habitat, and provide other channel and ecosystem functions. Increasing the amount of large wood in streams is a

key component of watershed restoration, and the ROD/RMP (USDI 1995) states that we should “Apply silvicultural treatments to restore large conifers in Riparian Reserves.”

Of the 818 acres of density management treatments that are proposed, 81 acres would be thinned within the Riparian Reserve. All Riparian Reserves proposed for thinning are dominated by smaller diameter stands of Douglas-fir mixed with some hardwoods. In the Riparian Reserves of units 9-1, 10-1, 20-1, and 21-2 there are some legacy overstory trees present. In these stands, legacy overstory trees have been identified for retention and will not be harvested with the remainder of the unit. All stands, including those with some legacy trees, are lacking in the multiple canopy structure, large wood debris, downed logs, and large tree structure desired in Riparian Reserves. Thinning of dense Riparian Reserves would reduce competition on the retained trees for light, nutrients, water and growing space, allowing trees would develop larger canopies, display better vigor and put on diameter growth faster than if left untreated. Treatments within Riparian Reserves would be specifically designed to promote the development of future large woody debris and multi-story canopies. These treatments would result in minor increases in soil disturbance on up to 7.5 acres during yarding operations. However by retaining legacy trees that already provide desired future large woody debris and wildlife habitat, and thinning from below to reduce competition, these treatments would improve the overall riparian quality in approximately 10-20 years.

Riparian Reserve stands would be treated using cable and ground based yarding to extract usable products, improve stand condition, and reduce fire danger. There would be 9 roadside landings utilized within the Riparian Reserves. These landings would utilize the road surface for equipment but would need to clear trees, on either side of the road, to create an open area up to 0.25 acres in size for safe operation of yarding and log loading equipment. Three of these landings would be located within the EPZ on the road surface and within turnouts. There would be no overstory shade trees removed, and no more than 5 trees total would be taken from the three sites combined. BMP’s would be applied to ensure that erosion from these actions would remain onsite and would not result in stream sedimentation. A list of BMP’s that would be implemented is provided in Section 2.3 Best Management Practices and Project Design Features. Together these BMP’s will ensure the following:

- the magnitude and extent of the affected area is minimized to reduce erosion;
- sediment control barriers are installed and maintained to prevent offsite erosion where landings would otherwise be hydrologically connected and;
- adequate buffers are implemented to protect all components of water quality based on the type, extent, and magnitude of the proposed activities’ impact.

Buffers were designed to ensure that erosion remains onsite and water quality is not affected. For density management units, this buffer is referred to as the Ecological

Protection Zone (EPZ). The EPZ for streams in this project ranges from 75 to 205 ft from the stream bankfull width (by slope distance). It would be applied along streams to protect stream channel structure and water quality (Best Management Practice, RMP p.154). Each EPZ distance was developed using stated protection criteria for individual elements of the Riparian Reserves including: bankfull and flood stage streambank stability; shade and temperature; surface erosion of streamside slopes; fluvial erosion of the stream channel; soil productivity; habitat for riparian-dependent species; the ability of streams to transmit damage downstream; the role of streams in the distribution of large wood to downstream fish bearing waters; and riparian microclimate. The Ecological Protection Width Needs chart is based on slope and rock type, and takes into account protection of streams from “surface erosion of streamside slopes, fluvial erosion of the stream channel, soil productivity, habitat for riparian-dependent species, the ability of streams to transmit damage downstream, and the role of streams in the distribution of large wood to downstream fish bearing waters” (ROD/ NWFP, p. B-14).

Other than the above mentioned roadside landings, no management activities would occur with the EPZ. Treatments within the Riparian Reserves that are outside the EPZ would maintain a canopy cover above 50% to ensure microclimate is maintained. Trees selected for removal would primarily be suppressed upland conifer species. Within the Riparian Reserves, riparian dependent species, legacy overstory trees, and hardwoods would be maintained as necessary to ensure the diversity of the stand. Activities in this area would be designed to ensure that habitat conditions for the wildlife and plant species that use this zone are not degraded.

Implementation of standard PDF’s that limit the extent and magnitude of erosion, as well as the EPZs for density management and no treatment zones for understory thinning activities, will ensure erosion remains onsite and water quality is maintained.

3.3.2.3 Summary of Effects for Soil Erosion

Because of the type of actions proposed and the PDF’s that would be implemented, there would be no instances of chronic erosion or excessive soil displacement that would occur as a result of any proposed actions associated with this project. The magnitude and extent of soil erosion from all activities associated with the Proposed Action would be consistent with the impact analysis and conclusions provided in the 1994 Medford RMP EIS.

Cumulative effects to Soil Erosion and Sensitive Soils

Erosion from land management actions across all ownerships within this Planning Area would be expected to remain consistent with current levels over the long term, but may vary from year to year. While some new roads would be constructed, erosion from roads is likely to remain at current levels or may even decrease in the future since road design

and construction practices have been greatly improved from the practices used when legacy roads were constructed. Older legacy roads in poor locations, or that were poorly constructed would likely continue to be decommissioned and rerouted, or upgraded in the future as projects and funding occurs.

It would be expected that new harvest actions would be implemented across all ownerships that would result in erosion and compaction. Based on past harvest trends, acres impacted by non-federal harvest would be expected to be between 700 and 1,000 acres during the next 5 years. Actions on non-federal lands could potentially require hauling on the proposed haul routes and would be expected to remain consistent with the Clean Water Act. At times when hauling would occur concurrently with haul for the Speaking Coyote Project, the standard would remain the same for the amount of allowable turbidity within streams. As such, the impacts to soils and erosion would be minimized and would remain primarily onsite.

Broadcast burning, pile burning, and other activity fuels treatments would be expected to continue on non-federal lands. All actions would be required to be done in accordance with Oregon Forest Practices Act requirements. Treatment of activity fuels and site preparation of units will likely result in accelerated erosion, stream sedimentation, and localized chemical alterations to the soil and water.

The extent of the impact to soils from non-federal harvest related actions is not known. However, due to improved practices the magnitude of these impacts would be expected to be equal to, or less than, those that have occurred during past timber management activities and would be expected to be compliant with the Oregon Forest Practices Act.

Erosion would occur in conjunction with scheduled and emergency road maintenance activities under the Medford District Road Maintenance Categorical Exclusion. These actions would be limited to within the road right of way and would be done using BMP's to protect from offsite erosion. These road activities are ongoing actions on Medford BLM lands, and have been further refined to reduce the instances and magnitude of offsite or excessive erosion. These actions would therefore be expected to maintain or reduce current erosion levels from roads in the future.

Areas of short-term erosion could potentially occur as a result of proposed road maintenance and hauling activities that would be associated with the 5 Rogues and 5 Rogues Thin Timber Sales in this Planning Area. As discussed at the beginning of Chapter 3, these sales are currently un-awarded pending a biological opinion. As such, it would not be expected that these sales would occur concurrently with the Speaking Coyote Sale. If implemented, erosion would be minimized and any resulting stream

sedimentation from these actions would be regulated using BMP's to protect water quality (See Section 3.4: Water Quality).

There are no other current or future federal timber sale projects planned at this time within this Planning Area. However, this does not imply that future projects would not be considered at a later date if stand conditions warrant treatment. There are 39 silvicultural understory thinning projects that will occur in this Planning Area. The Young Stand Management project will pre-commercial thin, brushing, and prune approximately 518 acres. These treatments would result in low levels of onsite erosion and due to BMPs would not affect water quality. These projects would not occur within Speaking Coyote proposed treatment units.

Soil impacts resulting in erosion as a result of all federal projects discussed above are consistent with the impact analysis and conclusions provided in the 1994 Medford RMP EIS.

As such, erosion from the combined hauling actions of the non-federal and federal projects would be expected to be consistent with, and within the magnitude of, the impacts that were discussed for hauling in the direct and indirect impacts of Alternative 2, and would be consistent with the analysis and conclusions provided in the 1994 Medford RMP EIS. Sedimentation resulting from these actions is discussed further in Section 3.4, Cumulative Impacts to Water Quality. There are no overlapping actions from any federal or non-federal projects that would occur within the proposed treatment units.

3.4 Water Quality: Stream Sedimentation

3.4.1 Affected Environment Water Quality: Stream Sedimentation

Methodology

In this analysis, the Planning Area, or smaller scale is used to better detect potential effects of the project near the site of proposed actions. The rationale is that adverse (or beneficial) effects to water resources are easier to detect in smaller catchments (Bosch and Hewlett 1982) and as one nears the treatment site.

Assumptions

Sediment input to stream channels is a result of both natural and management related processes. Primary sediment sources include: episodic landslides and slumps usually associated with intense winter storms, hillslope erosion, stream bank erosion and roads. Forest management related increases in sedimentation are most often the result of poorly

designed and/or poorly maintained forest roads. These roads can be a major contributor of fine sediment to streams (Wemple and Jones 2003).

There are no streams in the Planning Area currently listed by ODEQ as impaired by excess fine sediment. As discussed above in Section 3.3 Soil Erosion and Sensitive Soils, the only actions associated with this project that would result in offsite erosion that could lead to stream sedimentation is road maintenance and haul. Some roads in the Planning Area show evidence of surface erosion, inadequate drainage, inadequate stream crossings or unstable cut-banks and fill slopes. Where hydrologically connected these roads are likely to provide excess fine sediment to adjacent streams. Field inspections of the proposed haul route showed multiple locations with the potential for accelerated sediment delivery. Roads contribute to stream sedimentation at different levels depending on the depth and quality of rock, type of use, location, maintenance frequency, and moisture levels of the road surface during use. BLM managed land in the Grants Pass Resource Area limits its use of rocked and natural surface roads to dry conditions to reduce erosion and protect road surface integrity. Access to all proposed haul roads is hydrologically connected to streams. There are a total of 109 stream intermittent and 164 perennial stream crossings along the proposed haul routes.

Designated beneficial uses for the Grave Creek watershed include; public and private domestic water supply; industrial water supply; irrigation; livestock watering; anadromous fish passage, rearing, and spawning; resident fish and aquatic life; wildlife and hunting; fishing; boating; water contact recreation; and hydropower. The Oregon Department of Environmental Quality (ODEQ) is responsible for establishing water quality standards to protect beneficial uses and aquatic life in Oregon streams. Currently ODEQ does not have established criteria for measuring sediment. The current water quality standards instead address turbidity, a measure of water clarity. These standards are primarily based on an Environmental Protection Agency (EPA) recommendation from 1976. ODEQ is in the process of revising the water quality standards for turbidity based on the best available science regarding the effects of turbidity on beneficial uses, in particular aquatic life (<http://www.deq.state.or.us>). This standard does not necessarily correlate with the amount of sediment entering the stream.

Stream surveys completed in the Speaking Coyote Planning Area indicate that though variable, water quality, channel stability, and stream bed quality for aquatics within, and adjacent to units is generally in fair to good condition.

3.4.2 Alternative 1 (No Action) Effects to Water Quality: Stream Sedimentation

Sedimentation from harvest actions across all ownerships within the sub-watersheds in this Planning Area would be expected to remain consistent with current levels over the

long term, but may vary from year to year. Currently, road density within this Planning Area is 4.14 mi/mi². This is slightly above the 3 mi/mi² threshold for “not properly functioning” for aquatic species by the National Marine Fisheries Service (NMFS) (USFWS/NOAA Fisheries Table of Population and Habitat Indicators, USDA et al. 2004b). Though some new roads would be constructed outside currently proposed federal actions, sediment from roads is likely to remain at current levels or may even decrease in the future since road design and construction practices provide for greater consideration of water quality and aquatic resources than the practices used when legacy roads were constructed. Older legacy roads in poor locations, or that were poorly constructed would likely continue to be decommissioned and rerouted, or upgraded in the future as projects and funding occurs.

Harvest actions on non-federal land would continue to be implemented within this Planning Area. It is expected that this harvest would remain consistent with current harvesting trends. Past trends have resulted in between 700-1,000 acres of non-federal harvest taking place every 5 years. Sedimentation from harvest actions and road construction on non-federal lands within this Planning Area would be expected to remain consistent with current levels over the long term, but may vary from year to year. These projects would be expected to be consistent with the Oregon Forest Practices Act, the Clean Water Act and the Endangered Species Act. These acts provide a threshold for water quality and aquatic impact that would suggest that actions affecting water quality and aquatic habitat on non-federal lands would maintain current conditions.

Under Alternative 1, erosion and stream sedimentation would occur in conjunction with scheduled and emergency road maintenance activities under the Medford District Road Maintenance Categorical Exclusion. These actions would be limited to within the road right of way and would be done using BMP's to protect from offsite erosion and ensure compliance with Oregon water quality standards for turbidity. These are ongoing actions on Medford BLM lands, and have been further refined to reduce the instances and magnitude of offsite, excessive erosion, or stream sedimentation. These actions would therefore be expected to maintain or reduce current erosion levels from road maintenance in the future.

Areas of short-term localized sediment input could potentially occur as a result of proposed road maintenance and hauling activities that would be associated with the Five Rogues and Five Rogues Thin Timber Sales in this Planning Area. As discussed at the beginning of Chapter 3, the Five Rogue ales are currently un-awarded pending a biological opinion and red tree vole surveys. As such, it would not be expected that these sales would occur concurrently with the Speaking Coyote Sale. If implemented, stream sedimentation from this action would be regulated using BMP's to protect water quality. Sediment from these actions would be within ODEQ water quality standards, the Clean

Water Act, and is within the scope of anticipated effects to aquatic resources analyzed in the Medford District PRMP/ EIS (USDI 1994).

There are no other current or future federal timber sale projects planned at this time within the Planning Area. However, this does not imply that future projects would not be considered at a later date if stand conditions warrant treatment. Water Quality impacts that will result from all federal projects discussed above are consistent with the Clean Water Act and the impact analysis and conclusions provided in the 1994 Medford RMP EIS.

3.4.3 Alternative 2 Effects to Water Quality: Stream Sedimentation

Roads

- *Haul Activities and Road Maintenance*

There are 87.4 miles of existing road and 2.81 miles of new temporary routes proposed for haul. Of these, approximately 39 miles are paved surface county roads within the Planning Area. The roads are maintained by the county and would not be maintained as part of this action. There are an additional 6 miles of bituminous (paved), 35.1 miles of rocked, and 4.9 miles of native surface roads that would be used for haul and maintained as necessary. Because all access routes to treatment areas are hydrologically connected, hauling would be restricted to the dry conditions on all rocked and natural surface roads.

Best Management Practices and Project Design Features for road related activities would reduce and in some cases eliminate sediment from entering stream channels. Under Alternative 2, rocked and native surface haul roads would receive road surface, ditchline, and culvert maintenance as necessary to protect the integrity and drainage of the road during use. Where roads are connected to streams, sediment would enter stream channels.

Well vegetated ditchlines would reduce the amount of sediment reaching stream channels. During the dry condition haul there is no water flowing on the road surface or in ditchlines, so sediment delivery to streams would be minimal. Sediment derived from hauling would be primarily directed to ditch lines and then out of ditchlines via ditch relief culverts to the forest floor. Sediment directed to hillsides by ditch-relief culverts would filter into the soil before reaching stream channels. However, some sediment directed to ditchlines during hauling could move off-site during winter rains. Sediment control devices would be installed in some instances to trap and store sediment which would further reduce sediment delivered to streams. Additionally, in locations where the 34-6-3.2, 33-5-7, and 33-5-10 roads, cross, or are within 50 feet of critical habitat for SONC Coho, sediment barriers would be installed as necessary to ensure that no

sediment is reaching the stream. Road maintenance completed prior to and after haul would further reduce the amount of off-site sediment movement during and after haul.

The amount of sediment which would reach stream from haul and maintenance actions would not result in visible turbidity during use, and would be indiscernible from background levels that would be typically seen during early season storms. Deposition of fine sediments could result at capture points within 25 feet, downstream of stream crossings within smaller tributaries. The extent of these deposits would not be of a magnitude to alter macroinvertebrate populations and would be indiscernible following the first few rains. Effects to water quality from hauling and road maintenance would not be discernible from background levels within any major streams 3rd order or higher within this Planning Area.

On the 34-6-3.2, 33-5-7, and 33-5-10 roads, additional sediment control barriers would be placed and maintained to ensure that there would be no sediment delivery to Critical Habitat for Endangered Coho salmon from actions associated with this project. See Appendix 2, T/E Fish Species or Habitat for more detailed information.

In addition to traditional road maintenance actions, Alternative 2 proposes to reduce future road maintenance needs through daylighting of the road surface. Daylighting road maintenance would result in an increase in the intermittent occurrence of upslope erosion within this Planning Area on up to 52 acres, instead of the 14 acres that would be sporadically affected during typical roadside brushing maintenance. Erosion would primarily remain onsite within the hillslope vegetation. It would be expected, as with typically ditchline or soil disturbing road maintenance, that there would be a small amount of sediment that would move offsite via roadside ditches that connect cutbank actions to streams.

Within proposed thinning unit boundaries, all daylighting road maintenance would occur outside of the stream EPZ, except in cases of safety hazards or imminent road failure. All stream draws with proposed daylighting road maintenance that are located outside of proposed thinning units would be evaluated and marked by a hydrologist. The purpose of this evaluation would be to assess which trees along proposed roadways would need to be retained for the protection of all aspects of water quality. The goal is to allow some trees in the near streams to be removed along the road edge where needed to address road maintenance issues that are leading to chronic stream sedimentation, or road failure, while still providing sufficient protection for no measurable impacts to water quality. Solar radiation and sediment are the two measures of water quality that could be measurably affected by daylighting road maintenance if the proposed actions were to be implemented without PDFs. As such, effective shade provided by the tree and the tree's influence on slope stability are the two most critical components to be assessed for

proposed tree removal at stream crossings of streamside roads. To assess these components the following would be considered; tree size, position of tree relative to the sun's path, stream orientation, the distance of the tree from the stream, slope steepness, whether the tree is located in the primary or secondary shade zone, and whether or not the roots of the tree are providing needed cut and fill slope stability in areas that are hydrologically connected via surface flow to the stream. Subsequent to this assessment, the hydrologist would mark which trees near stream crossings that could be safely removed without having any measurable direct, indirect, or cumulative impacts to water quality. All areas with trees crossing or parallel to a stream that were determined to be providing water quality protection, would be posted and flagged. Removal of vegetation in these posted areas would be restricted to marked commercial trees, and non-commercial trees and brush within 4 feet of the road or turnouts. In some of these posted areas, no commercial trees would be marked for harvest to protect water quality. Outside the designated protection areas for the roadway stream draws, but within the NWFP Riparian Reserves, cutting of vegetation would be limited to 10 ft on either side of the roadway to retain the important microclimate function of the outer Riparian Reserves.

The amount of fine sediment introduced to streams during haul activities on all other haul routes would be indiscernible beyond natural erosion processes occurring during winter rains and would have negligible impacts to downstream resources. The use of these roads is expected to be short term and limited by weather conditions as specified in the site specific Project Design Features. Where sediment would reach stream channels as a result of road activities, it would not cause a visible increase in stream turbidity or a reduction in macroinvertebrate populations. Changes in embeddedness, interstitial spaces, and pool depth would not occur. A long-term reduction in sediment entering streams would occur on some sections of haul road following road maintenance because these road activities would improve currently impaired road drainage. These actions would therefore not exceed State of Oregon water quality standards and would not result in any measurable effects on aquatic habitat. Alternative 2 is also consistent with the standards and guidelines set forth under the 1994 Medford RMP EIS.

Cumulative Effects to Water Quality: Stream Sedimentation

Cumulative effects of past land management practices on federal and non-federal lands have contributed to the current reductions in water quality and aquatic habitat within the Planning Area. Sedimentation from harvest actions and road construction on non-federal lands within these sub-watersheds would be expected to remain consistent with current levels over the long term, but may vary from year to year. Non-federal actions would be expected to be consistent with the Oregon Forest Practices Act, the Clean Water Act and the Endangered Species Act. These laws provide a threshold for water quality and

aquatic impact that would suggest that actions affecting water quality and aquatic habitat on non-federal lands would maintain current conditions.

Ongoing actions on non-federal lands would likely require hauling on some of the proposed haul routes. These actions would be expected to remain consistent with the Clean Water Act. At times when hauling would be occur concurrently with haul for the Speaking Coyote Project, the standard would remain the same for the amount of allowable turbidity within streams. As such, additional BMP requirements for federal hauling actions would, in some locations, result in an overall reduction in sediment entering streams from non-federal haul during concurrent hauling activities.

Areas of short-term localized sediment input could potentially occur as a result of proposed road maintenance and hauling activities that would be associated with the Five Rogues and Five Rogues Thin Timber Sales in this Planning Area. As discussed at the beginning of Chapter 3, these sales are currently un-awarded pending a biological opinion and red tree vole surveys. As such, it would not be expected that these sales would occur concurrently with the Speaking Coyote Project. If implemented, stream sedimentation from these actions would be regulated using BMP's to protect water quality. Where sediment does enter the stream, changes in turbidity or sediment deposition would not be discernible beyond 25 feet of road crossings in small tributary streams. Any deposition of sediment would be undetectable above natural levels following the first post action bankfull event. Within 3rd order or larger streams, stream sediment resulting from hauling and road maintenance actions would not be discernible from background levels due to the fine sediment entrainment that would occur in these higher streamflows. There are no other federal actions currently planned that would result in changes in water quality within this Planning Area.

Having multiple would not cumulatively change the magnitude of impacts, or the extent of the impacts that was analyzed for the direct and indirect effects of each individual project for the following reasons; Federal and state laws limit the magnitude of potential stream sedimentation; the impacts to water quality from these projects are of a short term nature; and each of the projects that are occurring within the same watershed during the same time period are in dispersed locations. Logically it can be concluded that negligible increases in sediment from these activities would contribute to the overall amount of sediment entering streams from past, present, and future impacts within these sub-watersheds, but sediment from these actions would be within ODEQ water quality standards, the Clean Water Act, and is within the scope of anticipated effects to aquatic resources analyzed in the Medford District PRMP EIS (USDI 1994).

3.5 Soil Compaction and Productivity

3.5.1 Affected Environment for Soil Compaction and Productivity

Assumptions

Physical, chemical, and biological properties of soils determine the natural level of soil productivity. These properties also determine how different soils will respond to natural and anthropogenic disturbances. For soils to be productive for timber management, soils must be able to acquire, maintain, and release water and nutrients needed by trees during the growing season. Soils also must be able to support the microorganisms necessary to maintain proper nutrient cycling and plant nutrition. Forest management activities can affect these soil properties by displacing and compacting soils and removing topsoil organics.

Soil compaction is defined as the packing together of soil particles by physical pressure at the soil surface that results in an increase in soil density and a decrease in pore space. A decrease in soil pore space results in restricted movement of water, nutrients, air, and plant roots, and as such generally decreases site productivity in most soil types.

Soil productivity, in a forested setting, is primarily the soil's capacity to support plant growth over time as reflected by some index of biomass accumulation. Losing a soil's plant growth capacity also means losing the site's ability to sustain timber production and other important ecological values. Soil productivity is affected by soil bulk compaction, soil displacement, and by changes and reductions in soil nutrients. Litter, humus, soil wood, and certain key properties of the surface mineral layers of forest soils are most easily and commonly disturbed by yarding activities, yet they are crucial to forest productivity. Minimizing the amount of soil displacement, compaction, and topsoil loss will generally improve stand development. The most common types of disturbances effecting soils and associated long term productivity are displacement and compaction. Soil compaction and displacement, which effects growth, is a combined effect which cannot be separated (1994 Medford District EIS, Vol. 1, p. 4-13).

Methodology

The amount of soil compaction and productivity loss will be based on percentages per unit. The scale of analysis is per harvest unit, as it is the affected area for soils to support tree establishment and growth on BLM managed land. Specifically, soil productivity calculations are based on acres of actual compaction/displacement. For the Speaking Coyote Project productivity loss will be limited to 5%. Those areas actually compacted/displaced are calculated to have a 35% growth/productivity loss per acre (*Productivity losses of 30 and 40% for disturbed and compacted acres respectively, are based on the Medford District PRMP vol.3 calculations, p.18-20). These two

productivity losses were combined at 35% for this analysis, based on percentages of disturbance and compaction within each cable yarding corridor and tractor skid trail (65% of the Speaking Coyote Project would be cable and 35% would be tractor). The acres of actual compaction/displacement are multiplied by a loss of 35% growth divided by the total unit area to determine the reduction in productivity. For instance, 20 acres of compaction/displacement across a 200 acre unit would expect to result in 3.5% productivity loss ($20 \times .35/200 = 3.5\%$). The calculations take into account all new and existing compaction/displacement associated with landings, skid trails, and cable yarding corridors.

3.5.2 Alternative 1 (No Action) – Direct and Indirect Effects on Soil Compaction and Productivity

Alternative 1 would result in negligible increased productivity of the soil. Existing compaction/displacement within the harvest units proposed for the Speaking Coyote Project would continue amelioration of prior compaction, towards pre-disturbance conditions. Fine roots of current vegetation would continue to loosen compacted soil. Leaf fall and other litter from the vegetation would continue to add organic material to the soil. Soil productivity in areas not affected by past disturbance would continue along natural productivity patterns.

3.5.3 Alternative 2 (Proposed Action) – Direct and Indirect Effects on Soil Compaction and Productivity

Alternative 2 proposes 818 acres of commercial thinning and 2.6 miles of temporary route construction and 0.21 miles of temporary route reconstruction that would result in an estimated 70.6 acres of soil compaction and displacement over new and existing footprints and would reduce soil productivity by an estimated 3%. Best Management Practices in the 1995 RMP (p. 166) describes the use of designated skid roads within stands to limit soil compaction to less than 12% of the harvest area. The analysis of skid trail compaction/displacement that was projected in GIS averaged 5.7% compaction per unit. Total compaction/displacement associated with tractor skid trails, landings and cable yarding corridors would account for an average of 9.2% per unit. Therefore, each proposed Speaking Coyote Project harvest units would be below 12% compaction and 5% productivity loss as analyzed in the 1994 Medford District FEIS RMP.

The specific actions of the Proposed Action that would affect the physical, chemical, or biological properties of soils in proposed harvest units are described below.

Soil Compaction/Displacement

- Roads

A total of 0.21 miles of temporary route reconstruction would occur within units 17-2 and LP27-4. These roads utilize existing road footprints that are currently compacted as a result of past harvest activities. These existing roads that would be re-opened for the Speaking Coyote Project amount to approximately 0.4 acres. Following use, these reconstructed roads would be ripped, stabilized, water barred and barricaded. While some displacement of surface organic material that had fallen onto the old road surface since past harvest would occur, compaction would be reduced by ripping. Overall, soil productivity on these acres would improve.

A total of 2.6 miles of temporary route construction is anticipated to occur during implementation of the Speaking Coyote Project, resulting in 1.1 acres of soil compaction. These routes would allow harvest operations to occur within parts of 10-2, 11-1, 17-2, 20-1, 21-2, 23-2, 23-3, LP 27-1, LP27-3, and LP27-4. These temporary routes would amount to approximately 4.3 acres. Following use, these temporary routes would be ripped, stabilized, water barred and barricaded. There would be some short-term loss of soil productivity where the temporary route was constructed due to displacement of soil organics. There would be an increase in soil productivity within the unit along these temporary routes in areas where the organics were deposited (e.g. fill-slopes). Ripping of these temporary routes would mitigate compaction.

Landings, Skid trails, and Cable Yarding Corridors

Soil compaction from landings, skid trails, and cable yarding corridors would occur on approximately 69.4 acres under Alternative 2. These landings, skid trails, and yarding corridors would be utilized during the extraction of commercial size timber.

Landings, skid trails, and cable yarding corridors would be winterized and rehabilitated by properly installing and/or using water bars, berms, sediment basins, gravel pads, hay bales, small dense woody debris, seeding and/or mulching, to reduce sediment runoff.

Operators working within previously harvested units would be required to utilize existing skid trails and cable yarding corridors to the greatest extent possible before consideration of new trails and corridors. New skid trails, would be pre-designated and approved by the BLM Authorized Officer.

- Off Designated Skid Trails, Use of Mechanized Harvest Equipment
- When practical, the mechanized harvest equipment (if used) must walk on a mat of existing or created slash. Slash mats would disperse downward pressure across the soil surface.

Alternative 2 (Proposed Action) - Cumulative Effects on Soil Compaction and Productivity

Soil compaction and productivity from harvest actions across all ownership within the sub-watershed in the Planning Area would be expected to remain consistent with current levels over the long term, but may vary from year to year. Harvest actions conducted on non-federally managed lands are expected to be consistent with the Oregon Forest Practices Act. It is expected that these harvest activities would remain consistent with current harvesting trends which have resulted in between 700 and 1m000 acres of harvest occurring every 5 years. Soil compaction and productivity losses associated with non-federal activities within the Planning Area would be expected to remain consistent with current levels over the long term but may vary from year to year. Activities occurring on non-federal land that could impact soil compaction and productivity include road building and commercial and non-commercial timber extraction.

Effects of the proposed action are analyzed on a per harvest unit basis. Design of the proposed action to meet established standards for loss of soil productivity in this project maintains desired soil productivity on BLM managed lands below 12% compaction and 5% productivity loss as analyzed in the 1994 Medford District FEIS. Other activities such as young stand management treatments and fuels hazard reduction treatments are not ground disturbing and will not contribute to soil compaction and productivity loss within the Planning Area.

Areas of localized soil compaction and productivity loss could potentially occur as a result of road maintenance, temporary haul route construction, and resource extraction associated with the Five Rogues and Five Rogues Thin Timber Sales in the Planning Area. As addressed at the beginning of Chapter 3, the Five Rogues sales are currently un-awarded pending a biological opinion and red tree vole surveys. It is not expected that these sales would occur concurrently with the Speaking Coyote Sale. If implemented soil compaction and productivity loss from this action would be analyzed on a per harvest unit basis and would maintain desired soil productivity on BLM managed lands below 12% compaction and 5% productivity loss as analyzed in the 1994 Medford District RMP/EIS. BMPs and PDFs would be implemented to achieve these thresholds.

The Lower Graves Planning Area and the Speaking Coyote Planning Area share a common boundary in sections 33-5-26 and 27. The Lower Graves Planning Area and associated timber sale proposes to harvest two units that fall within the Speaking Coyote Planning Area. These units will be analyzed within the Lower Grave Planning Area and all activities will be in compliance with the 12% compaction and 5% productivity loss as analyzed in the 1994 Medford District RMP/EIS.

3.6 Northern Spotted Owl (Threatened) and its Critical Habitat

3.6.1 Affected Environment for Northern Spotted Owl and its Habitat

The Planning Area is located within the Grave Creek Watershed, which contains a mixture of seral stages, including mature and old-growth forest habitat used by northern spotted owls. The BLM manages approximately 48% of this 104,529 acre fifth-field watershed. The watershed analysis document can be reviewed on the Medford District BLM website at <http://www.blm.gov/or/districts/medford/plans/inventas.php>. BLM ownership is divided with other ownerships in a checkboard pattern by legal sections of land.

As of January, 1999, up to 58 percent of the BLM lands in this watershed are comprised of stands that are older than 80 years. However, due to low overstory densities and crown closures in some stands, the actual effective late seral habitat is closer to 39 percent of the BLM lands in this watershed. It's important to note that the exact acreage is uncertain due to inadequate inventories of late-successional characteristics. (Grave Creek watershed Analysis, USDI BLM 1999 p.86). Although ingrowth and harvesting since 1999 has changed the quantity of closed canopy late-successional habitat, similar moderate levels occur on BLM land in Grave Creek watershed.

A large majority of the late-successional habitat in the watershed occurs on BLM lands. It is expected that private timber lands will continue to be cut on a 50-80 year rotation. As a result, northern spotted owl habitat is expected to be limited to federal lands. Extensive harvesting on BLM occurred in the Planning Area prior to the 1990 listing of the spotted owl as a threatened species, and the implementation of the NFP in 1994. The Grave Creek Watershed Analysis (USDI 1999, p. 51) notes that the late-successional stands are highly fragmented and often isolated from other stands because of the checkerboard pattern of federal land ownership and past logging. Harvesting on private lands continues to be extensive. Most private land has been intensively harvested, much of it in the last few decades. Other past events, such as quarry development, road building, rock slides, and fire have also contributed to presently unsuitable spotted owl habitat.

Habitat suitability for spotted owls includes a composition of multiple habitat elements such as canopy closure, canopy layering, trees with nesting structure such as platforms and cavities, snags, down wood, flying space, shrubs and forbs ground cover, and prey items. Habitat suitability for each forest stand is determined by field review.

One of the functions of Matrix lands is to serve as connectivity between Late Successional Reserves (USDA/USDI. 1994b, p. B-43). One section (T33S-R5W-Section 17) is designated as a Connectivity/Diversity Block within the Matrix land use allocation. Connectivity/Diversity Blocks are generally square-mile sections in which at least 25-30 percent of each block will be maintained in late-successional conditions. They are designed to promote movement of late-successional species across the landscape and add richness and diversity to the land outside Late Successional Reserves (LSRs).

Status and Trend of Northern Spotted Owl Populations

Under the NWFP, the agencies anticipated a decline of spotted owl populations during the first decade of implementation. Recent reports (Anthony et al. 2006) identified greater than expected spotted owl declines in Washington and northern portions of Oregon, and more stationary populations in southern Oregon and northern California. The reports did not find a direct correlation between habitat conditions and changes in vital rates of spotted owls at the meta-population scale. However, at the territory scale, there is evidence of negative effects to spotted owl fitness due to reduced habitat quantity and quality. Also, there is no evidence to suggest that dispersal habitat is currently limiting (Courtney et al. 2004, Lint 2005). Even with the population decline, Courtney et al. (2004) noted that there is little reason to doubt the effectiveness of the core principles underpinning the NWFP conservation strategy.

Because the existing survey coverage and effort are insufficient to produce reliable range-wide estimates of population size, demographic data are used to evaluate trends in spotted owl populations. Analysis of demographic data can provide an estimate of the finite rate of population change. Demographic data, derived from studies initiated as early as 1985, have been analyzed periodically (Anderson and Burnham 1992; Burnham et al. 1994; Forsman et al. 1996; Anthony et al. 2006 and Forsman et al. 2011) to estimate trends in the populations of the spotted owl.

In January 2009, two meta-analyses modeled rates of population change for up to 24 years. One meta-analysis modeled 11 long-term study areas, while the other modeled eight study areas that are part of the effectiveness monitoring program of the NWFP. There was strong evidence that populations declined on 7 of the 11 areas (Forsman et al. 2011). On four areas which includes the Klamath Study area (including the Speaking Coyote Planning Area) populations were either stable, or the precision of the estimates was not sufficient to detect declines.

Decreases in adult apparent survival rates were an important factor contributing to decreasing population trends. Forsman et al. (2011) found apparent survival rates were declining on 10 of the study area with the Klamath study area in Oregon being the exception. Forsman et al. (2011) express concerns by the collective declines in adult

survival across the subspecies range because spotted owl populations are most sensitive to changes in adult survival.

Barred Owls

As discussed in the *Status of the Species* section, the 2008 and 2011 Recovery Plans for the Northern Spotted Owl (USDI FWS 2008b) identified competition from the barred owl (*Strix varia*) as a pressing threat to the spotted owl. Barred owls are native to eastern North America, but during the past century, have moved westward, arriving in the Pacific Northwest a couple of decades ago and settling into spotted owl habitat. Since barred owls are less selective about the habitat they use and the prey they feed on, they are out competing northern spotted owls for habitat and food (USDI FWS 2008b). For each of the individual demographic study areas, there has been an almost steady increase in the number of barred owls as measured by the proportion of spotted owl sites with barred owls detected (Forsman et al. 2011). In some areas, as many of 60 percent of the spotted owl sites have barred owls detected; specifically for the Klamath study area, approximately 30 percent of the spotted owl sites have barred owls in recent years. Forsman et al. (2011) found evidence barred owl detections were important sources of variation and had negative effects on spotted owl apparent survival and recruitment. Barred owls are attributed to a decline in spotted owls (Forsman et al. 2011).

Barred owl detections in the Grave Creek watershed and adjacent watersheds have generally occurred opportunistically; however, these detections indicate there is a trend of increasing numbers of barred owls, following a similar pattern to the surrounding demographic study areas.

Recent information (Dugger et al 2011 *in press*) indicates that site extinction rates for spotted owls increased with decreased amounts of old forest at the site core scale, an effect that was two to three times greater when barred owls were detected. In addition, the detection of barred owls decreased the probability that spotted owls would colonize vacated nesting territories as the nearest neighbor distance between old forest patches increased.

There is mounting evidence that barred owls are having a negative impact on the spotted owl population within the KSA. This is illustrated by several population trends beginning about 2003 which is when barred owl detections at sites within the KSA exceed 10%. Spotted owl detections have been steadily decreasing since 2002 and reached the lowest point in 2009, the same year barred owl detections reached their highest level (Davis et. al. 2010).

Barred owls have been detected in the following spotted owl sites: Foley Glen, Flume, Board Tree East, Board Tree West, Levens Gulch, and Tennessee Gulch. The project occurs within the KSA, where upward trend of spotted owl sites with barred owl

detections has occurred. It has been shown (Bailey et al. 2009, Crozier et al. 2006) that the presence of barred owls negatively affects the detection probabilities of spotted owls. Barred owl presence appeared to have a negative influence on spotted owl survival (Anthony et al. 2006). Decrease in spotted owl detections since 2002 corresponds to an increase in barred owl presence (Davis et al. 2010; Forsman et al 2009). This may account for some decrease in spotted owl detections; however, it is quite possible the barred owl is actually having an impact on the spotted owl population and the population on the KSA may be experiencing these effects (Davis et al. 2010).

In 2011, the USFWS released a Revised Spotted Owl Recovery Plan for the northern spotted owl that identified criteria and actions necessary to stop the owl's decline, reduce threats, and return the species to a stable, well distributed population in Washington, Oregon, and California (USFWS 2011).

The recovery plan is not a regulatory document; rather, it provides guidance to bring about recovery and establishes criteria to be used in evaluating when recovery has been achieved. The recovery plan identified the primary threats facing the northern spotted owl and described 34 Recovery Actions to address these threats.

RA 32 (Spotted owl Recovery Action 32) recommends agencies maintain substantially all of the older and more structurally complex, multilayered conifer forests on federal lands (USFWS 2008b, 34). These forests are characterized as having large diameter trees; high amounts of canopy; multiple layers; and decadence components such as broken-topped live trees, mistletoe, cavities, large snags and large coarse wood. RA 32 forest stands are the highest quality nesting, roosting, and foraging habitat. Field review located approximately 11 total acres in habitat areas ranging from 1 to 4 acres, which met RA 32 stand conditions and were deferred from the Speaking Coyote Project. Maintaining 40% canopy in dispersal habitat and 60% canopy with nesting, roosting and foraging habitat components in treatment areas adjacent the deferred RA 32 habitat maintains the function of substantially older and more structurally complex multi-layered conifer forests on federal lands.

Northern spotted owl suitable habitat includes stands suitable for nesting, roosting, and foraging. There are two categories of suitable habitat. Habitat 1 (nesting and roosting) conifer stands satisfy the daily and annual needs of the owl for nesting, roosting, foraging, and function as dispersal habitat as well. These stands generally have a multilayered canopy with large trees in the overstory and an understory of shade tolerant conifers and hardwoods. Canopy closure generally exceeds 60% (Thomas et al. 1990), and average diameter at breast height (dbh) of dominant and co-dominant trees is generally 21 inches or greater, and contains trees with structures to support nesting owls. Habitat 2 (foraging) suitable habitat includes conifer stands which provide roosting and foraging opportunities and contain structure that support prey populations such as shrub

and herbaceous understories, single or multi-layered canopy, large down wood, hardwood components, riparian zones, midstory and overstory layering, but lack the necessary structure such as large cavities or platform structure for nesting or consistent nesting. These stands generally exceed 60% canopy cover and average dbh of conifers is 11- 21 inches.

Dispersal (non-suitable) habitat generally includes conifer stands with trees greater than or equal to 11 inches dbh and canopy closure of 40-60%. Dispersal habitat may have higher canopy cover and lack other suitable habitat components to adequately support prey and residential owls. It may have lower canopy cover which does not provide adequate protection and security, but includes habitat components such as understory, down wood, snags, or remnant trees that may increase prey density and stand habitat utility. Speaking Coyote Project units were field-reviewed to determine if they met the definition of suitable or dispersal habitat.

Scale of Analysis

Spotted owl home ranges that overlap the Speaking Coyote Project proposed units will be used as the scale of analysis for potential direct, indirect, and cumulative impacts for this project because these are the areas of owl activity that could be affected by the Speaking Coyote Project and foreseeable projects. There are eleven known spotted owl centers (Foley Glen, Flume, Board Tree East, Board Tree West, Levens Gulch, Bummer, Lucky Strike, Gravey, Sitting Bull, Tennessee Gulch, Wolf Creek) with approximate home ranges (1.3 mile radius) overlapping proposed Speaking Coyote Project units that are surveyed annually. It is unlikely that more residential sites occur in the Planning Area. One hundred acre core areas were designated for Foley Glen, Board Tree East, Board Tree West, Levens Gulch, Bummer, Lucky Strike and Wolf Creek owl sites under the 1995 RMP and are not modified by the Proposed Action. Seventy-acre nest patches (300 meter radius) have been delineated around all owl sites (USDA/USDI 2008) and are also excluded from the Proposed Action. Nest Patch area arrangement and nest patch size have been shown to be an important attribute for nest site selection by spotted owls.

Table 9. Results of Northern Spotted Owl Surveys for 2007-2011

Owl Site					
	2007	2008	2009	2010	2011
Board Tree East 0877B	Barred owl response	Barred owl response	Barred owl response	Barred owl response	Barred owl response
Board Tree West 0878A*	NSO response; Barred owl pair	Barred owl pair	unoccupied	unoccupied	unoccupied

Bummer 1732O	NSO Pair	NSO Pair	Pair -fledged	2 spotted owls	unoccupied
Flume 4624O	unoccupied	unoccupied	Barred owl pair	Barred owl response	Barred owl response
Foley Glen 0917O	Barred owl response	unoccupied	Barred owl response	Barred owl response	Barred owl response
Gravey 4625A**	unoccupied	Pair – Alternate site	Single SO	Single NSO	Single NSO
Lucky Strike 2068O	NSO pair	NSO Pair - fledged	NSO Pair - fledged	NSO Pair - fledged	NSO pair
Levens Gulch 0928O	NSO response; Barred owl pair	Barred owl response	unoccupied	unoccupied	unoccupied
Sitting Bull 2070B	unoccupied	unoccupied	unoccupied	NSO response	unoccupied
Tennessee Gulch 4626O	pair-nested	pair-nested	pair	NSO pair / barred owl response	pair-fledged
Wolf Creek 2624O	NSO pair	NSO pair	NSO pair	unoccupied	unoccupied

*may be an Alternate Site to Bummer NSO site

3.6.2 Environmental Effects on Northern Spotted Owl and its Habitat

3.6.2.1 Alternative 1 (No Action) - Direct and Indirect Effects on Spotted Owl and its Habitat

Under the No Action Alternative, no harvest would occur for this project. Wildfire would remain the most immediate hazard to late-successional forest habitat and associated species (Courtney et al. 2004). Growth of late-successional forest habitat or of young stands (plantations or dense fire-replacement stands) toward late-successional forest habitat under this alternative is uncertain. Fire has played an important role in influencing successional processes and creating diverse forest conditions in the action area. Spotted owl habitat patterns in these drier portions of its range are not continuous, but occurred naturally in a mosaic pattern (USDI FWS 2008a). As a result of effective fire exclusion, many forest stands in the action area occur in a mid or late-seral, closed condition.

The unthinned second-growth stands with high tree densities may not develop the large crowns and diameters of historical open-grown trees. In southwest Oregon, the reduction in fire frequency has reduced the role of fire as an ecological factor, influencing stand development and altering historic forest structures, processes, and functions. The development of large tree structure comparable to that of remnant trees used by late-successional dependent species would not be likely to occur. This is because current stand conditions are too dense and trees are not developing the diameter to height ratio required to develop this structure. This ratio was historically created through frequent fire events that reduced stem densities and competition that created open grown conditions. Other disturbances, such as insect infestations, diseases, and windthrow, would have historically thinned out stands, created gaps, and created more complex stand structure. Current stand conditions would likely develop into less complex stand structures and species compositions than that of old-growth stands (Sensenig 2002).

BLM standard road maintenance, including activities such as road surface, ditch, road bank and fills, hazardous tree removal, culvert replacement, would occur and not downgrade the spotted owl habitat. Temporary and permanent right-of-way construction would continue on private lands and potentially on BLM consistent with reciprocal right-of-way agreements to allow private harvesting, resulting in the potential for removal of suitable and dispersal habitat.

3.6.2.2 Alternative 2 (Proposed Action) - Direct and Indirect Effects on Spotted Owl and its Habitat

Under the Proposed Action, nesting, roosting, and foraging (NRF) function would be maintained on approximately 210 acres in units 9-1, 14-1, 14-2, 17-1, 17-2, 20-1, 20-2, 21-2, 22-1, 23-4, 27-2, 24-1, and 23-4. Construction of temporary route segments occur in or adjacent to NRF habitat in units 17-2, 20-1, 17-1, 21-2, and 24-1 and occur on or near ridgetops where habitat use by spotted owls is low and no nesting or heavy foraging use occurs.

Under the Revised Proposed Action, dispersal function would be maintained on approximately 571 acres in units 10-1, 10-2, 10-3, 13-2, 14-1, 15-1, 15-5 17-1, 17-2, 20-1, 21-1, 23-2, 23-3, 25-2, and 25-3.

Unit 17-1 would treat and maintain habitat conditions in approximately 10 acres of NRF habitat in the Connectivity/Diversity Block in T33S-R5W-Section 17. Approximately 0.85 miles of ridgetop route construction and reconstruction would create a narrow linear canopy opening. The proposed thinnings would maintain the habitat structure and diversity within this connectivity block. Riparian Reserves outside of the EPZ would retain at least 50% canopy in dispersal habitat, 60% canopy in NRF habitat. EPZs would not be treated for the Speaking Coyote Project.

Canopy opening from 2.6 miles of temporary route construction and .21 miles of reconstruction, and 14 miles of daylighting would not deter owls from moving across small openings created due to the narrow linear nature of constructed or existing road clearing (approximately 20 to 40 feet). Enlarging the current existing road openings from daylighting by removing narrow strips (1-2 row of trees) of second growth/ dispersal-size trees (up to 24 inch DBH) along chosen roads and adjacent to treatment units would have no measureable effect on owl movement across roads or foraging behavior along roads, as spotted owls are known to forage along openings, and cross large openings such as clearcuts, meadows, and highways (Forsman et.al. 2002). Canopy opening from temporary route construction or road renovation/improvement would be slightly less than the ground clearing width, as the adjacent tree branches would extend into the opening above the ground clearing.

Temporary route construction and reconstruction would occur on ridgetops and upper slopes in roosting/foraging or dispersal habitat and avoids old-growth stands and lower slopes where habitat use by spotted owls is selected for (Blakesley et. al., 1992; Hershey et al., 1998) and avoids nest patches. Approximately 1.2 miles of road construction would occur within Board Tree East owl core and 0.1 mile of construction would occur within the Bummer owl site core area. All road construction occurs on or near ridgetops, and is not expected to remove habitat which would degrade heavily used nesting and foraging areas, and would not negatively affect dispersal through forest stands and across the landscape.

BLM would maintain the characteristics that classify a stand as NRF or dispersal habitat throughout the treatments for no loss of NRF or dispersal habitat. Treatments would retain the canopy percentages, structural components and species diversity important to owls and their habitat. The age of NRF stands in the Proposed Action vary from approximately 70 to 130 years, and although they contain habitat components to provide roosting and foraging opportunities, and some structure to support nesting use, the general stand ages are young to provide optimal late-successional habitat for spotted owls. The dispersal habitat units in Speaking Coyote vary from approximately 30 to 60 years old, although dispersal habitat is dependent upon structure than age.

The function of owl habitat in each unit would be maintained. Nesting, roosting, and foraging habitat would retain at least 60% canopy cover, and when present, a multi-storied, multi-species canopy with large overstory trees, larger trees with various deformities, large snags, accumulations of fallen trees and wood on the ground, and remnant trees or leave trees from previous harvesting would be retained. Dispersal habitat would maintain at least 40% canopy closure. Dispersal habitat provides temporary shelter for northern spotted owl moving through the area between NRF habitat

and some opportunity for northern spotted owl to find prey, but does not provide all of the requirements to support an owl throughout its life.

High quality spotted owl habitat was identified and deferred from proposed treatment units as a recovery measure for the spotted owl, as identified as Recovery Action #32 in the spotted owl Recovery Plan. Patches of habitat approximately 3.5 acres, and 1.5 acres, were deferred from unit 20-3; patches of approximately 1.5, 0.5, and 0.4 acres were deferred from unit 20-2; approximately 3 acres were deferred from unit 22-1.

Alternative 2 meets the intent of RA 10, in part, by maintaining or improving the habitat conditions within spotted owl home ranges and core-use areas, and deferring treatment within complex nesting and foraging habitat within high suitable habitat on lower slopes within drainages (USFWS 2011).

Prey Species

Treatments would sustain the ecological health of the stand and maintain vegetation important to spotted owl prey. Thinning would remove some trees that could be utilized for roosting, perching for hunting, or nest structure support for prey such as red tree voles or flying squirrels. Dominant trees with large crowns and branches which provide the best structure for arboreal mammalian nests are selected for retention. Residual trees, snags, and down wood that are retained in the thinned stands will provide some cover for prey species over time, and will help minimize harvest impacts to some prey species.

The northern flying squirrel, red tree vole, dusky-footed woodrat, and bushy-tailed woodrat are important prey of the northern spotted owl in this action area. Spotted owl prey relationships are complex and prey-switching may be important (Courtney et al 2004). Timber harvest and fuels reduction projects may impact foraging by changing habitat conditions for different species of prey.

Treatments that reduce tree density, reduce canopy cover, reduce shrubs and understory vegetation and open the stand to more light and nutrients would affect different prey species in various ways, depending on the condition of the prey habitat prior to treatment, the prey habitat post treatment, and complex interactions among the prey/predator community. Suzuki and Hayes (2003) evaluated the response of ground-dwelling mammals to Oregon Coast Range forest thinning and found that thinning appeared to increase the abundance of small mammals, and maintains or enhances habitat quality in the long or short term. All species except western red backed voles exhibited increases over a three year period following heavy and moderate thinning as compared to controls, presumably because these species were responding to the increased forage caused by the additional light in the stand. Habitat for western red backed voles was expected to improve in treated stands over the long term (Suzuki and Hayes 2003).

While some reports suggest negative impacts of thinning on flying squirrels (Wilson 2010, Holloway and Smith 2011), there is also some counter information as to these effects (e.g., Gomez et al. 2005, Ransome et al. 2004, Waters and Zabel 1995). Flying squirrel densities are correlated with high cavity density, large amounts of hypogeous fungi, and crown class differentiation (Carey et al 1999, Carey et al 2000). Gomez et al. (2005) noted that commercial thinning in young stands of Coastal Oregon Douglas-fir (35 to 45 years old) did not have a measurable short-term effect on density, survival, or body mass of northern flying squirrels. Ritchie et al (2009) found negative landscape effects on flying squirrels when harvested areas opened the stand to create open conditions.

Timber harvest and associated activity fuels treatment may impact foraging by changing habitat conditions for prey. Sakai and Noon (1993) stated that dusky-footed woodrats, the primary prey of owls in our area, might benefit from some thinning or harvest that would increase shrub and pole stands. Bushy-tailed woodrat presence is more dependent on cover and food availability than on seral stage. They often use areas previously disturbed by fire (Carey 1991). Bushy-tailed woodrats are most abundant along streams, and riparian areas may serve as the principal avenue for woodrat recolonization (Carey et al 1992). Lemkuhl et al. (2006) found that fuels projects in eastern Washington could have impacts on bushy-tailed woodrats, but confirmed the importance of maintaining snags, down wood, and mistletoe. These components will be retained as part of our proposed action. Heat and smoke from activity fuels treatments is not expected to change prey population levels. Slash pile burning either has low flame lengths of short duration with heat or smoke that dissipates prior to entering crowns, or piles are burned outside of the crowns of trees to avoid branch and needle scorch of retained trees.

Based on this research, the prescriptions in Speaking Coyote that retain 40% canopy cover in younger undifferentiated stands, and in the older stands retaining 60% canopy cover, the largest diameter trees, thinning through diameter classes to retain vertical structure, retaining untreated areas within riparian reserves and for botanical and wildlife special status species surveys would retain cover that would be used by flying squirrels as well as other prey species. While flying squirrels may inhabit some of the young stands, it is not likely that they will be significantly affected by the proposed actions because large dead wood would be retained, some canopy diversity will be maintained, and treatment areas make up a small proportion of available habitat.

Edges created from harvest can be areas of good prey availability and potentially increased vulnerability (i.e., better hunting for owls) (Zabel 1995). Prey animals may be more exposed in the disturbed area or may move away from the disturbed area for the short-term. Some minor changes in prey availability may occur as cover is disturbed and animals move around in the understory. They may become more vulnerable and exposed. The disturbance might attract other predators such as hawks, other owls, and

mammalian predators. This may increase competition for owls in the treatment area, but the exposure of prey may also improve prey availability for northern spotted owls. Some disturbance from thinning habitat may improve forage conditions where canopy and tree stem density is too high and excludes light and ground cover is sparse. Removal of some tree canopy would bring more light and resources into the stand, stimulating forbs, shrubs and other prey food. Once the initial impact of disturbance recovers (6 months to 2 years), the understory habitat conditions for prey food may increase over the next few years, until tree canopy growth increases the canopy closure and begins excluding light.

Bingham and Noon (1997) reported that a spotted owl core area is the area that provides the important habitat elements of nest sites, roost sites, and access to prey, benefiting spotted owl survival and reproduction. Rosenberg and McKelvey (1999) reported that spotted owls are “central place” animals with the core area (the area closest to the nest) being the focal area. Several studies (Wagner and Anthony 1998, Dugger *et al.* 2005, Zabel *et al.* 2003, Bingham and Noon 1997) indicate the core area size for the Klamath and Western Cascades provinces is 0.5 miles (or 500 acres) of the nest site. Therefore, effects to prey species are most critical at the nest patch and core areas.

Red tree vole surveys were conducted in forest stands greater than 80 years old that were suitable habitat, and active populations managed by retaining 10 acre or larger habitat areas. Habitat patches will be retained within the project area for red tree voles habitat areas, high quality structurally complex spotted owl habitat from RA32 surveys to aid in the recovery of the spotted owl, untreated riparian areas, areas with fragile soil concerns, and stand ages greater than 160 deferred from treatment, and other constraints that provide a mosaic of untreated patches within the project area. The overall impacts of the proposed action on prey will not adversely affect spotted owls in the area. Flying squirrel habitat may be reduced in quality in some places where thinning opens the overstory and midstory, but those same places are likely to maintain or improve woodrats and other small mammals (Courtney *et al.* 2004). The Speaking Coyote project maintains large standing and down wood in all treatments, which is important to flying squirrels (Carey *et al.* 1999), and maintains hardwoods and multi-layered canopies in the nesting, roosting and foraging habitat. Maintaining a multi-layered canopy will somewhat ameliorate the adverse effects of thinning flying squirrel habitat (Carey *et al.* 1999).

3.6.2.3 Alternative 2 (Proposed Action) - Cumulative Effects on Spotted Owl and its Habitat

Cumulative effects to spotted owls result from the incremental impact of the Proposed Action, added to other past, present, and reasonably foreseeable actions regardless of land ownership. The majority of remaining older forest for spotted owls affected by this

project is on public lands managed by BLM. Past activities have resulted in habitat loss and have changed the distribution and abundance of many wildlife species. Species associated with younger forested conditions have benefited from these changes. Habitat modification and removal with fewer or lesser protection measures would continue on private, county, or state lands, which negatively affect late-successional dependent wildlife species on these lands.

Extensive harvesting on BLM occurred in the Planning Area prior to the 1990 listing of the spotted owl as a threatened species, and the implementation of the NWFP in 1994. The Grave Creek Watershed Analysis notes that the watershed has been greatly affected by timber harvest and associated road building. Most of the private lands have been logged, as well as many acres of BLM lands. Logging has also removed and fragmented the older forest habitat.

The 1995 RMP/EIS assumed that in the future nonfederal lands would have no suitable habitat (BLM 1995, p.4-73) due to 50-80 year rotations on private lands, but are expected to provide some dispersal habitat. The cumulative effects are the combination of the Proposed Action (maintaining owl habitat conditions on approximately 818 acres through moderate to light thinning, tree and understory saplings and shrub removal for 2.6 miles of temporary route construction, and peripheral tree removal on 14 miles daylighting road treatment) combined with other recent and foreseeable projects.) combined with other recent and foreseeable projects.

The Speaking Coyote Project Planning Area is heavily affected by large-scale fragmentation from past federal and private harvesting, and particularly recent extensive private harvesting. Proposed thinning, and daylighting road maintenance, temporary route construction and reconstruction would not increase late-successional habitat fragmentation (reduction of the amount of interior late-successional habitat in blocks of late-successional habitat) for spotted owls. The effects of removal of small diameter trees (< 24 inches dbh) along roads is not expected to measurably affect spotted owl habitat use, occupation, or survivability, which are associated with late-successional and old-growth (nesting, roosting and foraging) habitat.

Approximately twenty-three acres of young stand plantation (50 years old) dispersal habitat will also be thinned in the recent Slim Timber sale, and maintain dispersal function within the home range territory of the Sitting Bull owl and Lucky Strike sites. Cumulatively, approximately 47 acres of dispersal habitat will be thinned and maintained in the home range of the Sitting Bull owl site. Cumulatively, approximately 160 acres of dispersal habitat will be thinned and maintained and 10 acres of NRF habitat will be thinned and maintained within the core and home range territories of the Lucky Strike owl site. The dispersal habitat thinning would promote open space for flying, and

improve future conditions for prey and foraging in the stand, as increased growth and canopy development respond to the thinning.

The Five Rogues Thin and Five Rogues Timber Sales are unharvested Sold/Un-awarded sales, which occur within Flume and Wolf Creek owl territories and proposed downgrading and removal of suitable habitat outside of the core areas, which are also affected by Speaking Coyote proposed units. The Five Rogues sale actions are not expected to proceed foreseeably with downgrading and removing of suitable habitat within the home range of occupied spotted owls, within the issued Decision Record.

The Five Rogue sale actions are not expected to proceed foreseeably with effects to owls, within the issued Decision Record.

Due to limited federal ownership and past federal harvesting, the Wolf Creek and Flume owl sites are deficient in nesting and foraging habitat on federal land, and downgrade or removal of suitable habitat would have adverse effects on the productivity capability of these sites.

3.7 Northern Spotted Owl Critical Habitat

3.7.1 Affected Environment for Northern Spotted Owl Critical Habitat

The Proposed Action does not occur in Revised Critical Habitat (2008; [Federal Register \(73\): 47326-47522](#)), as designated by the U.S. Fish and Wildlife Service (USFWS).

Northern spotted owl Critical Habitat was first designated for the northern spotted owl in January 1992 ([Federal Register \(57\):1796-1838](#)). Critical Habitat was revised in 2008. A proposed revision to Critical Habitat was published in the Federal Register in March 2012.

Critical habitat, as defined in Section 3 of the Endangered Species Act, is “the specific areas within the geographic area occupied by a species...on which are found those physical or biological features essential to the conservation of the species...” ([Federal Register \(73\): 47326-47522](#)). These features are referred to as the primary constituent elements which support the life history requirements of the species include, but are not limited to, the following: (1) Space for individual and population growth and for normal behavior; (2) Food, water, air, light, minerals, or other nutritional or physiological requirements; (3) Cover or shelter; (4) Sites for breeding, reproduction, and rearing (or development) of offspring; and (5) Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of the species. As the USFWS noted in its Biological Opinion on the NWFP, for a wide-ranging species such as the spotted owl, each Critical Habitat Unit (CHU) has both a local role and a

rangewide role (USDI USFWS 1994, p.20). Impacts from proposed harvest therefore are evaluated based upon removal, downgrading, and maintaining of suitable (nesting, roosting, foraging) habitat and dispersal habitat, and are evaluated at both the local level and the provincial level.

The project occurs within the Klamath East Unit (KLE-2) of the proposed March 2012 Critical Habitat. Approximately 110,477 ac (44,709ha) occur in Josephine and Douglas Counties, Oregon, and comprises Federal lands managed by the Forest Service and the BLM under the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this proposed subunit to address threats from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for east-west connectivity between subunits and CHUs, but also for demographic support. This subunit is between the western Cascades and coastal Oregon and the Klamath Mountains. The Fish and Wildlife Service's (FWS) evaluation of spotted owl sites known to be occupied at the time of listing indicate that approximately 92 percent of the area of KLE-2 was covered by verified spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by non-territorial owls and dispersing subadults, the FWS considered this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. The FWS determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of spotted owl habitat is necessary to provide for viable populations of spotted owls over the long term by providing for population expansion, successful dispersal, and buffering from competition with the barred owl. (Federal Register (77): 14120 Proposed Rules).

3.5.4 Environment Effects on Northern Spotted Owl Critical Habitat

3.5.4.1 Alternative 1 (No Action) - Direct and Indirect Effects on Spotted Owl Critical Habitat

No actions are proposed within the listed 2008 or proposed 2012 spotted owl critical habitat. Growth of non-habitat, dispersal, and suitable habitat within young and late-successional forest habitat would continue. If harvesting is deferred, older stand development would continue to contribute standing dead and downed wood and maintain high levels of canopy closure. However, stands would likely be reviewed under future actions for harvesting or fuels reduction and would not likely support additional productive owl sites, as overlapping owl territories already occur in the Planning Area. Growth of late-successional forest habitat or of young stands toward late-successional

forest habitat under this alternative is uncertain. Second-growth stands with high tree densities and single canopy layering may not develop the large crowns and diameters and vertical and horizontal layering and spacing created by fire. Fire hazard would continue to increase and be the highest threat to habitat loss in forest stands where the density of hardwood and conifer stems and fuel ladders is high.

Temporary and permanent right-of-way construction would continue on private lands and potentially on BLM consistent with reciprocal right-of-way agreements to allow private harvesting, resulting in potential removal of suitable and dispersal habitat on private, and within right-of-ways on BLM land.

Even though some risk factors to habitat in CHU have declined (such as habitat loss due to federal harvesting) other factors continue such as habitat loss due to wildfire, increased competition with the barred owl, West Nile virus, and sudden oak death (USFWS 2004, Lint 2005). The role of critical habitat to provide nesting, roosting, foraging, and dispersal would remain unchanged; however, the effectiveness of critical habitat and the rate of population decline beyond the most recent meta-data analysis (Anthony et al. 2004, 2006; Forsman 2011) would be uncertain.

3.5.4.2 Alternative 2 (Proposed Action) - Direct and Indirect Effects on Spotted Owl Critical Habitat

No direct or indirect effects would occur to the Revised 2008 Critical Habitat.

Under the Proposed Action, nesting, roosting, and foraging (NRF) function would be maintained on approximately 210 acres (in units 9-1, 14-1, 14-2, 17-1, 17-2, 20-1, 20-2, 21-2, 22-1, 23-4, 27-2, 24-1, and 23-4) and avoids nest patches. Construction of temporary route segments avoid nest patches, and occurs in or adjacent to NRF habitat in units 17-2, 20-1, 17-1, 21-2, and 24-1 and occurs on or near ridgetops where habitat use by spotted owls is used less frequently than suitable habitat in mid and lower slopes. Under the Proposed Action, nest patches are avoided, and dispersal function would be maintained on approximately 570 acres in units 10-1, 10-2, 10-3, 13-2, 14-1, 15-1, 15-5, 17-1, 17-2, 20-1, 21-1, 23-2, 23-3, 25-2, and 25-3.

Canopy opening from 2.6 miles of temporary route construction and .21 miles of reconstruction does not occur within nest patches or older structurally complex nesting habitat, and 14 miles of daylighting would not deter owls from moving across small openings created due to the narrow linear nature of constructed or existing road clearing (approximately 20 to 40 feet). Enlarging the current existing road openings from daylighting by removing narrow strips (1-2 row of trees) of second growth/ dispersal-size trees (up to 24 inch dbh) along chosen roads and adjacent to treatment units would have no measureable effect on owl movement across roads or foraging behavior along roads, as spotted owls are known to forage along openings, and cross large openings such as clearcuts, meadows, and highways (Forsman et.al. 2002). Canopy opening from

temporary route construction or road renovation/improvement would be slightly less than the ground clearing width, as the adjacent tree branches would extend into the opening above the ground clearing.

Nesting and roosting habitat provides structural features for nesting, protection from adverse weather conditions, and cover to reduce predation risks for adults and young. This Primary Constituent Element (PCE) is found throughout the geographical range of the northern spotted owl, because stand structures at nest sites tend to vary little across the spotted owl's range. Within known territorial owl sites, and adjacent spotted owl habitat, nesting and foraging habitat is retained to meet the home range, core, and nest patch needs of territorial northern spotted owls throughout the year. The nesting and roosting stands for treatment would retain 60 percent canopy cover, and where it occurs, multilayering and trees species diversity, and retain most large 20–30 inch or greater dbh overstory trees throughout the treated units. A diversity of different diameters of trees greater than 8 inches dbh is retained. Largest live trees with various deformities (e.g., large cavities, broken tops, mistletoe infections, and other evidence of decadence are retained. Healthy and dominant incense-cedar, sugar pine, and Douglas-fir conifers, and hardwood species such as bigleaf maple, black oak, live oaks, and large madrones are favored for retention. Large snags are retained to extent operationally feasible and large woody debris on the ground is retained. Older structurally complex nesting habitat with all or most all of these features would not be treated. Untreated riparian areas and habitat protection areas for red tree voles provide islands of untreated habitat for terrestrial and arboreal small mammals.

Dispersal habitat function would be maintained on approximately 570 acres, and continue to provide at least 40% canopy cover, and retain and favor features such as conifer and hardwood species diversity, existing snags and down wood, and provide limited opportunities for foraging. Structural stand development development would be improved in these stands by thinning to favor pines, cedars, oaks, and dominant madrones, within stands dominated by Douglas-firs. These stands are typically simple single-storied tree stands.

The proposed action is not likely to adversely affect the function of subunit KLE-2 to function primarily for east-west connectivity between subunits and CHUs, to provide for spotted owl demographic support, and to contribute to the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of spotted owl habitat (USFWS 2011, p. ix).

3.5.4.3 Alternative 2 (Proposed Action) - Cumulative Effects on Spotted Owl Critical Habitat

Alternative 2 does not occur within 2008 Critical Habitat, therefore no cumulative effects to 2008 Critical Habitat would occur. Critical Habitat is currently being revised. The proposed 2012 Critical Habitat was published in the Federal Register in March 2012 and is it unknown when the Proposed 2012 Critical Habitat will be finalized. Units within the Speaking Coyote project have been reviewed to minimize impacts to NRF habitat within core area territories and Relative Habitat Suitability (RHS) areas that rank as high suitability (USFWS 2011). There would be no treatments within: nest patch territories, forest stands greater than 120 years old, active red tree vole habitat areas, untreated portions of Riparian Reserves, unstable slopes, 100 acre spotted owl cores, high quality complex habitat (RA32). Maintaining 60% canopy cover with hardwoods, dominant trees, snags, and down wood, within suitable habitat maintains primary constituent elements supporting nesting and roosting, foraging, and dispersal. Thinning plantations, and dense single-storied stands to accelerate habitat structure for spotted owls, and increase fire resiliency, aids in restoring a natural forest dynamic process

Consideration of potential cumulative effects of the Speaking Coyote Project to the 2012 Revised Critical Habitat would be limited to the scale of analysis identified in Section 3.6.1 (home range of known spotted owl sites), as this is the area that could affect the primary constituent elements of CHU. In the cumulative effects analysis area for the Speaking Coyote Project, no change to quantity of nesting, roosting, and foraging habitat is anticipated, and dispersal habitat in Speaking Coyote would retain adequate tree size and canopy closure to provide protection from avian predators and provide some structure for prey and foraging opportunities for the spotted owl. Therefore, no adverse effects to the analysis area or KLE-2 are expected.

There are no foreseeable BLM projects that would downgrade or remove owl habitat in the Speaking Coyote Project cumulative effects analysis area Planning Area. The Five Rogues Thin and Five Rogues Timber Sales are unharvested Sold/Un-Awarded sales, which occur within the same watershed, and proposed downgrading and removal of suitable spotted owl habitat. The Five Rogues sale actions are not expected to proceed foreseeably with downgrading and removing of suitable habitat within the home range of occupied spotted owls, within the issued Decision Record.

3.8 Forest Vegetation

3.8.1. Affected Environment

Stand ages in the proposed Speaking Coyote Project units range from 30-120 years old. Stand ages were derived from stand exam information collected within proposed units and from Forest Operation Inventory (FOI) stand data. Breast height ages were sampled

from trees representative of average stand conditions. An average of the sample trees determined total stand age.

The proposed units are predominately Douglas-fir (*Pseudotsuga menziesii*) with a minor component of other conifer species present in the stands including: ponderosa pine (*Pinus ponderosa*), sugar pine (*Pinus lambertiana*), incense-cedar (*Calocedrus decurrens*), white-fir (*Abies concolor*) and Jeffrey pine (*Pinus jeffreyi*). Hardwoods and ground vegetation are present where there is sufficient light available and include Pacific madrone (*Arbutus menziesii*), golden chinquapin (*Castanopsis chrysophylla*), canyon live oak (*Quercus chrysolepis*), California black oak (*Quercus kelloggii*), Oregon white oak (*Quercus garryana*), Pacific yew (*Taxus brevifolia*), hazel (*Corylus spp.*), oceanspray (*Holodiscus discolor*), manzanita (*Arctostaphylos spp.*), poison oak (*Rhus diversiloba*), evergreen huckleberry (*Vaccinium ovatum*), salal (*Gaultheria shallon*), and sword fern (*Polystichum munitum*). A majority of the proposed units were harvested or partially harvested between the 1920s and 1980s. Many of the stands have had non-commercial silvicultural treatments which include planting, precommercial thinning and fertilization. Much of the area has been treated for hazardous fuels through hand piling and burning of brush and small diameter trees. Current stand densities remain at 70-350 trees per acre. Remnant mature Douglas-fir, ponderosa pine, and sugar pine are present within the Planning Area.

Stand inventories along with field reconnaissance were used to identify current stand conditions. Proposed units may contain one or more stands mapped along FOI boundaries and contain a mix of tree species, form, and distribution. The current stand conditions for the Speaking Coyote project are summarized below in Table 10.

Table 10. Current Stand Conditions in Speaking Coyote Units

Unit(s)	Stand Age (years)	Trees Per Acre	Basal Area (square feet)	Quadratic Mean Diameter (inches)	Canopy Cover (%)	Live Crown Ratio (%)
9-1	85	152	233	17	70	40
10-1	40	245	215	13	70	44
10-2 10-3	55	264	261	14	72	35
11-1	48	296	296	14	75	40
13-2	103	133	288	20	68	52
14-1	74	122	195	17	76	36
14-2	115	73	215	24	62	35
15-1 15-5	58	139	135	14	78	45

17-2 20-1	45	232	256	14	81	41
20-2	123	150	373	21	74	44
17-1 21-1	32	240	220	13	77	40
21-2	90	202	298	17	66	33
23-2	48	144	202	16	70	53
23-3	58	136	202	16	74	45
23-4	80	96	125	22	44	51
23-5	97	125	240	19	73	44
24-1	68	127	219	18	67	50
25-2	50	162	176	14	72	34
27-2	47	218	194	13	68	35
LP27-1	36	217	215	14	78	43
LP27-2	40	292	195	11	72	41
LP27-3	52	214	247	15	76	35
LP27-4	47	350	264	12	71	35
LP34-1	31	110	88	12	68	48

3.8.2. Effects of Alternative 1 (No Action) on Forest Vegetation

In the absence of thinning treatments, trees generally become crowded as the stand ages. These crowded trees either differentiate, die, fall over, or quit growing (Oliver and Larson 1996). As time passes, canopy cover would remain high, relative densities would increase and the crowns of individual trees would recede (Tappeiner et al. 2007). This results in trees which experience increased suppression mortality and decreasing diameter growth as trees compete for a limited supply of water, nutrients and sunlight (Oliver and Larson 1996). Stand health and vigor generally decreases.

High height to diameter ratios can predispose trees to stem bending, windsnap, and windthrow. As trees increase in height, with little increase in diameter, they become unstable and more susceptible to damage. Within a few decades it is expected that trees within untreated units would exceed the above threshold and become less resistant to stem bending, windsnap, and windthrow.

Inter-tree suppression or mortality would occur primarily in the smaller size classes of trees and would be the main source for snag and coarse woody debris recruitment. Mortality could occur across all crown classes at any age from insects, disease, windthrow, and stem breakage. As the stand ages, regular mortality from inter-tree competition would become less significant and irregular mortality factors would become more important (Oliver and Larson 1996). Mortality is the source of snags and down

wood. Since trees would not be removed under the No Action Alternative, this alternative would promote snags and dead wood recruitment, although small in size and diameter.

In the short term shrub density and cover can be expected to remain stable (Tappeiner et al. 2007). In the midterm, as tree crowns interlock less light reaches the forest floor causing a reduction in shrub density and percent cover. Long-term, shrubs and shade tolerant tree species would gradually increase as understory light increases due to receding overstory tree crowns and tree mortality (Oliver and Larson 1996).

Live crown ratios of the overstory trees would continue to decrease from current levels as lower limbs are shaded out and die. Closely spaced trees with small crown ratios have reduced photosynthetic capacity, which results in decreased diameter growth and lower resistance to insect and disease. As trees increase in height, with little increase in diameter, they become unstable and more susceptible to wind damage (Oliver and Larson 1996).

3.8.3. Effects of Alternative 2 (Proposed Action) on Forest Vegetation

Thinning treatments can act as partial disturbance events which remove trees. Growing space previously occupied by a tree that is removed becomes available. Remaining trees and newly initiating plants expand to refill the gaps (Oliver and Larson 1996). Thinning can also increase live crown ratios (Oliver and Larson 1996), maintain live crown ratios (Tappeiner et al. 2007), and reduce the rate of live crown recession. The maintenance of live crowns greater than 30% prevents reduction in vigor and diameter growth.

Alternative 2 would thin from below to achieve lower stand densities. Generally, retained trees would display crown ratios of at least 30% as this figure is associated with dominant and co-dominant cohorts. Trees with at least a 30% live crown ratio would be more likely to develop deep crowns and have accelerated diameter growth.

Thinned stands produce larger trees at any given age than do unthinned stands. Thinned stands are more open and sometimes more diverse (Curtis et al. 1998). Thinning increases tree diameter growth compared to unthinned controls. Studies have shown repeated thinning in young stands can increase diameter growth by 33 to 56% on the largest 40 stems per acre (Curtis et al. 1998).

Thinning may stabilize or prevent height to diameter ratios from exceeding thresholds that predispose trees to stem bending, wind snap, and windthrow. Thinning increases a stand's resilience to disturbances such as wildfire, disease, or insect infestation.

Thinning may initially reduce the cover of shrubs and herbaceous vegetation due to disturbance caused by harvesting activities. Such effects would be minimized through the use of designated skid trails and corridors. Thinning treatments usually accelerate understory development and succession and movement of the stand into the understory reinitiation stage (Curtis et al.1998). In the long-term thinning treatments are anticipated to increase cover and plant diversity beyond levels of pre-treatment conditions.

Natural regeneration of tree species is common after thinning, depending on seed availability and other factors. Results from a study conducted in S.W. Oregon indicate that harvesting stimulates the recruitment of multiple cohorts of natural Douglas-fir regeneration (Gerstein 1999). Regenerative distributions and densities are highly variable. Thinning treatments reduce overall canopy cover and decrease stand densities which can increase resource availability to the forest floor and increases the frequency, density, and growth rates of regeneration (Gerstein 1999). Appendix 10 outlines canopy covers to be achieved through the proposed thinning project.

Under the Proposed Action thinning would reduce canopy cover to 40% in northern spotted owl dispersal habitat units, to 50% in designated Riparian Reserves, and to 60% in NSO nesting, roosting and foraging habitat. Lightly thinned stands would maintain 50% and 60% canopy cover and produce moderate to high volume growth rates at the expense of individual tree diameter growth rates. A single light thinning offers minimal opportunity to create diverse, multi-stored stands. Understory conifer and hardwood species' vigor and survival would diminish as the overstory canopy closes over time. Some units are currently at or below canopy cover percentages. These units would benefit from thinning treatments. Conifer clumps would be thinned reducing density and increasing individual tree health and vigor.

Stands that are moderately thinned to canopy covers of 40% would have higher rates of diameter growth at the expense of volume production. It is uncertain whether the overstory in moderately thinned stands would remain open enough without additional thinnings to maintain light levels that provide an environment conducive to the long-term survival and growth of understory vegetation that would produce a multi-storied structure.

A reduction in stand densities involves the tradeoff between maintaining or improving individual tree growth rates while promoting understory growth and layered stand structures while reducing the accumulation of dead trees. The Proposed Action would capture much of the mortality caused by suppression mortality through harvest. At these levels of thinning it is predicted that trees would continue to die from competition factors.

Creating a situation where fewer but larger trees become snags and eventually become coarse woody debris.

Post treatment, snag development is expected to be larger snags with more resiliency and limb structure than snags that develop under a more competitive stand condition. Snag retention rates would meet Medford District RMP standards.

Variability in canopy and spacing is acceptable. Existing snags and hardwoods greater than 12 inches dbh and larger would be retained unless hazardous to thinning operations. Pre-existing down wood would also be retained. Areas of some units may not receive commercial treatment. In these areas non-commercial conifers would be spaced to a maximum distance of 16 ft x 16 ft, tree formed hardwoods less than 12 inches dbh would be spaced to 40 ft x 40 ft, and shrubs would be cut. The stands would then be evaluated for fuel treatment needs which include hand piling of slash and burning of piles. Some planting may be appropriate to establish an understory canopy with a conifer component. Units will be evaluated for planting considering the potential for natural regeneration.

Some units contain mature remnant pine and Douglas-fir trees. These legacy trees are generally much larger than the average stand diameter. Their presence on the landscape is evidence of past wildfire disturbance which were usually characterized by multiple low intensity underburns (SWEAT Team Report). The Speaking Coyote Project proposes culturing of some legacy trees. Where appropriate, selected legacy trees would have all competing conifers removed from the clearing cylinder to distances between 20 feet and not exceeding 40 feet. Hardwoods greater than 12 inches DBH would be retained within the clearing cylinder area. This treatment would be applied only to selected legacy trees. The remainder of the unit would be thinned on a regular spacing interval.

Isolated instances of cable yarding through areas not within established unit boundaries may occur. Vegetation disturbance in these areas would be restricted to cable corridors.

The following tables project short-term and long-term effects of proposed thinning treatments compared to no treatment. Projections for short-term effects have a higher degree of certainty compared to the projection of long-term effects. Stand condition and stand characteristics 11-100+ years into the future are highly dependent upon uncontrollable variables such as climate stability or change, extreme weather, wildfire, future management direction, societal pressures, available funding for follow-up treatments and random events.

Vegetation Effects – Short Term (1-10)

Stand Condition	No Treatment	Commercial Thinning
Vigor of residual trees	No change to decrease	No change to slight increase
Growth rate	No change to decrease	Remain the same to increase
Live crown ratio	No change to decrease	Increase
Conifer species	Remain the same	Remain the same to increase
Hardwood species	No change to decrease	No change
Shrubs/brush/forbs	Decrease	Remain the same to increase due to increased light reaching understory
Snags	Remain the same to increase due to mortality	Remain the same with potential increase or decrease. Dependent on retained trees and logging feasibility.
Course woody debris	Remain the same to increase due to mortality	Remain the same to potentially increase as low vigor and broken topped trees decay
Branching	Continued loss of lower limbs	No change
Individual tree stability	No change to decrease	No change to slight decrease.
Ability to respond to future treatments	No change to decrease	No change to slight increase
Rate of development of mature forest characteristics	No change	No change to slight increase

Vegetation Effects – Long Term (11+ years)

Stand Condition	No Treatment	Commercial Thinning
Vigor of residual trees	Decrease	Increase
Growth rate	Decrease	Increase
Live crown ratio	Decrease	Increase
Conifer species	No change to slight decrease	Increase as stand develops different canopy layers

Hardwood species	No change to decrease	Remain the same to increase slightly then decrease as canopy closes
Shrubs/brush/forbs	Decrease	Increase then decrease as canopy closes
Snags	Remain the same to increase due to mortality; mostly small diameter	Decrease in numbers, increase in size
Course woody debris	Remain the same to increase due to mortality; mostly small diameter	Remain the same with the potential to increase or decrease
Branching	Continued loss of lower limbs	Retention of limbs present until canopy closes. Development/retention of large branches
Individual tree stability	No change to decrease	Increase (after potential short-term decrease)
Ability to respond to future treatments	Decrease	No change to increase
Rate of development of mature forest characteristics	No Change	Increase

The processes that shape how these stands appear in the future and their character are dependent on many factors. The above table lists what is thought to be the most likely outcomes of the no action alternative and the Proposed Action. Fire, insects, disease, climate, drought and other management activities will be factors in the long term development of these stands.

Cumulative Effects on forest Vegetation

The Speaking Coyote Planning Area encompasses many types of land ownerships and is typified by federal lands intermingled with non-federal lands in a “checkerboard” pattern characteristic of much of the Oregon and California (O&C) railroad lands of Western Oregon. Ownership and management of lands within the Planning Area include Federal, State/County, Private Industrial Timber, Private non-industrial holdings, and Agriculture/residential. For purposes of analysis short term vegetation effects will be from 0 to 10 years and long term effects are classified as anything 11 years or greater.

The Speaking Coyote Project proposes the commercial thinning of stands. In the short term age classes and species composition in these stands will remain the same. The thinned stands will have a similar structure to pre-harvest units with lower densities and fewer stems per acre. In the short term the developmental trajectory of the harvested units will not be reduced to early seral stages but rather move from stem exclusion stage to stem reinitiation stage. Other stands of commercial age timber within the Project Area on federal land will have no harvesting operations conducted in the short term. Unit 26-1 which is within the southern boundary of the Planning Area has been deferred for thinning treatments until 2013 and will be incorporated into the Lower Graves Planning Area.

Silvicultural understory thinning and fuels reduction treatments have occurred in this Planning Area. These treatments include: brush cutting, precommercial thinning, selective slashing, hand piling, and hand pile burning. Within the past 5 years 1500 acres of non-harvest activities have occurred. These treatments result in a short term shift of the vegetation communities. Brush and hardwoods are manually cut and left in place as activities slash or hand piled to be burned at a later date. Other treatments prescribe the cutting of conifers along with hardwood and brush species. The cut brush and hardwoods are momentarily set back and will usually re-sprout to pretreatment conditions in 5-10 years. The vegetation communities are never removed or permanently altered and treatments generally set back competing vegetation and release the conifer communities.

Non-federal land located within the Planning Area could have multiple treatments applied. It is expected that these activities would remain consistent with current harvest trends which have resulted in between 700 and 1000 acres of harvest occurring every 5 years. All harvest activities applied on non-federal land should comply with the Oregon Forest Practices Act. These activities could include clear cutting, partial cutting, and thinning. This could alter the vegetation structure within the Planning Area by converting mature timber stands to early seral condition. Under the Oregon Forest Practices Act no harvest area shall exceed 120 acres will be within 300 feet of another 120 acre cut and will be replanted within one year of harvest.

The Speaking Coyote Planning Area is overlapped by the Five Rouges and Five Rouges Thin Timber Sale. This sale is currently un-awarded pending a biological opinion and red tree vole surveys. It is not expected that these sales would occur concurrently with the Speaking Coyote Sale. The Five Rouges Timber Sale proposes to implement regeneration, group select and selection cut units. These treatments would alter late-successional forests and produce early seral conditions. The Five Rouges thin project proposes 469 acres of commercial thinning. If implemented, thinned stands will have a similar structure to pre-harvest units with lower densities and fewer stems per acre.

Chapter 4.0 List of Preparers

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

<u>Name</u>	<u>Title</u>	<u>Primary Responsibility</u>
Erica Freeman	Engineer	Transportation
Mike Crawford	Fish Biologist	Fisheries
Colleen Dulin	Hydrologist	Soils and Water
Merry Haydon	Archaeologist	Cultural Resources
Marlin Pose	Wildlife Biologist	Wildlife, T/E Animals
Rachel Showalter	Botanist	Botany, Noxious Weeds, T/E Plants
Dustin Wharton	Engineer	Transportation
Jon Larson	Fuels Specialist	Fuels
Ferris Fisher	Silviculturist	Silviculture
Sarah Queen-Foster	Forester	Logging Systems
Martin Lew	Ecosystem Planner	Environmental Compliance, NEPA

Chapter 5.0 Consultation

5.1 United States Fish and Wildlife Service

Medford BLM submitted a Biological Assessment (Medford BLM Summer 09 Biological Assessment) to the Fish and Wildlife Service and received a Letter of Concurrence (MedfordBLM Summer 2009 Informal TAILS#: 13420-2009-I-0159) stating proposed treatments are “not likely to adversely affect the spotted owl”. Medford BLM submitted a Biological Assessment for harvest units in T33S R6W Sections 27&34 (Medford BLM FY 2011 SUMMER NLAA) to the Fish and Wildlife Service and received a Letter of Concurrence (October 2011 Informal TAILS #: OIEOFW00-2012-1-0003) stating proposed treatments are “not likely to adversely affect the spotted owl”.

5.2 National Marine Fisheries Service (NMFS)

The thinning, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including route decommissioning), road maintenance, roadway clearing, hauling, and activity fuel treatments that are proposed within the Rogue Basin and the range of the federally threatened Southern Oregon/Northern California Coasts (SONCC) coho salmon, would have no effect on coho or critical habitat.

Consultation for the Endangered Species Act with NMFS is not needed as the Proposed Action would not affect listed species or their habitat. No consultation is needed under

the Magnuson-Stevens Fishery Conservation and Management Act as there is no adverse effect to Essential Fish Habitat for coho and chinook within the Rogue Basin.

5.3 Native American Tribal Consultation

Speaking Coyote Project Scoping Reports were sent to local federally recognized Native American Tribes interested in Medford District Bureau of Land Management proposed projects. The Tribes take an active role in the management of their native lands and the BLM works with individual tribal governments to further identify and address Native American concerns and traditional uses of lands administered by the BLM. Further consultation with Tribes did not identify cultural resource concerns for the proposed project.

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APPENDIX 1 ALTERNATIVE DEVELOPMENT SUMMARY

Speaking Coyote Project Environmental Assessment

(DOI-BLM-OR-M070-2012-0002-EA)

Pursuant to Section 102 (2) (E) of NEPA (National Environmental Policy Act of 1969, as amended), Federal agencies shall “Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.” The CEQ (Council on Environmental Quality) regulations for implementing the procedural provisions of NEPA states, alternatives should be “reasonable” and “provide a clear basis for choice” (40 CFR 1502.14).

In light of the direction contained in both NEPA and the CEQ Regulations, the following questions were used to 1/ identify the alternatives to be analyzed in detail in this environmental assessment that are in addition the Proposed Action and the “No Action” Alternatives, and 2/ document the rationale for eliminating alternatives from detailed study.

The following addresses the public’s comments on Alternative Uses of Available Resources to the Speaking Coyote Project.

Are there any unresolved conflicts concerning alternative uses of available resources? If yes, document and go to Question #2.

No. The BLM received seven letters of comments after the Speaking Coyote Scoping Report was released. The BLM considered the public comments and have minimized the environmental effects while also providing an economically feasible project. Some of the concerns were resolved by the final EA design of the project such as units not being located adjacent to private lands. Also, the BLM follows recommendations by the USFWS regarding regeneration harvesting in the range of the spotted owl. Public comments ranged from:

- 1) requesting that the BLM “create a favorable operating climate for the forest products industry” by “improving federal laws, regulations, policies and decisions regarding access to, and management of, forest lands” and that “these stands are at a stage that necessitates a regeneration harvest.”

- 2) “We implore the BLM to thin the smallest percentage possible in the lands abutting Cabbage Lane Trust. We encourage leaving a large buffer of uncut timber at our borders and eliminate timber cutting near the gulches and creeks.”
 - 3) “Thinning stands up to 130 years old is too old “
 - 4) “The two most prominent issues of concern to our organizations regarding the Speaking Coyote timber sale project are the proposals to construct additional temporary logging roads and to log within designated riparian reserves.”
-
1. **What alternatives should be considered that would lessen or eliminate the “unresolved conflicts concerning alternative uses of available resources”?**

 2. **Of those alternatives identified in Question #2, are there reasonable alternatives for wholly or partially satisfying the need for the Proposed Action? If so, briefly describe alternatives and go to question #4.**

 4. **Of those alternatives identified in Question #3, will such alternatives have meaningful differences in environmental effects?**

APPENDIX 2 ENVIRONMENTAL ELEMENTS

Speaking Coyote Project Environmental Assessment

(DOI-BLM-OR-M070-2012-0002-EA)

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

Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.

Critical Element of the Human Environment	Status	Interdisciplinary Team Remarks
	1/ Not Present 2/ Not Affected 3/ Affected	1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix D of the 1995 RMP to reduce or avoid environmental harm
Air Quality (Clean Air Act)	Not Affected	Prescribed burning would be administered in accordance with the Oregon Smoke Management Plan administered by the Oregon Department of Forestry and the regulations established by the Oregon Department of Environmental Quality. The Planning Area is not located within a Class I designated airshed or non-attainment area. The impact of smoke on air quality is expected to be localized and of short duration. Particulate matter would not be of a magnitude to harm human health, affect the environment, or result in property damage. Dust created from vehicle traffic on gravel or natural-surfaced roads, road work, and logging operations would be localized and of short duration. As such, the Proposed Action is consistent with the provisions of the Federal Clean Air Act.
Areas of Critical Environmental Concern	Not Present	There are no Areas of Critical Environmental Concern located within the Planning Area.

Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.

Critical Element of the Human Environment	<p align="center">Status</p> <p>1/ Not Present</p> <p>2/ Not Affected</p> <p>3/ Affected</p>	<p align="center">Interdisciplinary Team Remarks</p> <p>1/ If not affected, why?</p> <p>2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix D of the 1995 RMP to reduce or avoid environmental harm</p>
Cultural, Historic, Paleontological	Not Present	<p>A cultural resource survey of the Planning Area was conducted between the months of August and October, 2011. A total of seven new cultural resource sites and one isolate were recorded during archaeological survey, along with five previously recorded sites. The BLM in consultation with the State Historic Preservation Office (SHPO) evaluates sites to determine if they are significant and qualify for listing in the National Register of Historic Places. Eligible sites and unevaluated sites warrant protection according to Section 106 of the National Historic Preservation Act (NHPA).</p> <p>For the Speaking Coyote Project, six sites are located within the APE (areas of potential effect). The sites have not been formally evaluated for significance and eligibility to the National Register of Historic Places and warrant protection. Project Design Features (PDFs) have been developed to protect each site during project implementation.</p> <p>The BLM recommended that the proposed Speaking Coyote Project will have No Adverse Effect to the five potentially eligible (unevaluated) sites. SHPO concurred in a letter dated June, 21, 2012 that the proposed project would have No Adverse Effect to cultural resources.</p> <p>If cultural resources are found during project implementation, the project would be redesigned to protect the cultural resource values present, or evaluation or mitigation procedures would be implemented based on recommendations from the Resource Area Archaeologist, with input from the Tribes, and concurrence from the Field Manager and State Historic Preservation Office.</p> <p>No paleontological resources are known to exist in the project planning area.</p>
Energy (Executive Order 13212)	Not Affected	The Proposed Action would have no effect on energy development, production, supply and/or distribution.

Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.

Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix D of the 1995 RMP to reduce or avoid environmental harm
Environmental Justice (Executive Order 12898)	Not Affected	The Proposed Action is not anticipated to have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.
Prime or Unique Farm Lands	Not Present	There are no prime or unique farmlands within the Planning Area.
Flood Plains (Executive Order 11988)	Not Affected	The Proposed Action does not involve occupancy and modification of floodplains, and would not increase the risk of flood loss. As such, the Proposed Action is consistent with Executive Order 11988.
Hazardous or Solid Wastes	Not Affected	There would be no environmental effects associated with this element due to the implementation of the Best Management Practices contained in the Medford RMP and the terms/conditions of the timber sale contract.

Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.

Critical Element of the Human Environment	Status	Interdisciplinary Team Remarks
	1/ Not Present 2/ Not Affected 3/ Affected	1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix D of the 1995 RMP to reduce or avoid environmental harm
Invasive, Nonnative Species (Executive Order 13112)	Not Affected	<p>Units with the Speaking Coyote Planning Area were surveyed for noxious weeds in the spring of 2010 and 2011. Sites found along roadsides in 2010 were treated in 2011. New sites located in 2011 included 5 populations of <i>Rubus armenicus</i> (Blackberry), 6 populations of <i>Centurea pratensis</i> (Meadow Knapweed), 4 populations of <i>Cytisus scoparius</i> (Scotch broom), 1 population of <i>Vinca minor</i> (Common periwinkle), and 1 population of <i>Helix hedera</i> (English Ivy) and were documented within proposed units. (Table A6-1).</p> <p>Based on these population sizes, per noxious weed reports provided by professional botany contractors, the Grants Pass botanist estimated that 1.2 % of the harvest unit / road renovation/improvement / temp route construction acreage harbor noxious weeds. The maximum square footage/acreage occupied by all noxious weed species reported in or directly adjacent to Speaking Coyote units is approximately 10.1 acres</p> <p>The Medford District RMP states that the objectives for noxious weeds are to “contain and/or reduce noxious weed infestations on BLM-administered land.(p. 92),” and “survey BLM-administered land for noxious weed infestations...(p. 93).” These RMP directions for weed management are intended to be met at a landscape level. In an effort to continue to contain and/or reduce noxious weeds on federal land, the BLM has treated many of these known weed populations within Speaking Coyote Project Planning Area. Subsequent follow-up treatments are scheduled to occur in the spring of 2012.</p> <p>There are three main reasons why potential weed establishment is not expected to result in a detectable effect to overall ecosystem health. First, surveys indicate that a very small percentage - less than 1.2 % of acreage within the Planning Area units - are affected by noxious weeds. Second, these sites located in units proposed for treatment have been reported during predisturbance surveys, and have received weed treatment under Medford District’s <i>Integrated Weed Management Plan and Environmental Assessment OR-110-98-14</i>.</p>

Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.

Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix D of the 1995 RMP to reduce or avoid environmental harm
Invasive, Nonnative Species (Executive Order 13112)	Not Affected	<p>Third, Project Design Features (PDFs) have been established to minimize the rate at which project activities might potentially spread noxious weed seed from outside/adjacent sources.</p> <p>Seeds are spread by the wind, by animal/avian vectors, natural events, and by human activities - in particular through soil attachment to vehicles. BLM's influence over these causes of the spread of noxious weeds is limited to those caused by human activities. Additional human disturbance and traffic would increase the potential for spreading noxious weed establishment, but regardless of human activity, spread of these weeds would continue through natural forces. Thus, the BLM cannot stop the spread of noxious weeds, it may only reduce the risk or rate of spread. See noxious weed specialist report in Appendix 8.</p>
Native American Religious Concerns	Not Affected	

Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.

Critical Element of the Human Environment	Status	Interdisciplinary Team Remarks
T/E (Threatened or Endangered) Fish Species or Habitat	<p>1/ Not Present</p> <p>2/ Not Affected</p> <p>3/ Affected</p>	<p>1/ If not affected, why?</p> <p>2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix D of the 1995 RMP to reduce or avoid environmental harm</p>
	<p>Not Affected</p> <p>(Southern Oregon/Northern California Coasts coho salmon Evolutionarily Significant Unit (ESU))</p>	<p>Salmon are listed under the Endangered Species Act by evolutionarily significant units (ESU). An ESU is a stock of Pacific salmon that is 1) substantially reproductively isolated from other specific populations units; and 2) represents an important component in the evolutionary legacy of the species. The northern most extent of the federally listed threatened Southern Oregon/Northern California Coasts (SONCC) coho salmon is the Rogue Basin.</p> <p><u>SONCC coho salmon</u> are within the Grave Creek Watershed. Thinning, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including route decommissioning), road maintenance, roadway clearing, hauling, and activity fuel treatments would have no effect on SONCC coho salmon (ESA-Threatened) and coho critical habitat (CCH). For the Speaking Coyote Project Planning Area, the closest CCH (Wolf Creek) is approximately 100 feet from the closest thinning units (9-1, 10-1 and 15-1). These thinning units will have intact 100 foot Ecological Protection Zones and have 60 percent canopy retention. The Speaking Coyote Project Planning Area haul road segments and road related activities intersect four streams containing CCH. These four road segments represent one bridge (Wolf Creek) and three culverts (Bummer Gulch, Mackin Gulch and Secesh Gulch) on CCH streams. Sediment would not be expected to enter CCH as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into CCH. Project activities would follow all provisions of the Clean Water Act (40 CFR Subchapter D) and Department of Environmental Quality's (DEQ's) provisions for maintenance of water quality standards.</p>

Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.

Critical Element of the Human Environment	<p align="center">Status</p> <p>1/ Not Present</p> <p>2/ Not Affected</p> <p>3/ Affected</p>	<p align="center">Interdisciplinary Team Remarks</p> <p>1/ If not affected, why?</p> <p>2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix D of the 1995 RMP to reduce or avoid environmental harm</p>
<p align="center">T/E (Threatened or Endangered) Plant Species or Habitat</p>	<p align="center">Not Present</p>	<p>Of the four federally listed plants on the Medford District (<i>Fritillaria gentneri</i>, <i>Limnanthes flocosa</i> ssp. <i>grandiflora</i>, <i>Arabis macdonaldiana</i>, and <i>Lomatium cookii</i>), only <i>Fritillaria gentneri</i> has a range which extends into the northern portion of Grants Pass Resource Area. Final units within the Speaking Coyote Project Area are not within the range of <i>F. gentneri</i>, as determined by the 2004 US Fish and Wildlife Service Biological Opinion. Vascular plant surveys were conducted in the spring of 2011, and no <i>Fritillaria gentneri</i> populations were found. There would be no anticipated effect from the Proposed Action on any federally listed plant.</p>

Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.

Critical Element of the Human Environment	Status	Interdisciplinary Team Remarks
		1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix D of the 1995 RMP to reduce or avoid environmental harm
/E (Threatened or Endangered) Wildlife Species, Habitat and/or Designated Critical Habitat	Affected Spotted Owl Habitat)	<u>Affected:</u> Alternative 2 would maintain suitable and dispersal habitat for the northern spotted owl (Threatened). No thinning would occur in Recovery Action 32 (RA 32) habitat). <i>Refer to Section 3.6 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>
	Affected 2012 NSO Critical Habitat	<u>Affected:</u> Alternative 2 would not occur in 2008 NSO CHU, and would maintain nesting, roosting and foraging, and dispersal habitat in NSO 2012 critical habitat in the Planning Area, including the supporting primary constituent elements 1. <i>Refer to Section 3.6 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>
	Not Affected Disturbance-NSO	<u>Not Affected:</u> Logging activities occurring during spotted owl nesting season are not expected to disturb owls because all proper Project Design Criteria distance buffers and timing restrictions during the nesting and fledging periods would be applied to proposed activities. Spotted owl surveys conducted in 2010, 2011, 2012 identify occupied habitat.
	Not Affected (MAMU, habitat, disturbance)	Alternative 2 does not occur within the known range of the marbled murrelet. Suitable inland marbled murrelet habitat including old-growth trees with multiple platforms containing moss, lichen or mistletoe (McShane et. al. 2004) may occur up to 10km east of the western hemlock zone and the known range (Zone A. The proposed action would not remove or downgrade suitable murrelet habitat, and does not occur within designated marbled murrelet critical habitat.

Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.

Critical Element of the Human Environment	Status	Interdisciplinary Team Remarks
Water Quality (Surface and Ground)	1/ Not Present	1/ If not affected, why?
	2/ Not Affected	2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix D of the 1995 RMP to reduce or avoid environmental harm
	3/ Affected	
	Not Affected Temperature	Temperature: A total of 26 miles of streams in these sub-watersheds do not meet ODEQ water quality standards for temperature. BLM lands would continue to be managed to attain compliance with state water quality standards and ACS objectives. Streams in this Planning Area are generally well shaded on public lands by both the mid and upper canopy streamside vegetation. Within this Planning Area, the Ecological Protection Zone would maintain stream temperatures by reserving all trees within the primary shade zone, and a majority of the trees within the secondary shade zone (USFS and BLM, 2005) from commercial harvest.
	Not Affected Chemical/Nutrient Contamination	Chemical/Nutrient Contamination: No herbicides or pesticides would be used as a part of this project. Hydraulic fluid and fuel lines on heavy mechanized equipment would be in proper working condition in order to minimize potential for leakage into streams. Due to Project Design Features such as no re-fueling of any equipment would occur within 150 ft of streams or stream crossings it would not be expected for the proposed activities to have any effect on chemical contamination of streams or waterbodies. Fuel treatments could increase nitrogen levels within the stream and riparian zone in the short term. These would be highly localized, low level increases and would not be of a magnitude that would have any adverse effect on macroinvertebrate populations which are the most sensitive indicators of water quality conditions.
	Affected: Sediment (hauling and road maintenance)	Sediment/Turbidity: Where roads are hydrologically connected, a small amount of localized sediment may enter streams during hauling and road maintenance. These actions would result in measurable increases in sediment for no more than 25 ft downstream of the impact point. Sediment from hauling and maintenance actions would not be of a magnitude that would alter macroinvertebrate populations, and would be within the State of Oregon water quality standards. Due to the implementation of additional protection measures on roads within close proximity to streams with T&E fish species, no sediment would be expected to enter coho salmon habitat as a result of haul or road maintenance.
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Table 1. Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.

Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix D of the 1995 RMP to reduce or avoid environmental harm
Water Quality (Surface and Ground) cont.	Not Affected: Sediment (thinning, yarding, landing construction, temporary route construction and reconstruction (including associated decommissioning), haul, and fuels)	All thinning, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including associated decommissioning), and activity fuels and understory thinning treatments would not result in measurable inputs of sediment to streams due to project design. <i>See section 3.4: Water Quality: Stream Sedimentation for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>
Wetlands (Executive Order 11990)	Not Affected	The Proposed Action would not result in the destruction, loss or degradation of any wetland. As such, the Proposed Action is consistent with Executive Order 11990.
Wild and Scenic Rivers	Not Present	There are no eligible, suitable, or designated Wild and Scenic Rivers within the Fire Resiliency Planning Area.
Wilderness	Not Present	

Table 2. Other Elements of the Environment. This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary team’s predicted environmental impact per element if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.

Other Elements of the Environment	Status	Interdisciplinary Team Remarks
	1/ Not Present	1/ If not affected, why?
	2/ Not Affected 3/ Affected	2/ If affected, develop cause/effect statement, unit of measure, and if applicable, design features not already identified in Appendix D of the RMP to reduce or avoid environmental harm
Essential Fish Habitat (Magnuson-Stevens Fisheries Conservation and Management Act)	No Effect to EFH for coho and Chinook salmon (EFH within the Grave Creek HUC 5 watershed)	Coyote Creek, Grave Creek and Wolf Creek within Speaking Coyote Planning Area are designated as EFH (Essential Fish Habitat) under the Magnuson-Stevens Fishery Conservation and Management Act. Thinning, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including route decommissioning), road maintenance, roadway clearing, hauling, and activity fuel treatments would not adversely affect coho and Chinook salmon EFH. EFH in the Speaking Coyote Area is approximately 1.4 miles from the closest thinning unit. The Speaking Coyote haul road segments and road related activities do not intersect any EFH streams.
Fire Hazard	Affected	Activity fuels created in treatment units may increase fire hazard because of the potential to produce flame lengths that exceed the fire behavior threshold in the short term due to the presence of slash until the time it is treated and/or partially decomposed, within six months to 3 years. Flame length is a method to determine fire hazard. Flame length is measured in feet and dictates fire suppression strategies (Table 5 Fuel Models with the associated flame lengths...) <i>Refer to Section 3.2 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>
Fire Risk	Not Affected	Fire risk is the probability of a fire starting, as determined by the presence of ignition sources such as lightning and human activities. New permanent road construction has the potential to increase fire risk because new roads allow for an increase in human presence by providing easier access into previously inaccessible areas. However, there is no new permanent road construction proposed in the Speaking Coyote Project and the 2.81 miles temporary routes to be constructed and reconstructed would be decommissioned after use. Fire risk for this project is considered negligible.
Recreation	Not Affected	

Table 2. Other Elements of the Environment. This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary team’s predicted environmental impact per element if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.

Other Elements of the Environment	Status	Interdisciplinary Team Remarks
Rural Interface Areas (RMP, Map 13)	1/ Not Present 2/ Not Affected 3/ Affected	1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure, and if applicable, design features not already identified in Appendix D of the RMP to reduce or avoid environmental harm
Special Areas (not including ACEC)	Not Affected	Rural residents abide in the Planning Area would experience short-term noise, dust, and traffic congestion due to logging operations. These types of activities are common because of management practices occurring on private and other public lands.
	Not Present	

Table 2. Other Elements of the Environment. This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary team’s predicted environmental impact per element if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.

Other Elements of the Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure, and if applicable, design features not already identified in Appendix D of the RMP to reduce or avoid environmental harm
Special Status Species (not including T/E): Fish Species/Habitat	Not Affected (Klamath Mountains Province steelhead and Southern Oregon Coast/Northern California Coast Chinook within the Grave Creek HUC 5 Watershed.)	<p>On July 26, 2007 a new Special Status Species (SSS) list went into effect (BLM 2007). This new list has two categories, Sensitive and Strategic. The former categories of Bureau Assessment and Bureau Tracking no longer exist. Both of the listed species within the project area are classified as Oregon Strategic. BLM does not manage special status species but must plan actions so that they do not contribute to the need to list them as federally threatened or endangered.</p> <p>Klamath Mountains Province steelhead and Southern Oregon Coast/Northern California Coast Chinook are within Grave Creek HUC 5 Watershed. Their habitat is contained within the coho Critical Habitat analyzed for SONCC coho salmon. Thinning, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including route decommissioning), road maintenance, roadway clearing, hauling, and activity fuel treatments would have no effect on Klamath Mountains Province steelhead and Southern Oregon Coast/Northern California Coast Chinook. Sediment would not be expected to enter SSS habitat as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into SSS streams. Project activities would follow all provisions of the Clean Water Act (40 CFR Subchapter D) and Department of Environmental Quality’s (DEQ’s) provisions for maintenance of water quality standards.</p> <p>Fish species are listed as special status species by ESUs. See the “T/E (Threatened or Endangered) Fish Species or Habitat” section above for the definition of ESUs.</p>

Table 2. Other Elements of the Environment. This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary team’s predicted environmental impact per element if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.

<p>Other Elements of the Environment</p>	<p>Status</p> <p>1/ Not Present 2/ Not Affected 3/ Affected</p>	<p>Interdisciplinary Team Remarks</p> <p>1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure, and if applicable, design features not already identified in Appendix D of the RMP to reduce or avoid environmental harm</p>
<p>Special Status Species (not including T/E): Plant Species/Habitat</p>	<p>Not Affected</p>	<p>Bureau Special Status & Survey and Manage Plants – PRESENT, NOT AFFECTED</p> <p>On July 26, 2007 a new Special Status Species list went into affect (IM No. OR-2007-072). This new list has two categories, Sensitive and Strategic. The former categories of Bureau Assessment and Bureau Tracking no longer exist. Sensitive species require a pre-project clearance and management to prevent them from trending toward federal listing. There is no pre-project clearance or management required for the Strategic Species at the BLM District level, thus Strategic Species will not be analyzed in this document. The new list is effective immediately, however, if pre-project clearances have already been conducted for a project, there are no requirements to conduct pre-project clearances for newly added Bureau Sensitive Species or to address the newly added Bureau Sensitive species in the NEPA document (IM No. OR-2007-072).</p> <p>In addition to the new Special Status Species policy, Survey and Manage requirements have been re-instated as of December 2009. Surveys were in compliance with the 2001 Survey and Manage protocol, which requires surveys for Category A and C species. Survey and Manage protocol also requires managing known (documented) sites of Category A, B, C, and E species, managing ‘high-priority’ Category D species, and no site management requirement of Category F species.</p> <p>Vascular and nonvascular plant surveys were conducted in the fall of 2009 and the spring of 2010, respectively. Professional botanists surveyed the Planning Area units using intuitive controlled methodology, wherein areas supporting high potential habitat were surveyed more intensively; surveys were also in compliance with the 2001 Survey and Manage protocol, which requires surveys for Category A and C species. Survey and Manage protocol also requires managing known (documented) sites of Category A, B, C, and E species, managing ‘high-priority’ Category D species, and no site management requirement of Category F species. Surveys revealed the following new sites; (4) <i>Chaenotheca ferruginea</i> (Sensitive, S&M B), (2) <i>Chaenotheca furfuracea</i> (S&M F), (2) <i>Piperia elongata</i> (STR) and (1) <i>Lotus stipularis</i> (SEN).</p>

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<p>Special Status Species (not including T/E): Plant Species/Habitat (continued)</p>		<p>Bureau Special Status and S&M Fungi – PRESENT, NOT AFFECTED</p> <p><u>Special Status</u></p> <p>The Planning Area was not surveyed for ISSSP Sensitive fungi, as pre-disturbance surveys for Special Status fungi are not practical, nor required per BLM – Information Bulletin No. OR 2004-121, which states “If project surveys for a species were not practical under the Survey and Manage standards and guidelines (most Category B and D species), or a species’ status is undetermined (Category E and F species), then surveys will not be practical or expected to occur under the Special Status/Sensitive Species policies either (USDA/USDI 2004a, p.3).” Current special status fungi were previously in the aforementioned S&M categories which did not consider surveys practical, and are therefore exempt from survey requirements. With the recent instatement the new Interagency Special Status Species policy (ISSSP), 20 species of fungi were designated as Sensitive, 9 of which have been documented on Medford District. As mentioned above, none of these species require surveys.</p> <p>District wide, the Medford BLM has 20 Sensitive (SEN) fungi species; 11 are suspected to occur here, while the remaining 9 have been documented. Of the 9 documented species, only one, <i>Phaeocollybia olivacea</i>, has been found in the Glendale Resource Area, approximately 12.5 air miles away from the closest unit in the Planning Area. Dispersal via spore transport and/or mycelia network is improbable, as this site and the Planning Area reside within different HUC 5 watersheds (the site is in Middle Cow Watershed).</p> <p>While it is possible that this project is occurring within potential habitat for some species, there is very little information available describing the <i>exact</i> habitat requirements or population biology of these species (USDA/USDI 2004c, p.148).</p>
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Special Status Species (not including T/E): Plant Species/Habitat (continued)	Not Affected	<p>Based on the above information, the likelihood of a Sensitive fungi species in this Planning Area is very low; the likelihood of a sensitive fungi occurring within a single unit(s) encompassed in the Planning Area is even lower. The likelihood of contributing toward the need to list is not probable.</p> <p><u>Survey and Manage</u></p> <p>Aside from incidental Survey and Manage fungi sightings, the Planning Area was not surveyed for fungi to Survey and Manage protocol standards. For NEPA decisions signed in fiscal year 2011 and beyond for habitat-disturbing activities in old-growth forest, the 2001 S&M ROD (Forest Service and Bureau of Land Management 2001, S&G-9) gives direction to conduct equivalent effort surveys for category B fungi species if strategic surveys have not been completed for the province encompassing the project. The Survey and Manage Standards and Guides defines old growth forest as an ecosystem distinguished by old trees and related structural attributes that are usually at least 180 to 220 years old (Forest Service and Bureau of Land Management 2001, S&G-79). Strategic surveys have not been completed for category B fungi for the province containing the Fire Resiliency Planning Area, and equivalent effort surveys have not been completed as units do not exceed 180 years of age.</p>
Soil Productivity	Affected	<p>Soil productivity is the capacity of soil to support plant growth. Long term soil productivity is defined by the inherent natural growth potential of plants and plant communities over time. Two common types of disturbance effecting soil productivity are compaction and displacement. Soil productivity losses resulting from compaction and displacement would be below 5%. Compaction associated with harvest systems would be less than 12%. For more information regarding soil compaction and productivity losses reference section 3.5 of the EA.</p>

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Vegetation Resources	Affected	Commercial thinning treatments are designed to control stocking levels and to provide for increased and redistributed growth. These types of treatments enhance stand yield and stand quality. Commercial thinning would produce wood volume, maintain conifer growth rates, and improve the vigor of selected leave trees. Additionally the thinning treatments would be designed to maintain the functionality of northern spotted owl nesting, roosting, foraging, and dispersal habitat. Stand densities would be reduced increasing the availability of light, water, nutrients, and growing space for retained vegetation. Fewer, but larger trees would make up these stands. Stand diversity is expected to increase.
Soil Erodibility	Affected	Tractor and cable yarding corridors, landing construction and rehabilitation, hauling, road maintenance and use, understory treatments, prescribed burning, and temporary route construction and reconstruction (including associated route decommissioning) are proposed as part of this action. These activities would result in soil compaction and disturbance that would increase erosion. Compaction would not exceed 12% within any one unit, keeping impacts from compaction within those levels assessed under the 1995 RMP. Offsite erosion and subsequent stream sedimentation is discussed in the Water Quality section of this appendix. <i>See Section 3.4: Water Quality: Stream Sedimentation for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>

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Soil - mass wasting	Not Affected mass wasting	<p>Mass wasting causes increases in erosion that may lead to stream sedimentation, and damages to road systems. The risk of large scale mass wasting within this Planning Area is medium to high in some locations. Due to the potential natural and human caused risk for mass wasting in this Planning Area, a Certified Geotechnical Engineer was brought in to assess treatment units. This report is available in Appendix 9. Field observations and aerial photos indicated that larger slides have occurred in steep draw areas, and in areas impacted by intense land management or poor road locations within this Planning Area. Small slumps and slides are not uncommon in this Planning Area. They are found primarily at contact points between different geologic formations, or in association with roads. The Geotechnical Engineer examined all areas with soils or slope characteristics that would initially elevate the risk of mass wasting to medium or high. The results of this evaluation determined treatment units and associated activities that were able to continue with a low risk of mass wasting. Each unit that remained was closely examined on the ground by field crews for any indicators that a unit would be at an increased risk of mass wasting if stand thinning, yarding, temporary route construction, or road reconstruction were to occur. Following an on the ground examination of each unit, and needed unit modifications, it was determined that the risk of mass wasting would not be elevated within any of the final proposed project units.</p>
Visual Resources	Not Affected	<p>The Planning Area is located in the VRM (Visual Resource Management) Class II,III and IV lands. These VRM categories allow for varying amounts of modifications to the existing character of the landscape. Unit LP27-4 where seen from Interstate 5 is in VRM category II and would. The Proposed Action is consistent with the visual resource management objectives as stated in the Medford District Resource Management Plan (p.70).</p>

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Other Elements of the Environment	Status	Interdisciplinary Team Remarks
Water Resources (not including water quality)	<p>1/ Not Present</p> <p>2/ Not Affected</p> <p>3/ Affected</p> <p>Not Affected</p>	<p>1/ If not affected, why?</p> <p>2/ If affected, develop cause/effect statement, unit of measure, and if applicable, design features not already identified in Appendix D of the RMP to reduce or avoid environmental harm</p> <p>Water quantity can be affected during timber harvest by soil compaction and increased open space. Under the Proposed Action, a total of 69.4 acres may be compacted from skid trails, landings, and temporary route construction. This would result in a net increase in compaction within this Planning Area of less than 0.1%. Since these sub-watersheds are currently well below 12% watershed compaction known to result in significant changes in runoff timing and peak flows, these increases would not be of a magnitude that would result in any measurable change to the watershed hydrology. Within each unit, localized increases in surface flows at the compaction site could occur that would result in an increase in surface erosion. However due to the unaffected soils that would be left on each of these sites, these localized instances of surface erosion would infiltrate back into the unit soils. Upon completion of harvest, all compacted areas associated with temporary route construction would be sub-soiled, reducing the magnitude of soil compaction. There may also be a slight increase in groundwater flow below vegetative harvest sites. Water Sources with legal water rights have been located and assessed to ensure impacts from vegetation harvest would not result in reduced ground water in springs were public water is obtained.</p> <p>The Speaking Coyote project would not result in the creation of any continuous areas of overstory forest canopy openings that would contribute to open space within any sub-watershed (WPN, 1999). Within thinning units overall canopy closure would remain above 40% and would therefore not contribute to open space (WPN, 1999). As such, the Proposed Action would result in canopy gaps that would not be large enough to result in a measurable effect on watershed hydrology, including no increase in peak flows, base flows, runoff timing, subsurface flow, or water storage.</p> <p>Since watershed hydrology would not be affected this project would not affect municipal or domestic water use or water rights.</p>

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Other Elements of the Environment	Status	Interdisciplinary Team Remarks
Late-Successional Forest	1/ Not Present 2/ Not Affected 3/ Affected Proposed Action is in compliance with the 15% Standard and Guideline	1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure, and if applicable, design features not already identified in Appendix D of the RMP to reduce or avoid environmental harm The Northwest Forest Plan standards and guidelines state that at least 15% of each fifth field watershed should be managed to retain late-successional patches (ROD, C-44). No regeneration harvesting is proposed and 60% canopy cover, large decadent trees, snags, down wood are retained in NSO habitat suitable for nesting, roosting and foraging. The Proposed Action is in compliance with the 15% Standard and Guideline.

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Birds Species of Conservation Concern (BCC) 2008-Bird Conservation Region 5	Not Affected, at a state or regional scale*	<p>Both the U.S. Fish and Wildlife Service (2002) and Partners in Flight (Altman 1999) consider the state and regional approach a key to the conservation of migratory songbirds. The Birds of Conservation Concern (USFWS 2008a) identifies species, subspecies, and populations of migratory and non-migratory birds in need of additional conservation actions that are deemed to be the highest priority for conservation actions. The BCC 2008 encompasses three distinct geographic scales—North American Bird Conservation Initiative (NABCI) Bird Conservation Regions (BCRs), USFWS Regions, and National—and is primarily derived from assessment scores from three major bird conservation plans: the Partners in Flight North American Landbird Conservation Plan, the United States Shorebird Conservation Plan, and the North American Waterbird Conservation Plan. The Northwest Forest Plan as an effort in the same type of conservation planning process, which approaches management at a regional level. The proposed actions are consistent with the Northwest Forest Plan, which is also designed to provide for the conservation of other forest-related species in the range of the Northern Spotted Owl, such as these birds that may occur. Species that are known or may occur in or near the Grants Pass Resource Area: Bald Eagle (b*), Peregrine Falcon (b*), Rufous Hummingbird, Allen's Hummingbird, Olive-sided Flycatcher, Willow Flycatcher (c*), Horned Lark (<i>strigata</i> ssp.) (a*), Oregon Vesper Sparrow (<i>affinis</i> ssp.), Purple Finch.</p> <p>* (a=ESA candidate, b= ESA delisted, c= non-listed subspecies or population of T&E species)</p> <p>Within the Northwest Forest Plan (24,455,300 federal acres), reserved/ withdrawn lands total approximately 78% of the federal land base (USDA/USDI 1994, p. 2-62:65). Not all of the reserves are in or will obtain late-successional forest conditions, but the majority is expected to contribute as suitable habitat towards migratory birds utilizing late successional habitat. In addition, Matrix lands (3,975,300 acres) representing about 16% of the federal land base, contain selected portions of the land managed to retain 15-30% in late-successional forest, which provides additional suitable habitat. <i>See Appendix 8 for Migratory Birds Specialist Report.</i></p>

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Survey and Manage and Special Status Species (not including T/E): Wildlife Species/Habitat	Not Present: Canada lynx, fisher	<p>Threatened species - Lynx: Medford BLM was excluded from the lynx known range due to the absence of lynx habitat characteristics (involving elevation and snow depth) and lack of historic sightings.</p> <p>Candidate species- Fisher: Fishers have not been found in the Planning Area, or adjacent portions of the Grave Creek and Middle Cow Creek 5th field watershed. Approximately 37 remote camera survey stations were conducted to protocol (Zielinski and Kucera 1995) from 2002-2009 in and adjacent to the planning, with no fisher detections. Fishers have not been observed by BLM field personnel over many successive years of field work within the Planning Area. Although it is possible that fisher may occur or disperse through the Planning Area, the absence of detections from surveys and extensive BLM field work and presence of personnel in the planning area indicates use is minimal at best. Fisher would not be affected due to maintenance of large remnant trees, snags, down wood and 60% canopy cover in spotted owl suitable habitat.</p>
	Not Affected: Pond Turtle, foothill-yellow legged frog, fringed myotis	<p>Bureau Sensitive: Pond turtles, and foothill yellow-legged frogs occur in Grave Creek, where maintaining ACS objectives, 25’ no treatment buffers, and maintaining canopy cover for suitable spotted owl habitat will maintain suitable habitat and riparian conditions. The fringed myotis may roost in large decadent trees and snags, which occur in some Proposed Action units and are retained to the extent possible. Some incidental snags may be felled for safety concerns but would not be of the magnitude to affect habitat abundance or distribution. Water quality and nesting habitat not expected to be affected and viability of these species not affected.</p>
	Not Present	<p>Bureau Sensitive not expected to be present in Planning Area units: Tricolored blackbird, white-tailed kite, streaked horned lark, American peregrine falcon, bald eagle, Lewis' woodpecker, white-headed woodpecker, purple martin, black salamander, Siskiyou Mountains salamander , Oregon spotted frog, pallid bat, Townsend's big-eared bat, Oregon shoulderband snail, Chase sideband snail, travelling sideband snail, Siskiyou hesperian snail, Evening fieldslug, Franklin’s bumblebee, Johnson’s hairstreak, mardon skipper, coronis fritillary, Siskiyou short-horned grasshopper.</p>

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Other wildlife	Not Affected: other species: Red Tree Vole, Goshawk, and great gray owl)	Red Tree Vole (RTV) is not listed as Sensitive or Strategic species for the portion of the range affected by the Planning Area in Final State Director's Special Status Species List (BLM 2008a). Red tree voles are common throughout the Planning Area. RTV sites (2001 Survey and Manage ROD) were detected in the Speaking Coyote Planning Area as a result of protocol surveys with the current accepted protocol with surveys completed in June 2011. Surveys were applied to units stands over 80 years old (Pechman, see Chapter 1 of the EA). RTV habitat areas are excluded from forest management prescriptions that would modify middle and overstory trees in RTV habitat areas, per Management Recommendations (BLM 2000b) and to provide for the persistence of the species (USDA/USDI 2001). Surveys do not detect all nests, and loss of some individuals and nest structures would occur under the Proposed Action. Managing known sites, retaining large dominant trees with full crowns, and maintaining 60% canopy closure in spotted owl NRF habitat in proposed units where surveys did not detect red tree voles and continues to provide a lower level of functioning habitat for these populations, and across the landscape, and provide for species persistence (2001 Survey and Manage ROD and Standard and Guidelines, p.4). No foreseeable projects are expected to affect the known sites in the proposed action; therefore, there are no cumulative effects. Fuels management has become an important part of ecosystem management and community protection on BLM lands. Piling and burning would be used to reduce excessive accumulations of fuels and reduce fire risk to red tree vole habitat. Subsequent Understory burning may be used to reduce fuel loading and vertical fuel continuity and maintain a lower fuel loading . Wildfires in stands that are managed using underburning are generally less severe, and fire suppression is more effective. Fire hazard is high. Most of the Planning Area is high frequency-high severity fire regime. Burning would be conducted during a time of year when the likelihood of fire escaping into the tree canopy is lowest. Pre-treating fuels with pile burning would reduce fuel loading and reduce underburning fire intensity. Flame lengths would be approximately 1-2 feet in timber litter and 3-5 feet in timber understory, and short duration, with creeping backing downslope burns with low intensity such that direct heat and smoke is not expected to cause mortality to red tree voles in the midstory and overstory canopy

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Other wildlife (continued)	Not Affected: other species: (continued) Del Norte salamander, pine marten, flying squirrel)	<p>Goshawks and great gray owls are not listed as Sensitive or Strategic species in Final State Director's Special Status Species List (BLM 2008a) or USFWS Birds of Conservation Concern for BCR 5 (USFWS 2002). There are no known sites within the Proposed Action. Goshawks have been observed in the Planning Area and are likely to forage in proposed units. No known nest areas occur with proposed units. Light to moderate thinning would not reduce habitat suitability or would slightly improve openness for foraging. There is sufficient mix of seral stages including large trees in the Planning Area, and reserved, deferred or withdrawn habitat within Matrix to provide nesting, fledging, and foraging habitat. Viability rating would remain high and unchanged. (USDA/USDI 1994a 3&4 p.179). Great gray owls have not been observed in the Planning Area, or in the Grave Creek watershed. Protocol surveys have been completed for great gray owls for two years surveys (2011-12), and for historical projects in the Grave Creek watershed and have had no detections.</p> <p>Del Norte Salamander Surveys are not required and there are no known sites in the Planning Area. Historical surveys in the Grave Creek watershed adjacent to the planning did not detect the salamanders. No management is required for species persistence (2001 S&M ROD and S&G p.40).</p> <p>Pine marten have been documented in the Grants Pass Resource Area in high-elevation conifer forests and likely occur in the planning area. They are thought to be present in the forested habitats across the lands administered by the Resource Area. Martens inhabit forested habitats at any elevation and would use openings in forests if there are downed logs to provide cover (Csuti, et al. 1997). They are a forest species capable of tolerating a variety of habitat types if food and cover are adequate. They prefer mature forests that contain large quantities of standing and downed snags and other coarse downed woody material, often near streams. They often use down logs for hunting and nesting. Habitat conditions and possible occurrence would not be affected for these due to maintenance of habitat elements for spotted owl habitat.</p> <p>Flying Squirrels (Prey for spotted owls) The Speaking Coyote Project provides habitat skips for prey, and avoids treating structurally complex forests, which may have high densities of flying squirrels.</p>

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	Flying squirrel cont.	<p>The Understory Thin treatment areas retain untreated midstory and overstories, and also include some red tree vole habitat areas with untreated midstory and overstory layers. Some red tree vole habitat areas are excluded from any treatment. Riparian reserves would remain untreated. Large down wood and snags and trees with dominant crowns are retained. Thinning may reduce flying squirrel densities in Density Management units by reducing forest understory, midstory and some overstory canopy biomass and reduce understory plants, truffles, and lichens, or by removing some trees supporting dens. Flying squirrels and woodrats are co-dominant prey items (Forsman et al. 2004). Therefore, spotted owls in southwest Oregon are afforded a more diverse large-prey food source which likely results in relative increases in energetic benefitted foraging opportunities and fitness of spotted owls. The trade-off is one of habitat-quality reductions weighing against the opportunity to decrease the short and long term likelihood of losing significant amounts of untreated closed-canopy forest stands and wildlife habitat to wildfire. Negative stand-level impacts would be traded for increased resistance and resilience of the forest landscapes to large-scale stand replacement fires. The affected nesting, roosting and foraging stands are anticipated to continue to contribute to spotted owl recovery. No forest treatment occurs within the nest patch area of spotted owls. Treated units would continue to support habitat that would support multiple prey species, including red tree voles, wood rats and flying squirrels.</p>
Port-Orford-cedar	Not Present	<p>The Speaking Coyote Project is within the natural range of Port-Orford-cedar (POC). A POC Risk Key Analysis was completed. No management specific to POC and POC root disease (<i>Phytophthora lateralis</i>) is required. The Proposed Action is consistent with management direction in the Port-Orford-cedar EIS (POC Risk Key is on file)</p>

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Greenhouse Gases and Carbon Storage	Affected	<p>Scientific knowledge on the interrelationship between greenhouse gas levels and climate change is rapidly changing. Substantial uncertainties and key limitations exist. Because forests store carbon, they can affect atmospheric concentrations of carbon dioxide, a greenhouse gas. Forest management can change the amount of carbon stored in a forest.</p> <p>Treatments within the Proposed Action of this project were compared to treatments in other recent projects and found to be similar. Carbon storage and carbon emissions in the proposed actions of those projects were calculated to determine the net contributions of greenhouse gases resulting from the treatments. Those carbon calculations were based on assumptions in the 2008 FEIS (USDI/BLM 2008 Appendix C) . Carbon storage was analyzed by quantifying the change in carbon storage in <i>live trees</i>, storage in forests <i>other than live trees</i> (dead wood and roots, non-tree vegetation, litter and soil organic matter), and storage in <i>harvested wood</i> products. Changes in forest ecosystem carbon over time were calculated using site specific data and the ORGANON Growth Model (Hann et al. 2007). Stand volume in cubic feet per acre per year was used to calculate tonnes of carbon stored per year. Carbon emissions (carbon dioxide) were calculated from timber harvest activities (including fuel consumption) and post-harvest fuel treatments. Net carbon storage was calculated by subtracting carbon emitted from carbon stored.</p> <p>Similar to treatments in the other projects, Speaking Coyote treatments would reduce carbon stores temporarily but would result in net increases over time. For units similar to the thinning units, growth within five years following treatment resulted in carbon storage that exceeded direct and indirect carbon emissions, resulting in a net storage of carbon compared to pretreatment conditions. For units similar to the thinning units, growth within ten years following treatment resulted in carbon storage that exceeded direct and indirect emissions, resulting in a net storage of carbon compared to pretreatment conditions. In addition, the treatments within the Speaking Coyote Project would reduce the burning intensity of future fires which in the long-term would maintain higher carbon stores on the landscape.</p>

Survey & Manage Tracking Form:

Wildlife Species Survey and Site Management Summary Medford District BLM - Grants Pass Resource Area

Project Name: Speaking Coyote

Prepared By: Marlin Pose, Wildlife Biologist

Project Type: Variable Retention Thinning Harvest
2012

Date: April 25,

Location: T33S-R3W-Sections 7, 9, 10, 11, 13, 14, 15, 17, 18, 20, 21, 22, 23, 24, 25, 26, 27, 30, 31, 34, 35 ; T33S-R6W-Sections 1, 27, 34; T33S-R4W Sections 31; in Josephine County, Willamette Meridian.

S&M List Date: 2011 Settlement Agreement

Table A. Survey & Manage Wildlife Species

The Medford District BLM compiled the species listed below from the 2011 Settlement Agreement Attachment 1. This includes those *vertebrate species with pre-disturbance survey requirements (Category A, B or C species)*, whose known or suspected range includes the Grants Pass Resource Area of the Medford District BLM according to:

- Survey protocol for the Great Grey Owl within the Range of the Northwest Forest Plan v3.0 (Jan. 2004)
- Survey Protocol for the Red Tree Vole v2.1 (Oct. 2002)
- *Survey Protocols for Amphibians under the Survey & Manage Provision of the Northwest Forest Plan v3.0* (Oct. 1999),
- *Survey Protocol for Survey and Manage Terrestrial Mollusk Species from the Northwest Forest Plan, Version 3.0* (2003).
- There are no Category D, E, or F species with known sites located within the Speaking Coyote Project Area.

The Speaking Coyote project contains 818 acres of mid-seral forested habitat. Commercial Thinning timber harvest would result in habitat disturbance to these stands.

Surveys have been completed for the S&M vertebrates *Arborimus longicaudus* (category C) and *Strix nebulosa* (category C) that occur in the Grants Pass Resource Area of the Medford District BLM.

Management of known sites were applied to red tree vole according to Management Recommendations for the Oregon Red Tree Vole *Arborimus longicaudus* Version 2.0 (IM OR-2000-086).

There were no known sites or observations of great gray owls detected from surveys.

APPENDIX 3 WILDLIFE SURVEY AND MANAGE TRACKING TABLE

Table A.
FOR THE SPEAKING COYOTE PROJECT
April 2012

Species	S&M Category	Survey Triggers			Survey Results			Site Management
		Within Range of the Species ?	Contains Suitable habitat?	Habitat Disturbing*?	Surveys Required?	Completed Survey Date (month/year)	Sites Known or Found?	
Vertebrates								
Red Tree Vole <i>Arborimus longicaudus</i>	C	Yes	Yes	Yes	Yes	Jan. 3-June 3, 2011	Yes	Habitat management areas ≥ 10 acres for each active RTV management area
Great Gray Owl <i>Strix nebulosa</i>	C ₃	Yes	Yes	Yes	Yes	March 15 - July 15; 2010&2011	No	NA
Mollusks								
Siskiyou Sideband <i>(Monadenia chaceana)</i>	B	No	N/A	N/A	N/A	N/A	N/A	N/A
Crater Lake Tightcoil <i>(Pristiloma arcticum crateris)</i>	A	No	N/A	N/A	N/A	N/A	N/A	N/A
Evening Fieldslug <i>(Deroceras hesperium)</i>	B	No	N/A	N/A	N/A	N/A	N/A	N/A

*“Habitat disturbing” and thereby a trigger for surveys as defined in the 2001 ROD S&Gs (p. 22).

N/A = Not applicable

Statement of Compliance. Units were surveyed in winter and spring of 2011 for red tree voles, and in the spring and summer of 2010 & 2011 for great gray owls. The Medford BLM applied the 2011 Settlement Agreement Species List to the Speaking Coyote project, completing pre-disturbance surveys, and management of known sites (Table A) required by Survey Protocols and Management Recommendations 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*.

Project surveys discovered 59 red tree vole nest sites (29 active and 30 inactive nests). Twenty-three active nests and 25 inactive nests were located in habitat greater than 80 years old in units 9-1, 15-1, 17-2, 20-1, 20-2, 22-2, 23-5, 24-1, 27-1, and 27-2. Red tree vole habitat areas are excluded from the project for 19 red tree vole areas (approximately 220 acres) in habitat greater than 80 years old to provide for the persistence of the species.

There were no known sites or observations of great gray owls detected from surveys.

Marlin Pose, Grants Pass RA Wildlife Biologist

April 25, 2012

Grants Pass Interagency Field Office, Medford District BLM

Survey & Manage Tracking Form:
Botany Species Survey and Site Management Summary

Grants Pass Resource Area – Medford District

Project Name: Speaking Coyote

Prepared By: Rachel Showalter, Botanist

Project Type: Variable Retention Harvest

Date: March 1, 2012

Location: T32S-R6W-Sections 25, 36; T32S-R5W-Sections 29-33; T33S-R6W Sections 1,12,13,21-24; T33S-R5W-Sections 1,36; T33S-R4W-Sections 19, 30-33; T34S-R6W-Sections 2-5,9,10; T34S-R5W-Sections 1,2,11,12 and T34S-R4W-Sections 4-8 in Josephine County, Willamette Meridian.

S&M List Date: 2011 Settlement Agreement

Table A. Survey & Manage Botany Species

The Medford District BLM compiled the species listed below from the 2011 Settlement Agreement Attachment 1. This includes those *vascular and non-vascular plant species with pre-disturbance survey requirements (Category A or C species)*, whose known or suspected range includes the Medford District BLM according to:

- Species distribution maps located at:
<http://www.fs.fed.us/r6/sfpnw/issssp/planning-tools/species-distribution-maps.shtml>
- Management Recommendations for Vascular Plants, USFS and BLM, 1999
- Survey Protocols for Survey & Manage Category A & C Lichens in the Northwest Forest Plan Area, Version 2.1 (2003), BLM, USFS, and USFWS

The Speaking Coyote project contains 818 acres of mid-seral forested habitat. Commercial Thinning timber harvest would result in habitat disturbance to these stands. Strategic surveys have been completed for two S&M category B lichens that occur in the Medford District – *Chaenotheca chrysocephala* and *Chaenotheca ferruginea* (USFS and BLM, 2006, p1). If they were detected during surveys for S&M category A or C, or Bureau Sensitive species, they were documented. No other Category B lichens or bryophytes are documented or suspected of occurring in the Medford District BLM.

There were 5 incidental fungi sightings within the project area units, consisting of (2) *Phaeocollybia attenuata* (S&M D, in units 25-2 & 25-3), (2) *Rhizopogon truncatus* (S&M D, in units 15-1 & 25-3), and (1) *Clavariadelphus occidentalis* (S&M D).

APPENDIX 4 SURVEY AND MANAGE TRACKING TABLE

Table A.
FOR THE SPEAKING COYOTE PROJECT
MARCH 2012

Species	S&M Category	Survey Triggers			Survey Results			Site Management
		Within Range of the Species ?	Contains Suitable habitat?	Habitat Disturbing*?	Surveys Required?	Survey Date (month/year)	Sites Known or Found?	
Vascular Plants								
<i>Cypripedium fasciculatum</i>	C	Yes	Yes	Yes	Yes	May-July 2011	No	NA
<i>Cypripedium montanum</i>	C	Yes	Yes	Yes	Yes	May-July 2011	No	NA
<i>Eucephalus vialis</i>	A	Yes	Yes	Yes	Yes	May-July 2008	No	NA
Lichens/Bryophytes								
<i>Leptogium cyanescens</i>	A	Yes	Yes	Yes	Yes	July 2008 – Jan 2009	No	NA
<i>Usnea longissima</i>	A	Yes	Yes	Yes	Yes	July 2008 – Jan 2009	No	NA

*“Habitat disturbing” and thereby a trigger for surveys as defined in the 2001 ROD S&Gs (p. 22).

N/A = Not applicable

Statement of Compliance. Units were surveyed in spring of 2011 for vascular plants, and in the fall of 2011 for nonvascular plants. The Medford BLM applied the 2011 Settlement Agreement Species List to the Speaking Coyote project, completing pre-disturbance surveys, and management of known sites (Table A) required by Survey Protocols and Management Recommendations 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*.

Project surveys discovered sites for 0 Survey and Manage Category A or C flora species.

Known sites are present within the project for 5 additional species (Survey and Manage Category B & D):

(1) *Chaenotheca chrysocephala* (B) in unit 15-1; (1) *Chaenotheca ferruginea* (B) in unit 9-1; (2) *Phaeocollybia attenuata* (D) in units 25-2 & 25-3; (2) *Rhizopogon truncatus* (D), in units 15-1 & 25-3), and (1) *Clavariadelphus occidentalis* (D) in unit 25-3.

Rachel Showalter, Grants Pass RA Botanist

March 1, 2012

NAME, Botanist

Date

NAME District or Field Office

U.S. Forest Service and Bureau of Land Management. April 3, 2006. *Bureau of Land Management-Instruction Memorandum No. OR-2006-038*. 3 pp. On file at: <http://www.blm.gov/or/plans/surveyandmanage/ss.htm>

APPENDIX 5 AQUATIC CONSERVATION STRATEGY CONSISTENCY ANALYSIS

“The Aquatic Conservation Strategy was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. The strategy would protect salmon and steelhead habitat on federal lands managed by the Forest Service and Bureau of Land Management within the range of the Pacific Ocean anadromy” (Medford District RMP pg. 22).

The four components of the ACS are Riparian Reserves, key watersheds, watershed analysis, and watershed restoration. The ACS was designed to meet the nine objectives discussed below.

This ACS consistency analysis evaluates Speaking Coyote Project EA on BLM land.

Analysis of the Four Components of the ACS:

1. Riparian Reserves: The proposed project is consistent with the actions and directions within Riparian Reserves as described in the Medford District RMP. The Proposed Action would result in 40 acres of thinning and understory treatments to promote forest health and the development of large woody debris (LWD) within Riparian Reserves outside the Ecological Protection Zone (EPZ). Thinning would be designed to expedite the development of late successional, multi-story habitat conditions and restore the species composition and structural diversity of the plant communities, needed to achieve ACS and Riparian Reserve objectives (Medford RMP, pg 22, pg 26 respectively). Riparian Reserves within the proposed units are currently dominated by Douglas fir and some hardwoods. Most riparian stands are lacking large wood debris, downed logs, and large tree structure. Thinning of dense Riparian Reserves would reduce competition on the retained trees for light, nutrients, water and growing space, allowing trees to develop larger canopies, display better vigor and put on diameter growth faster than if left untreated.

The project is also consistent with the Best Management Practices (BMP) within Appendix D of the 1995 Medford RMP.

2. Key Watershed: The Planning Area is not located in a Key watershed.

3. Watershed Analysis: The Glendale Resource Area completed the Grave Creek Watershed Analysis in 1999. The proposed activity is consistent with all Watershed Analyses.

The Watershed Analysis found that management directions in the Northwest Forest Plan and the 1995 RMP including the Aquatic Conservation Strategy, Best Management Practices, and Riparian Reserve management would be adequate at protecting,

maintaining and improving aquatic and riparian ecosystems. The Grave Creek Watershed Analysis recommended reducing road densities which are not needed for future management.

The Grave Creek Watershed Analysis discussed restricting road construction or considering alternatives to constructing new roads in sensitive soil areas. Permanent road construction is not proposed under the Speaking Coyote project. Many of the roads within the Speaking Coyote Project Planning Area are not public roads and are under reciprocal right-of-way agreements with private landowners because of the checkerboard ownership pattern. The BLM does not have the option to close these roads due to the reciprocal right-of-way agreements.

4. Watershed Restoration: Though the Speaking Coyote Project is not a watershed restoration project, it would aid in the improvement of watershed health through the following proposed activities: road renovation/improvement, and thinning and activity fuels reduction in Riparian Reserves.

Analysis of the Speaking Coyote Project EA Proposed Action's consistency with the Aquatic Conservation Strategy objectives:

The ACS gives direction to maintain and restore ecosystem health at watershed and landscape scales. For the purposes of this analysis the watershed scale will be discussed in terms of site or project scale and will be at the HUC 6 and 7 watersheds. The landscape scale will be at the HUC 5 watershed level.

Appropriate consideration of potential cumulative effects is a critical element in determining a project's consistency with the ACS. The minimal effects at the HUC 7 scale would not reach a magnitude detectable at the HUC 6 or HUC 5 scales. Because there would be no detectable cumulative effects caused by the Proposed Action, cumulative effects will not be discussed in the individual ACS objectives.

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

The watershed and landscape-scale features which protect species, populations, and communities dependent on aquatic systems would be maintained and in some cases enhanced in the short term and long term. The distribution, diversity, and complexity of watershed and landscape-scale features needed for the protection of aquatic systems would be maintained. Proposed activities such as road renovation/improvement, and riparian thinning would restore watershed features in the short and long term.

Riparian Reserves

One key component of watershed and landscape scale features needed for the protection of aquatic systems is Riparian Reserves. Riparian Reserves would be maintained at the site and watershed levels in the short and long term. Riparian vegetation treatments

(thinning) would enhance riparian characteristics. Riparian thinning would result in a reduction in stand densities in young dense stands and would allow for the development of late successional riparian characteristics. Some of these characteristics include multi-level canopy cover which helps to maintain cool water temperatures. Late successional characteristics in riparian areas also include downed coarse woody debris and LWD which increases channel complexity. Late successional characteristics in riparian areas also include diverse species composition which provides a variety of chemical and biological inputs to streams. Riparian thinning would also reduce the spread of disease and the risk of a high intensity or severity fire within Riparian Reserves. Such a fire could result in tree mortality and a reduction in shade, which could negatively affect fish habitat by causing an increase in water temperature, a reduction in future recruitment of LWD, an increase in soil erosion and sediment entering streams.

Roads

Sedimentation would be generated from the haul, blading of roads, and pulling of ditchlines during maintenance of haul routes. However, due to placement of sediment barriers and other PDFs (see page XX of Appendix 2), no amount of stream sedimentation at stream crossing locations would enter coho critical habitat. All sediment producing actions would be fully arrested and would all be within the State of Oregon water quality standard of no more than a 10% increase in turbidity above and below the action.

Road renovation/improvement would reduce sediment entering stream channels in the short and long term. Road renovation/improvement would generally reduce chronic erosion problems and reduce sediment input to streams.

This project would not increase the number of permanent roads within this sub-watershed, since permanent road building is not part of the proposed project. No foreseeable permanent road construction is planned on federally managed lands within this sub-watershed.

Peak Flows

The Proposed Action would not affect the timing, magnitude, duration, and spatial distribution of peak, high and low flows. No regeneration harvest or overstory removal is proposed for this project.

2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

The spatial and temporal connectivity within and between watersheds would be maintained in the short and long term at the site and landscape scales. Chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-

dependent species would be maintained.

3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

The physical integrity of aquatic systems, including shorelines, banks, and bottom configurations would not be affected at the site or landscape scale in the short or long term. The proposed activities would not manipulate or affect shore lines, banks or bottom configurations.

4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

Water quality necessary to support healthy riparian, aquatic and wetland ecosystems would be maintained. Water quality would remain within the range that maintains biological, physical, and chemical integrity streams.

No increases in turbidity would occur in the short term in localized areas as a result of road activities. Best Management Practices (BMPs) were designed to fully arrest the amount and duration of sediment entering stream channels. Increases in turbidity would not measurably alter the biological, physical, or chemical integrity of streams. Aquatic and riparian dependent species' survival, growth, reproduction, and migration would be maintained.

Road maintenance on BLM land, thinning, and hauling would have no effect on Southern Oregon/Northern California Coasts (SONCC) coho salmon (ESA-Threatened) or coho critical habitat (CCH). The closest coho presence and CCH in Speaking Coyote is approximately 1.4 miles 100 feet respectively from the closest thinning unit. The Speaking Coyote Project Planning Area haul road segments and road related activities intersect four streams containing CCH yet do not intersect coho presence. These four road segments represent one bridge (Wolf Creek) and three culverts (Bummer Gulch, Mackin Gulch and Secesh Gulch) on CCH streams. Sediment would not enter CCH as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into CCH.

5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

The sediment regime under which aquatic ecosystems evolved would be maintained at the site and landscape scales in the short and long terms. Some of the proposed activities such as road maintenance would reduce sediment input in the short and long term. Streams within the Planning Area evolved with sediment input. Sediment input can

result from natural disturbances such as landslides, slumps, wildfires, bank erosion, and channel scour.

Road Related Activities

Proposed road related activities (road maintenance (including daylighting), and haul) would not deliver sediment to streams. Because of PDFs (pp. 16-27) sediment would not enter streams from road related activities but would be fully arrested. Changes in embeddedness, interstitial spaces, and pool depth would not occur.

Harvest Activities

All other soil disturbing activities are located outside the EPZ, and would be implemented using BMPs that minimize the quantity and transport of soil erosion. Since the EPZ is designed to filter out sediment produced during upslope activities that are implemented using BMPs, these activities would not result any sediment entering streams.

6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.

The Speaking Coyote Project would not affect the timing, magnitude, duration, and spatial distribution of peak, high and low flows. No regeneration harvest or overstory removal is proposed in this project.

7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

The timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands would not be affected by any of the proposed activities. There are no wetlands, as defined on page 117 of the RMP, within the Planning Area.

8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

The species composition and structural diversity of plant communities in riparian areas would be maintained at the site and landscape scales in the short and long term. There are no wetlands, as defined on page 117 of the 1995 RMP, within the Planning Area. Vegetation treatments proposed in the Proposed Action were designed to enhance riparian conditions in the short and long term. Plant communities in riparian areas would be maintained and enhanced through silvicultural prescriptions and no treatment buffers in order to provide for adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply

amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.

Habitat for riparian-dependent plant, invertebrate and vertebrate species would be maintained at the site and landscape scales. Vegetation treatments proposed were designed to enhance riparian conditions in the short and long term. There would not be a reduction of habitat needed to support riparian dependant species in the short term or long term.

CONCLUSION:

Based on this analysis at both the site and landscape scale of the proposed activities in the Speaking Coyote Project, it was determined that the actions are consistent with the nine objectives and the four components of the ACS. This determination was based on the small spatial and temporal disturbances associated with the proposed activities.

APPENDIX 6 NOXIOUS WEEDS

Specialist Report Memo

To: Allen Bollschweiler, Field Manager, Grants Pass Resource Area
 From: Rachel Showalter, Botanist/Noxious Weed Specialist, Grants Pass Resource Area
 Re: Noxious Weed Rationale Report for the Speaking Coyote Planning Area
 Date: February 29, 2012

Speaking Coyote Project Area – Noxious Weeds – PRESENT, NOT AFFECTED

Units with the Speaking Coyote Planning Area were surveyed for noxious weeds in the spring of 2010 and 2011. Sites found along roadsides in 2010 were treated in 2011. New sites located in 2011 included 5 populations of *Rubus armenicus* (Blackberry), 6 populations of *Centurea pratensis* (Meadow Knapweed), 4 populations of *Cytisus scoparius* (Scotch broom), 1 population of *Vinca minor* (Common periwinkle), and 1 population of *Helix hedera* (English Ivy) and were documented within proposed units. (Table A6-1).

Based on these population sizes, per noxious weed reports provided by professional botany contractors, the Grants Pass botanist estimated that approximately 1.2 % of the harvest unit / road renovation/improvement / temp route construction acreage harbor noxious weeds. The maximum square footage/acreage occupied by all noxious weed species reported in or directly adjacent to Speaking Coyote units is approximately 10.1 acres. Two of the sites – the Vinca and English Ivy sites – significantly increased the overall total square footage of noxious weed coverage within units. These sites are located within the periphery of old homesites, as they were common ornamental groundcover species planted by early settlers. Another species, blackberry, is commonly found throughout our region and although small, isolated patches will be treated, it is not practical to target for priority treatment due to its predominance across the landscape.

Table A6-1. 2011 Plant Surveys Revealing Noxious Weed Species in the Speaking Coyote Project Area Units

Location in Township (T), Range (R), Section (S)	Species	Coverage in Sq. Feet	Oregon Department of Agriculture Designation	Plant Description / Habitat Requirements
T33S-R5W-30 “”	Himalayan Blackberry	10 30	B*	Himalayan blackberry is a robust, clambering or sprawling, evergreen shrub which grows up to 9.8 feet (3 m) in height (Munz, 1974). Himalayan blackberry

“” T33S-R6W-24rd T33S-R5W-25rd		75 900 900		typically grows in open weedy sites, such as along field margins, railroad right-of-ways, roadsides, and riparian areas (Crane, 1940; Hitchcock et. al, 1973; Laymon, 1984; Roberts, 1980).
T33S-R5S-9 “” “” T33S-R5W-10 “” T33S-R5W-7	Knapweed	21780 360 21780 180 45 20	B*	Meadow knapweed, a hardy biennial/perennial, favors moist roadsides, sand or gravel bars, river banks, irrigated pastures, moist meadows, and forest openings (ODA, 2005). Prefers full sun and well-drained soils. Many infestations start on rights-of-way or from infested gravel or fill. Seeds are often transported by automobiles, contaminated fill and gravel, and by wildlife (King Co., DNR, 2004).
T33S-R5W-9 “” “” T33S-R5W-25rd	Scotch broom	40 50 90 450	B*	Scotch broom is a long-lived, brushy, early seral colonizer which does not grow well in forested areas, but invades rapidly following logging, land clearing, and burning (Moblely, 1954). Scotch broom is generally intolerant of shade and will not grow in heavily shaded places (DiTomaso, 1998; Peterson and Prasad, 1998), and is typically shaded out once native species are established (Bossard, 2000; Williams, 1983) or forest canopy closes (Sawyer et. al, 2000).
T33S-R5W-9	Vinca	4ac	B*	Common periwinkle, or vinca, is a perennial evergreen subshrub vine that will establish in open to semi-shaded forested areas. It is most often found on or adjacent to old homesteads, as it was used as an ornamental groundcover in the past (and can still be found at nurseries). This non-climbing vine forms dense clonal patches and outcompetes native plants (IPSAWG, 2007).
T33S-R5W-9	English Ivy	5ac	B*	English Ivy is a perennial evergreen subshrub vine that grows in a variety of areas with varying light conditions. It is often associated with old homesteads or buildings, as it was planted as an

				ornamental in the past. English Ivy forms thick patches and outcompetes native vegetation. Ivy also climbs trees or other vertical substrates, and blocks light from reaching the leaves of host trees. Lower branches eventually die and fall off, and the entire tree(s) continue to weaken until they succumb as well (www.nps.gov)
Total Sq. feet		46710 sq ft +9 ac = 10.1 ac		

* “B” designation; a weed of economic importance which is regionally abundant but which may have limited distribution in some counties. Where implementation of a fully integrated statewide management plan is not feasible, biological control shall be the main control approach (ODA, 2005).

Over the last 150 years activities such as motor vehicle traffic, recreational use, rural and urban development, timber harvest, road construction, and natural process have introduced and transported noxious weeds into the Rogue Valley. Noxious weeds are spread by the wind and by seed via attachment to vehicles and vectors such as humans, animals, and birds, and are able to grow on suitable habitat (generally considered as any newly disturbed ground and/or an influx of light due to canopy removal). Since the 1970’s, a recognition that weeds were causing environmental damage resulted in the passage of State noxious weed laws, the Carson-Foley Act of 1968 – Plant Protection Act of 2000, and Presidential executive orders like Invasive Species E.O. 13112, which directs federal agencies to combat the noxious weeds on federal lands. Additional direction is provided by the Medford District RMP, which states the district is to “contain and/or reduce noxious weed infestations on BLM-administered land...(p. 92),” and “...survey BLM-administered land for noxious weed infestations...(p. 93).” These RMP directions for weed management are intended to be met at a landscape level; whether the direction is achieved is not intended to be measured at the site specific level nor with the implementation of each project. Thousands of acres of weed treatments have occurred on federal (and non-federal) lands over the last decade across the Medford District with the RMP-driven objective of containing or reducing – not eradicating - noxious weed populations (Budesá, 2006). In an effort to continue to contain and/or reduce noxious weeds on federal land, the BLM proposed to treat known weed populations within the Grants Pass Resource Area. In 2011, over 1,000 acres of BLM land in the Grants Pass RA was treated, including roadsides adjacent to Speaking Coyote units. Many roadsides within the Speaking Coyote planning area are scheduled for subsequent treatment in 2012.

Environmental Consequences of the Speaking Coyote Project Implementation

Alternative 1 (No Action) – Direct and Indirect Effects

Under the No Action Alternative, noxious weeds within the Planning Area would continue to spread into suitable habitat at an unknown rate. The rate at which noxious weeds spread is impossible to quantify, as it depends on a myriad of factors including, but not limited to, logging on private lands, motor vehicle traffic, recreational use, rural and urban development, and natural processes (Northwest Area Noxious Weed Control Program EIS, p. 59). The following table (1-2) illustrates how each of these activities affects noxious weed dispersal.

Table A6-2. Factors Affecting the Determination of the Rate of Noxious Weed Spread

Activity	Role in Potential Noxious Weed Seed Dispersal
Private Land	Private lands host a perpetual source for noxious weed seed, which can be dispersed when seeds attach to tires, feet, fur, feathers or feces, or when natural processes such as wind and/or flooding events transport the seed from its source to another geographical vicinity.
Logging on Private Lands	Logging activity presents a key dispersal opportunity for noxious weed seeds per 1) attachment to tires/tracks of mechanized logging equipment, tires of log trucks, and various other logging-related substrates which subsequently transport the seed from its source to another geographic vicinity, 2) creation of openings for potential noxious weeds colonization and 3) a lack of PDFs – such as equipment/vehicle washing, etc. - which attempt to reduce the activity’s spread of noxious weed seeds.
Motor Vehicle Traffic (including Log Trucks)	Roads on public land include public use, which results in a plethora of seed-dispersing activities occurring on a daily basis. Private landowners use public roads to haul logs, undertake recreational pursuits, and/or access their properties. This transportation often occurs along BLM-administered roads, which are situated within a checkerboarded ownership arrangement. How or when seed detachment occurs is a random event could take place within feet or miles from the work site/seed source, presenting a high likelihood of detachment on public lands.
Recreational Use	The public often recreates on BLM-managed public lands, and can spread seed from their residences to public land in a variety of ways such as attachment to vehicle tires, hikers’ sox, shoes, or other clothing, the fur of domesticated animals, etc.
Rural and Urban Development	Rural development occurring within the checkerboard land arrangement often requires public landowners to acquire a Right-of-Way (ROW) from the BLM to legally access their parcel(s). These ROWs, or use of BLM-administered roads is often granted (Groves, 2006). Please refer to ‘Motor Vehicle Traffic’ and ‘Private Land,’ for clarification of how this affects the spread of noxious weeds from private to public lands.
Natural Processes	Wind, seasonal flooding, and migration patterns of birds/animals are a few natural processes that potentially spread noxious weeds, especially from private land to

	public land. Wind carries seeds, and deposits them at random intervals. High water caused by flooding reaches vegetation (often harboring a noxious weed component) growing on the banks of rivers/creeks/streams, and deposits seeds downstream.
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The abovementioned activities would contribute to noxious weed spread, which could degrade some elements of the environment. To predict the rate of this degradation would be highly speculative, as the extent of weed expansion is dependent on so many factors that it is considered impossible to quantify. The degree of degradation would depend on the noxious weed species, as some, such as scotch broom and meadow knapweed, are more intrusive than others. Across the Grants Pass Resource Area, the more aggressive species are prioritized and slated for treatment under Medford District’s *Integrated Weed Management Plan and Environmental Assessment OR-110-98-14* under a separate project. However, the success of implementing the weed management plan would be temporary, as logging on non-federal lands, recreational use, rural and urban development, natural processes and vehicle traffic will continue to spread noxious weed populations into the Planning Area.

Indirect effects of noxious weed spread include the potential degradation of wildlife habitat (Rice et. al. 1997, Harris and Cranston 1979), a decline in natural diversity (Forcella and Harvey 1983; Tyser and Key 1988; Williams 1997), and decline in water quality (Lacey et al. 1989); however, a very small amount of Speaking Coyote unit acreage (approx. 1.2% of unit acreage under Alt. 2) is covered by noxious weeds, making it difficult to quantify any potential decline in ecosystem health related to existing noxious weed populations, or to quantify the potential decline in ecosystem health related to any additional noxious weed populations potentially established by the activities described in Table A6-2.

Alternative 2 (Proposed Action) – Direct and Indirect Effects

In the short term (approximately 1-5 years), proposed activities within the Planning Area would result in the reasonable probability of spreading noxious weeds. However, the rate at which this potential spread would occur is unknown due to the indistinguishable causal effect of other activities and factors listed in table A6-2 on the spread of noxious weeds. Openings, caused by logging (818 acres), 0.2 miles of road renovation/improvement, 14.3 miles of daylighting road maintenance, and 2.6 miles of temporary route construction, would provide suitable habitat for noxious weeds to colonize. In addition, during project implementation, increased vehicle traffic could increase, or at least perpetuate, weed infestations along road systems because of seed dispersal.

Openings and disturbance provide the greatest opportunity for the establishment of noxious weeds. In an effort to address the potential for project activities to increase the rate of spread of noxious weeds, Project Design Features (PDFs) have been included in the project to decrease the potential spread of weeds associated with the Proposed Action. Project Design Features include washing equipment prior to moving it on-site, operating vehicles/equipment in the dry season, and seeding and/or planting newly created openings with native vegetation to reduce the potential establishment of noxious weeds. These PDFs are widely accepted and utilized as Best Management Practices (BMPs) in noxious weed control strategies across the nation (Thompson, 2006). Table A6-3 delineates the project design features and their expected implementation results.

Table A6-3: Project Design Features and Expected Implementation Results

Project Design Feature (PDF)	Result of Implementing PDF
Washing vehicles / equipment	Removes dirt that may contain viable noxious weed seeds, thereby reducing the potential for noxious weed spread
Operating vehicles/equipment during the dry season	Reduces the potential for viable noxious weed seed to be transported and dispersed via mud caked on the undercarriages/tires/tracks of logging equipment.
Seeding and/or planting newly created openings with native seed vegetation.	Introduces native vegetation to the site prior to noxious weed seed recruitment, allowing native plants an advantageous jump-start in reestablishment, which reduces the potential for noxious weed infestation.

Implementing the PDFs that reduce the potential spread of noxious weeds associated with the Proposed Action, and using native species for seeding/planting newly disturbed openings is expected to result in a similar potential of noxious weed expansion as associated with the No Action Alternative.

In the long term (5-100 years), tree canopies would eventually expand and reduce light levels, which in turn would prevent weeds from growing and expanding within treated areas, because populations decline as the amount of light reaching the plants diminishes. Consequently, in the long term, remaining weed populations would be confined to the road prism and adjoining (private) disturbed land as canopy is re-established in treated areas over time.

The effect of implementing Alternative 2 could possibly result in the establishment of new noxious weed populations. Although the *immediate* potential for weed spread would

be less with the No-Action Alternative than for the Proposed Action, the potential for the spread of existing noxious weeds and the introduction of new species is considered similar for both alternatives, because of the inclusion of PDFs in Alternative 2, and the fact that under the “No Action” Alternative, populations would continue to establish and spread due to seed transport by vehicular traffic, wildlife, and other natural dispersal methods listed in Table A8-2. Indirect effects associated with noxious weed population enlargement are similar to those mentioned in the No Action Alternative, and are known to include, generally, declines in the palatability or abundance of wildlife and livestock forage (Rice et al., 1997), declines in native plant diversity (Forcella and Harvey, 1983; Tyser and Key, 1988; Williams, 1997), reductions in the aesthetic value of the landscape, encroachment upon rare plant populations and their habitats, potential reductions in soil stability and subsequent increases in erosion (Lacey et. al, 1989), and an overall decline of ecosystem health. However, considering implementation of Alternative 2, there are three main reasons why potential weed establishment that might be caused by the Proposed Action is not expected to result in a detectable effect to overall ecosystem health. First, surveys indicate that a very small percentage – 1.2 % of acreage within the Project Area units - are affected by noxious weeds. Second, these sites located in units proposed for treatment have been reported during pre-disturbance surveys, and some (depending on how aggressive the species is) have already received treatment in 2010 under Medford District’s *Integrated Weed Management Plan and Environmental Assessment OR-110-98-14*, which means that the acreage in the Planning Area affected by noxious weeds is now even closer to 0% until ongoing activities listed in Table A8-2 would potentially re-introduce weeds into the Planning Area. Third, as aforementioned, Project Design Features (PDFs) have been established to minimize the rate at which project activities might potentially spread noxious weed seed from outside/adjacent sources.

Alternative 2 (Proposed Action) Cumulative Effects

In order to address the cumulative effects of the Proposed Action on the spread of noxious weed encroachment, the condition of non-federal lands must be considered. However, there is no available or existing data regarding noxious weed occurrence on local non-federal lands. Therefore, for purposes of this analysis, BLM assumes that 1) there is a perpetual source of noxious/invasive weeds on non-federal lands that can spread to federal lands, especially when the land ownership is checkerboarded, as within the Planning Area, and 2) conversely that noxious weeds are not established on these lands, and therefore there is a need to reduce the risk of spread of noxious weeds from the federal lands to the adjoining non-federal lands. Seeds are spread by the wind, by animal/avian vectors, natural events, and by human activities - in particular through soil attachment to vehicles. BLM’s influence over these causes of the spread of noxious weeds is limited to those caused by human activities. Additional human disturbance and

traffic would increase the potential for spreading noxious weed establishment, but regardless of human activity, spread of these weeds would continue through natural forces. Thus, the BLM cannot stop the spread of noxious weeds, it may only reduce the risk or rate of spread.

Given the unpredictable vectors for weed spread, such as the vehicle usage by private parties, wildlife behavior, and wind currents, it is not possible to quantify with any degree of confidence the rate of weed spread in the future, or even the degree by which that potential would be increased by the Proposed Action.

Foreseeable activities within the Planning Area are expected to be similar to past and current activities: motor vehicle traffic, recreational use, rural and urban development, timber harvest, road construction, and firewood collection. These types of activities could result in new disturbed sites available for colonization by existing noxious weed populations, and they do offer the possibility of introduction of new noxious weed species to the Planning Area under any alternative, including the No-Action Alternative. As stated above, there is no available or existing data concerning the rate of weed spread occurring on either federal or non-federal lands as a consequence of these types of activities. Also, as discussed above, there is no information on what, if any, increase in the rate of weed spread the Proposed Action would cause, and hence, it is not possible to quantify with any degree of confidence what the incremental effect of the Proposed Action on the spread of noxious weeds would be when added to the existing rate of weed spread caused by past, present, and future actions.

PDFs exist to reduce the potential that the Proposed Action would contribute to the spread of weed seed and establishment of new populations. PDFs are not intended or expected to completely eliminate any possibility that the Proposed Action would contribute to the spread of weed seed and establishment of new populations; however, PDFs ensure that any incremental contribution of the Proposed Action to the spread of weeds, when added to the rate of weed spread caused by past, present, and future actions, would be so small as to be incapable of quantification or distinction from background levels.

As described above, PDFs for this project include washing vehicles/equipment, operating in the dry season, and seeding/planting newly created openings with native vegetation. BLM, and other federal and nonfederal organizations involved in combating noxious weed spread, routinely utilize these PDFs in noxious weed control strategies. These PDFs are widely accepted as Best Management Practices (BMPs), as they are inexpensive to implement, easily attainable, and accomplish the objective of reducing the potential of spreading noxious weeds as a result of project-oriented activities.

Data collection would not reduce the inherent speculation in predicting incremental effects of the proposed action on the spread of weeds because of (1) the unpredictable

natural factors that largely determine whether weeds would spread after project activities, (2) the unlikelihood that future data collection would be able to detect or measure any difference between background rates of weed spread and the rate of weed spread as affected by the Proposed Action and correspondingly reduced by PDFs, and (3) the included PDFs that would reduce, if not eliminate, any project effects on the rate of weed spread that would make the already undetectable effects of the Proposed Action even more undetectable. Finally, further data collection on the rate of spread would not alter the PDF techniques already being applied to reduce that rate of spread. It cannot be over emphasized that under the “No Action” Alternative, noxious weeds are likely to spread over time regardless of whether or not the Speaking Coyote project occurs, and that rate would not be altered to any detectable degree by the Proposed Action.

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APPENDIX 7 SPECIAL STATUS SPECIES

Specialist Report Memo

To: Allen Bollschweiler, Field Manager, Grants Pass Resource Area

From: Rachel Showalter, Botanist, Grants Pass Resource Area

Re: Special Status Plants Rationale Report for the Speaking Coyote Planning Area

Date: Jan 6, 2012

T/E Plants – NOT PRESENT, NOT AFFECTED

Of the four federally listed plants on the Medford District (*Fritillaria gentneri*, *Limnanthes flocosa* ssp. *grandiflora*, *Arabis macdonaldiana*, and *Lomatium cookii*), only *Fritillaria gentneri* has a range which extends into the Glendale Resource Area. Of the final units within the Speaking Coyote Project Area, none are within the range of *F. gentneri*, as determined by the 2004 US Fish and Wildlife Service Biological Opinion. Vascular plant surveys were conducted in the spring of 2011, and no *Fritillaria gentneri* populations were found within units. There would be no anticipated effect from the Proposed Action on any federally listed plant.

Bureau Special Status & Survey and Manage Plants – PRESENT, NOT AFFECTED

On July 26, 2007 a new Special Status Species list went into affect (IM No. OR-2007-072), coupled with a new Interagency Special Status Species Policy (ISSSP). This new list has two categories, (ISSSP) Sensitive and Strategic. The former categories of Bureau Assessment and Bureau Tracking no longer exist. Sensitive species require a pre-project clearance and management to prevent them from trending toward federal listing. There is no pre-project clearance or management required for the Strategic Species at the BLM District level, thus Strategic Species will not be analyzed in this document.

In addition to the new Special Status Species policy, Survey and Manage requirements have been re-instated as of December 2009. On December 17, 2009, the U.S. District Court for the Western District of Washington issued an order in *Conservation Northwest, et al. v. Sherman, et al.*, No. 08-1067-JCC (W.D. Wash.), granting Plaintiffs' motion for partial summary judgment and finding NEPA violations in the *Final Supplemental to the 2004 Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines* (USDA and USDI, June 2007). In response, parties entered into settlement negotiations in April 2010, and the Court filed approval of the resulting Settlement Agreement on July 6, 2011. Projects that are within

the range of the northern spotted owl are subject to the survey and management standards and guidelines in the 2001 ROD, as modified by the 2011 Settlement Agreement.

The Speaking Coyote Project is consistent with the Medford District Resource Management Plan/Forest Land and Resource Management Plan as amended by the 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (2001 ROD), as modified by the 2011 Settlement Agreement.

Project Consistency: The Speaking Coyote Project applies the Survey and Manage species list in the 2011 Settlement Agreement (Table, Settlement Agreement Attachment 1) and thus meets the provisions of the 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines*, as modified by the 2011 Settlement Agreement.

Vascular and nonvascular plant surveys were conducted in the spring of 2011 and the fall of 2011, respectively. Professional botanists surveyed the Planning Area units using intuitive controlled methodology, wherein areas supporting high potential habitat were surveyed more intensively; surveys were also in compliance with the 2001 Survey and Manage protocol, which requires surveys for Category A and C species. Survey and Manage protocol also requires managing known (documented) sites of Category A, B, C, and E species, and ‘high-priority’ Category D species. No site management is required for Category F species. Surveys revealed the following new sites; (1) *Chaenotheca ferruginea* (S&M B, in unit 9-1), (1) *Chaenotheca chrysocephala* (S&M B, in unit 15-1), incidental fungi sightings of (2) *Phaeocollybia attenuata* (S&M D, in units 25-2 & 25-3), (2) *Rhizopogon truncatus* (S&M D, in units 15-1 & 25-3), and (1) *Clavariadelphus occidentalis* (S&M D). Only one new vascular site was found (*Piperia candida*), however, it is Strategic species and does not require further analysis per ISSSP, as aforementioned in this report.

Those sites containing species with Sensitive or Survey and Manage B status will receive buffers of 50-100 feet, depending on activities planned for the unit. For Survey and Manage Category D species, Survey and Manage protocols state Category D species are a ‘manage high-priority site’ species, although surveys are not required for them. The 2001 Survey and Manage Standards and Guidelines, p 10 states that “high priority sites will be managed according to the Management Recommendation for the species,” and if there aren’t any Management Recommendations for the species, then “a combination of professional judgment, Appendix 12 in the Northwest Forest Plan final SEIS, and appropriate literature will be used to guide individual site management.” Most importantly, “until a Management Recommendation has been written addressing high priority sites, either assume all sites are high priority,” or

commence determination of high-priority sites on a case-by-case basis with the following formula:

- 1) Obtain guidance from the Interagency Survey and Manage Program Manager;
- 2) Obtain local interagency concurrence (BLM, FS, USFWS);
- 3) Document consideration of the condition of the species on other administrative units as identified by the Program Manager – typically adjacent units as well as others in the species range within the province; and,
- 4) ID in ISMS (now GeoBOB)

In the case of this EA all Survey and Manage category D species are assumed ‘high-priority,’ and will be buffered to maximize the probability of species persistence at each site. As such, buffers may range from 25-100 feet, depending on site-specific conditions.

It is important to note that regarding the above-mentioned buffers, the actual buffer itself may be comprised of either a physical buffer made from flagging, or a virtual buffer provided on a map. In either case, the intent of the buffer is to provide awareness of the site and to prevent any activity from occurring within the buffer radius that would jeopardize species persistence.

Bureau Special Status & Survey and Manage Fungi – PRESENT, NOT AFFECTED

Special Status

The Project Area was not surveyed for ISSSP Sensitive fungi, as pre-disturbance surveys for Special Status fungi are not practical, nor required per BLM – Information Bulletin No. OR 2004-121, which states “If project surveys for a species were not practical under the Survey and Manage standards and guidelines (most Category B and D species), or a species’ status is undetermined (Category E and F species), then surveys will not be practical or expected to occur under the Special Status/Sensitive Species policies either (USDA/USDI 2004a, p.3).” Current special status fungi were previously in the aforementioned S&M categories which did not consider surveys practical, and are therefore exempt from survey requirements. With the recent instatement the new Interagency Special Status Species policy (ISSSP), 20 species of fungi were designated as Sensitive, 9 of which have been documented on Medford District. As mentioned above, none of these species require surveys.

District wide, the Medford BLM has 14 Sensitive (SEN) fungi species; 10 are suspected to occur here, while the remaining 4 have been documented (Table 1-1).

Table 1-1: Bureau Sensitive (ISSSP) Fungi Documented or Suspected on Medford BLM

<i>Arcangeliella camphorata</i>	B	SEN	S
<i>Boletus pulcherrimus</i>		SEN	D
<i>Chamonixia caespitosa</i>		SEN	S
<i>Dermocybe humboldtensis</i>	B	SEN	S
<i>Gastroboletus vividus</i>	B	SEN	S
<i>Gymnomyces fragrans</i>		SEN	S
<i>Helvella crassitunicata</i>	B	SEN	S
<i>Phaeocollybia californica</i>	B	SEN	D
<i>Phaeocollybia oregonensis</i>	B	SEN	S
<i>Psuedorhizina californica</i>		SEN	S
<i>Ramaria spinulosa</i> var. <i>diminutiva</i>	B	SEN	S
<i>Rhizopogon chamaleontinus</i>	B	SEN	S
<i>Rhizopogon ellipsosporus</i>	B	SEN	D
<i>Rhizopogon exiguus</i>	B	SEN	D

Of the 4 documented species, two (per the Oregon/Washington Geographic Biotic Observation (GeoBOB) database), *Phaeocollybia californica* (PHCA40) and *Rhizopogon ellipsosporus* (RHEL3), has been found in the Grants Pass Resource Area. The two *Phaeocollybia californica* sites exist approximately 20 miles southwest from the closest unit in the Speaking Coyote Project area, and the two *Rhizopogon ellipsosporus* are approximately 8 miles Southeast and 18 miles West/Southwest (respectively) from the project area. Dispersal via spore transport and/or mycelia network are improbable, as these sites and the Project Area reside within different HUC 5 watersheds (the PHCA40 sites are in Hellgate Canyon-Rogue River and Lower Applegate, and the RHEL3 sites are in Jumpoff Joe Creek and Hellgate Canyon-Rogue River, whereas the Speaking Coyote project is in Grave Creek Watershed) and the Grave Creek Watershed is separated from the other aforementioned watersheds by steep ridges, several ravines, and in all cases except the RHEL3 site in the Jumpoff Joe Creek Watershed, the Rogue River. There are no documented sites of either of these species in the Grave Creek HUC 5 watershed, where the Speaking Coyote Planning Area is located.

While it is possible that this project is occurring within potential habitat for some species, there is very little information available describing the *exact* habitat requirements or

population biology of these species (USDA/USDI 2004c, p.148). The 2004 FEIS to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines addresses this type of incomplete and/or unavailable information (p. 108-109). However, the *2004 Record of Decision (ROD) to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines*, offers a broad scale prospective of this current situation in stating, “Any discussion of risk based on rarity and likelihood of disturbance must recognize that, for many species, only a small percentage of potential habitat has been surveyed. Reserves have not been surveyed to the same degree as Matrix and Adaptive Management Area land allocations. The Reserves were not surveyed because there has been little management-induced disturbance there. The vast majority of pre-disturbance surveys have been located in the Matrix and Adaptive Management Area land allocation (19 percent of the northwest Forest Plan area), so that is where many of the known sites have been found. This does not mean that a disproportionate amount of their habitat is located in Matrix. If these species are truly closely associated with late-successional or old-growth forests, we can reasonably expect that the large amount of federally managed lands in Late-Successional and Riparian Reserves which provide the most amount of this type of habitat (86 percent of currently existing late-successional forests is in reserves) would also provide, at a minimum, its proportionate share of the habitat to support populations of these species (2004 ROD to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines, p.11).”

In addition, although fungi surveys were not required as mentioned above, nonvascular surveys were timed to maximize the probability of locating listed fungi species. Our surveyors documented 5 incidental fungi sites (none were ISSSP-listed), which provided a more quantifiable account of what species might occur within the project area.

Based on the above information, the likelihood of a Sensitive fungi species in this Project Area is very low; the likelihood of a sensitive fungi occurring within a single unit(s) encompassed in the Project Area is even lower. The likelihood of contributing toward the need to list is not probable.

Survey and Manage

Aside from incidental Survey and Manage fungi sightings, the Project Area was not surveyed for fungi to Survey and Manage protocol standards. For NEPA decisions signed in fiscal year 2011 and beyond for habitat-disturbing activities in old-growth forest, the 2001 S&M ROD (Forest Service and Bureau of Land Management 2001, S&G-9) gives direction to conduct equivalent effort surveys for category B fungi species if strategic surveys have not been completed for the province encompassing the project. The Survey and Manage Standards and Guides defines old growth forest as an ecosystem distinguished by old trees and related structural attributes that are usually at least 180 to 220 years old (Forest Service and Bureau of Land Management 2001, S&G-79). Strategic surveys have

not been completed for category B fungi for the province containing the Speaking Coyote project area, and equivalent effort surveys have not been completed as units do not exceed 180 years of age.

Alternative 1 – No Action

Direct and Indirect Effects

T&E, ISSSP Sensitive, & Survey and Manage Vascular Plants

There would be no direct or indirect effects to ISSSP Sensitive or Survey and Manage vascular plants under Alternative 1 because no physical disturbance would occur that could impact them.

ISSSP Sensitive & Survey and Manage Nonvascular Plants

No direct or indirect effects would occur to ISSSP Sensitive or Survey and Manage nonvascular plants because no activities would occur that could impact them.

ISSSP Sensitive & Survey and Manage Fungi

There would be no direct or indirect effects to ISSSP Sensitive or Survey and Manage fungi under Alternative 1 because no physical disturbance would occur. There would be no loss of late-successional forest which provides suitable habitat for the 10 suspected and 4 documented Medford District BLM Sensitive fungi.

Cumulative Effects

Information is not available about rare plant populations in the Speaking Coyote Planning Area prior to BLM botanical surveys, which began during the last 25 years. However, past activities, described in the affected environment, likely affected Special Status plants and populations by damaging or destroying individuals or reducing or degrading suitable habitat.

Although specific logging plans for private industrial forest lands are not available, it is assumed that commercial harvest will occur in the future on relatively short rotations, and that privately-owned forests will remain in early to mid-seral stages. Sensitive and Survey and Manage species do not receive protection on privately-owned lands, but will continue to be protected and conserved on federal lands, according to BLM policy (IM OR-91-57).

Alternative 1 would not contribute additional cumulative effects to ISSSP vascular / nonvascular plants, or fungi. The amount of late-successional forest on BLM-managed lands would remain unchanged.

Alternative 2

Direct and Indirect Effects

T&E, ISSSP Sensitive, & Survey and Manage Vascular Plants

There would be no direct or indirect effects to ISSSP or Survey and Manage vascular plants under Alternative 2 because no vascular plants were located during predisturbance surveys.

ISSSP Sensitive & Survey and Manage Nonvascular Plants

No direct or indirect effects would occur to ISSSP Sensitive species because none exist within project area units. The Survey and Manage B species listed in 9-1 and 15-1 (as delineated on page 2 of this report) will receive a protection buffer, and effects are not anticipated.

ISSSP Sensitive & Survey and Manage Fungi

ISSSP Sensitive

No official fungi surveys were performed, thus it is unknown if Sensitive fungi are present in the treatment units. Potential habitat for many of the 14 Sensitive species exists in the Project Area because a predominant Douglas-fir component is present (generally considered an indicator species, but recorded sites commonly have white fir as well), but predicting their presence is difficult because the habitat requirements are poorly understood. Because of their rarity across the Northwest Forest Plan area, it is unlikely that populations are present in the final treatment units. However, if present, they could be directly or indirectly adversely impacted by the proposed actions in Alternative 2.

Survey and Manage

Although predisturbance surveys resulted in a few incidental fungi sights, no fungi surveys have been conducted in accordance with Survey and Manage protocol in the Speaking Coyote Project Area. The incidental Survey and Manage Category D species listed in 15-1, 25-2 and 25-3 (as delineated on page 2 of this report) would receive a buffer. In addition, harvest activities would occur when the species is dormant so the anticipated effects to the species would be even further minimized.

ISSSP and S&M

Harvest can have varying degrees of adverse impacts on fungi, depending on the level of tree removal and ground disturbance. Removing, disturbing, or compacting the top layer of organic material and mineral soil could negatively impact fungi. The main and most extensive part of the fungus consists of a below-ground mycelia network that resides in the top few inches of mineral soil. Mycelia networks are often connected to multiple trees through their root systems. In one study, fungal mycelia networks ranged in size from 1.5 - 27 square meters (Dahlberg and Stenlid 1995). Disruption of mycelia networks could occur during timber harvest, construction or ripping of roads or landings, removal of host trees that sustain the ectomycorrhizae, or burning post-harvest slash piles. The effect of these activities on fungi is a loss of species diversity and abundance (Amaranthus et al. 1996). Alternative 2 presents a potential risk of impacting Sensitive fungi, if present, because it proposes temporary roads and the harvesting of trees.

Fungi could also be directly impacted from radiant heat during burning of post-harvest slash piles. Effects of pile burning include damage or death of mineral soil fungi including the mycelia and spores; loss of litter, organic matter and large wood, resulting in reduced moisture retention capability, loss of nutrient sources, and changes in fungal species diversity and abundance. Implementation of Alternative 2 creates the greatest threat of damage to fungi from burn piles because the trees would be harvested. However, commercial thinning activities do not produce as much slash as regeneration harvesting, and the area impacted by burn piles would be a very small percentage of acreage compared to the total amount of acres in the planning area.

Cumulative Effects.

Information is not available for rare plant populations in the Speaking Coyote Planning Area prior to BLM botanical surveys, which began during the last 25-30 years. However, it is assumed that past activities, described in the affected environment, likely affected Sensitive / S&M plants and populations by damaging or destroying individuals or reducing or degrading suitable habitat.

Although information is not available for logging plans on private industrial forest lands, it is assumed commercial harvest will occur in the future and privately-owned forests will be in early to mid-seral stages. Sensitive species do not receive protection on privately-owned lands, but will continue to be protected and conserved on federal lands, according to BLM policies and federal regulations.

Sensitive and/or S&M plants would not be directly impacted by the activities proposed in Alternative 2 because surveys have been conducted and no Sensitive plants were located.

Project design features would reduce the risk of introducing or spreading noxious weeds during project implementation, which could potentially impact Sensitive vascular plant habitat. No Sensitive Status or Survey and Manage vascular or nonvascular plants would trend toward listing (ISSSP) or cease persisting (S&M) as a result of implementing the activities proposed in Alternative 2.

The potential cumulative effect of the proposed project on Sensitive fungi would be the risk of impacting rare populations on 818 acres during timber harvest treatments. However, the proposed harvest would occur on matrix lands, which are designated for timber production and harvest. Across the Northwest Forest Plan area, approximately 14 percent of the 8 million acres of late-successional forest are in matrix and are available for harvest, while 86 percent are designated as late-successional reserves, congressionally reserved and administratively withdrawn areas, and Riparian Reserves. It is estimated that over the next 50 years, late-successional forest would develop at 2.5 times the rate of loss through stand-replacement fires and harvest (USDA/ USDI 2004c, 107-111). This reserve system spread across the landscape is intended to provide protection and development of late seral habitat for the protection and expansion of late-successional associated rare plants. Under the Northwest Forest Plan, at least 15 percent late seral (80-plus years old) conifer forest must be maintained in each 5th field watershed (USDA/USDI 1994, p. C-44).

Because of their rarity across the Pacific Northwest Forest Plan Area, it is unlikely Sensitive fungi are present in the Speaking Coyote timber harvest units. The risk is low that they would be impacted. The same holds true for Survey and Manage A & C fungi. It is protection of species at the landscape level that ensures Sensitive species will not trend toward listing and S&M species will persist. The assumption is made that protecting known sites (current and future found) of these Sensitive and S&M (categories A-E) fungi, in addition to conducting large-scale inventories throughout the Pacific Northwest, will be adequate in ensuring that this project and future projects would not contribute to the need to list them (USDI 2004, 5-2) or jeopardize persistence (2001 S&M Standards and Guidelines p-3).

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APPENDIX 8 MIGRATORY BIRDS

Specialist Report

To: Allen Bollschweiler, Field Manager, Grants Pass Resource Area
From: Marlin Pose, Wildlife Biologist, Grants Pass Resource Area
Re: 'Not Affected' rationale regarding migratory birds
Date: July 9, 2012

Analysis of Proposed Action Effects on Birds of Conservation Concern for the Speaking Coyote Planning Environmental Analysis

Compliance with the Executive Order To Protect Migratory Birds

Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds," (Federal Register 2001) highlights the need for federal agencies including the USDI Bureau of Land Management (BLM) to conserve migratory birds (those species listed in 50 C.F.R. 17.11) (U.S. Fish and Wildlife Service 2002) protected by the migratory bird conventions (the Migratory Bird Treaty Act [16 U.S.C. 703 – 711], the Bald and Golden Eagle Protection Acts [16 U.S.C. 668 – 668d], the Fish and Wildlife Coordination Act [16 U.S.C. 661 – 666c], and the Endangered Species Act of 1973 [16 U.S.C. 1531 – 1544]. This responsibility includes the need to ensure that environmental analysis of federal actions evaluate the effects of those actions on migratory birds, "with emphasis on species of concern" (Federal Register 2001, p.3855).

"To the extent permitted by law and ...in harmony with agency missions" (p.3854, Ibid.) such as the O&C Act of 1937, the Medford District Resource Management Plan (USDI 1995) and the Northwest Forest Plan (USDA/USDI 1994a); the proposed actions are consistent with "avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources," (p. 3854, Federal Register 2001) as directed in the Executive Order mentioned above.

Birds of Conservation Concern.

Table 1 below summarizes the potential effects of the proposed actions described in the Wolf Pup Planning Environmental Analysis on the Birds of Conservation Concern known to occur on Medford District BLM managed lands.

Table 1: Birds of Conservation Concern for Medford District BLM		
species	habitat	presence in Wolf Pup Project Area and effects
peregrine falcon	cliffs	Habitat not present in the Project Area
olive-sided flycatcher	Green coniferous forests with snags. Habitat is relatively broken-canopied coniferous forest from sea level to Cascades up to 9,000 ft elev., containing large trees and snags (Zeiner et al 1990). Geographic distribution over W side of CA,OR,WA, intermountain West and most of Canada (Natl. Geographic 1989). Mature and old-growth coniferous stands or fragments of these with uneven, mixed-age canopies that contain occasional snags, from which it forages (Csuti et al 2001, Kemper 2002, Altman 1999)	Present in Project Area, but very limited in proposed units which are dominated by younger trees and few large snags or large trees which are retained. Suitable medium and large conifer habitat would persist in Congressionally (Wilderness and National Parks) and Administratively (lands unsuitable for timber harvest) Withdrawn Lands, which total over 2.25 million acres (FEMAT 1993, Table IV-3) plus 100-acre owl cores (over 100,000 ac.[USDA/USDI 1994]); marbled murrelet LSRs; Riparian Reserves (630,000 ac [Ibid.]); and some forested lands in the following land allocations W of the Cascade crest: Mapped LSRs, many state parks; military installations, and national and state wildlife refuges. Individual home range is approximately 20 ac. (Johnston 1971 <i>In</i> Zanier 1980). Therefore, the proposed actions would have no measurable effect on population trends at a state or regional scale.
rufous hummingbird	Nests in shrubs and trees near foraging habitat including young second growth, mature and old growth conifer forests. Forages on nectar-producing flowers, which occur in early successional areas. (Healy et. al. 2006, Kemper 2002)	Present in the Project Area. Foraging habitat present over less than 10% of areas within timber harvest units, as units are forested and not in early successional stages. Some small openings occur. Residential areas, or recent harvested area on private or BLM, natural or man-made openings may provide flowering plants. Nesting habitat is present in some edges of units. Some nesting habitat near edges within units would be removed. But since nesting habitat suitability depends on the proximity of trees and shrubs to foraging habitat, it is likely that the proposed action would not result creation or removal of woody vegetation for foraging or nesting habitat. However, since habitat for this species is very widespread (in suburban and forested areas of NW CA, the NW 2/3 of OR and ID, all of WA and over half of BC), population trends at state or regional levels would not be affected by proposed actions.
Allens' hummingbird	breeds only along a narrow strip of coastal California and southern Oregon, in moist coastal areas, scrub, chaparral, and forests (Mitchell 2000, Kemper 2002)	Not expected to occur inland in the Project Area.
Oregon Vesper Sparrow (<i>affinis</i> ssp.)	Open habitats, favoring areas with a high percentage of bare ground and short, sparse herbs or grasses. Similar habitat to the horned lark. It selects open habitats with scattered trees or shrubs for singing perches and escape cover. (Beauchesne 2002)	Habitat not affected by proposed action units, not expected to occur in Project Area.

species	habitat	presence in Wolf Pup Project Area and effects
bald eagle	Mature and old-growth forested areas adjacent to large bodies of water with some habitat edge, relatively close (usually <2 km)	Nearby Cow Creek may provide some foraging opportunity, however, repeated visits to Project Area over time have not detected eagles and potential habitat not expected to be affected by proposed action.
Horned Lark (<i>strigata</i> ssp.) ESA candidate	Occurs in short-grass habitats and areas with bare ground. (Kemper 2002, USFWS 2008a)	No known sitings near the Project Area, and not expected to occur.
willow flycatcher (non-listed subspecies or population)	Shrubby, often wet habitats, river corridors; Occurs in moderate density in early-growth clearcuts in western Oregon. In California, high foliage-volume willow cover ares, moist brushy thickets, open second-growth, and riparian woodland, especially with willow. (Kemper 2002, Sedgwick 2000, Craig and Williams 1998)	May occur within Project Area. Proposed action not expected to reduce potential riparian or early successional conifer habitat.
purple finch	Breeds primarily in moist or cool coniferous forests. Also frequently found breeding in mixed coniferous-deciduous forest, edges of bogs, and riparian corridors. Also breeds in deciduous forests, orchards, ornamental plantations, pastures and lawns with scattered conifers and shrubs, hedgerows, and developed areas. Purple finch prefers open wooded habitats. (Wootton 1996)	May occur in Project Area and in or near proposed units. Typically nests on conifer branches. Some nests may be lost if proposed action occurs during nesting season. Suitable conifer habitat would persist in Congressionally (Wilderness and National Parks) and Administratively (lands unsuitable for timber harvest) Withdrawn Lands, which total over 2.25 million acres (FEMAT 1993, Table IV-3) plus 100-acre owl cores (over 100,000 ac.[USDA/USDI 1994]); marbled murrelet LSRs; Riparian Reserves (630,000 ac [Ibid.]); and some forested lands in the following land allocations west of the Cascade crest: Mapped LSRs, many state parks; military installations, and national and state wildlife refuges. Therefore, the proposed actions would have no measurable effect on population trends at a state or regional scale.

Regional Strategies

Both the USDI Fish and Wildlife Service (2008) and Partners in Flight (Altman 1999) consider the state and regional approach a key to the conservation of migratory songbirds. In 1999, strategies for the conservation of the olive-sided flycatcher and the rufous hummingbird and other species were proposed in the form of a regional conservation plan for coniferous forests in Oregon and Washington. This strategy, which “represents the collective efforts of multiple agencies and organizations within ...Partners in Flight,” recognized the Northwest Forest Plan as an effort in the same type of conservation planning process, which approaches management at a regional level. The proposed actions are consistent with the Northwest Forest Plan, which is also designed to provide for the conservation of other forest-related species in the range of the Northern Spotted Owl, such as these songbirds.

Within the Northwest Forest Plan (24,455,300 federal acres), reserved/ withdrawn lands total approximately 78% of the federal land base (USDA/USDI 1994, p. 2-62:65). Not all of the reserves are in or will obtain late-successional forest conditions, but the majority is expected to contribute as suitable habitat towards migratory birds utilizing late successional habitat. In addition, Matrix lands (3,975,300 acres) representing about 16% of the federal land base, contain selected portions of the land managed to retain 15-30% in late-successional forest, which provides additional suitable habitat.

Allocation	Acres	Percent
Congressionally Withdrawn	7,321,000	30
Late Successional Reserves	7,431,000	30
Riparian Reserves	2,628,000	11
Administratively Withdrawn	1,477,000	6
TOTAL	18,857,000	77
Matrix land	3,975,300	16

Compliance with the Migratory Bird Treaty Act.

This act implements various treaties and conventions between the U.S. and other countries that share migratory flyways. With this proposed action, and as prohibited in the Act, there would be no deliberate take (IM OR-2009-018), possession, import, export, transport, sale, purchase, barter or offering of these activities, or possessing migratory birds, including nests and eggs.

Summary

The implementation of the proposed actions is not expected to affect the trend in populations of migratory birds, as established at a state or regional scale. Also, the proposed actions are consistent with planning documents designed to conserve songbirds at those scales.

APPENDIX 9 GEOTECHNICAL REPORT

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT OFFICE
3040 BIDDLE ROAD
MEDFORD, OREGON 97504

To: Karen Schank, Acting Manager, Grants Pass Field Office
From: Miriam Liberatore, District Engineer
Subject: Geotechnical Assessment of Speaking Coyote Timber Sale
Date: March 29, 2012

INTRODUCTION

This memo documents a geotechnical assessment of the proposed Speaking Coyote Timber Sale, located in the Grants Pass Resource Area. Areas of high and medium concern with respect to soils and geotechnical issues were identified by the area staff. The scope of this work was an office reconnaissance with field confirmation of conditions in high and medium risk areas. Field visits were made to the site on August 9 and September 22, 2011, and January 23, 2012. The office reconnaissance portion of the work included research of the soil surveys of Josephine County by the Natural Resources Conservation Service (NRCS), a literature search for publicly available publications addressing landslide hazards in the area, and historic photos and records of selected areas.

SOIL AND GROUNDWATER

The predominant soil types along the roadways and in the proposed units within the areas of concern are thin, colluvial and residual soils composed of gravelly and sandy silts and clays over highly weathered bedrock. The bedrock is generally volcanic and sedimentary rock that has undergone some degree of metamorphosis. The soil profile is less than five feet thick almost everywhere in the sale area. Exceptions are in the more highly developed draws, such as near Unit 18-1. Groundwater is not normally present within the soil layer except as shallow, temporary, seasonal saturation due to precipitation. The soils in this assessment, as mapped by the NRCS, are described as follows.

Abegg gravelly loam (NRCS soil type 1C): Terrace deposits on slopes of about 7 to 12 percent. The soil depth is more than 80 inches; well drained; water transmission 0.57 to 1.98 in/hr; depth to water table is more than 80 inches. This soil has a liquid limit of 32, a plasticity index of 12, and water contents of 8 and 15 percent at 15 bars and 1/3 bar, respectively. Grain size composition is about 26% clay, 39% sand, and 35% silt. This soil has a low erosion potential. Units in this soil type: 9-1.

Beekman-Colestine complex (NRCS soil type 6F): North-facing, concave slopes of about 50 to 80 percent. The soil depth is 20 to 40 inches; well drained; water transmission 0.57 to 1.98 in/hr; depth to water table is more than 80 inches. This soil has a liquid limit of 33, a plasticity index of 6, and water contents of 8 and 16 percent at 15 bars and 1/3 bar, respectively. Grain size composition is about 23% clay, 40% sand, and 37% silt. This soil is highly erodible. Units in this soil type: 9-1, 10-1, 10-2, 10-3, 15-5, 17-1, 18-1, 20-1, 20-2, 25-2, 30-1, 30-2.

Beekman-Colestine complex (NRCS soil type 7F): South-facing, convex slopes of about 50 to 75 percent. The soil depth is 20 to 40 inches, well drained, 0.57 to 1.98 in/hr water transmission, water table more than 80 inches deep. This soil has a liquid limit of 33, a plasticity index of 6, and water contents of 8 and 16 percent at 15 bars and 1/3 bar, respectively. Grain size composition is about 23% clay, 40% sand, and 37% silt. This soil is highly erodible. Units in this soil type: 11-1, 17-1, 17-2, 20-1.

Cornutt-Dubakella complex (NRCS soil type 21F): Convex slopes of about 35 to 55 percent. The soil depth is 40 to 60 inches, well drained, 0.06 to 0.2 in/hr water transmission; the depth to water table is more than 80 inches. This soil has a liquid limit of 49, a plasticity index of 27, and water contents of 20 and 31 percent at 15 bars and 1/3 bar, respectively. Grain size composition is about 43% clay, 26% sand, and 30% silt. This soil is highly erodible and is subject to shrinking and swelling on changes in moisture content. Units in this soil type: 11-1, 15-5.

Jayar very gravelly loam (NRCS soil type 44F): Convex, north-facing slopes of about 35 to 75 percent. The soil depth is 20 to 40 inches; well drained, 0.57 to 1.98 in/hr water transmission; depth to water table is more than 80 inches. This soil has a liquid limit of 32, a plasticity index of 4, and water contents of 8 and 15 percent at 15 bars and 1/3 bar, respectively. Grain size composition is about 23% clay, 39% sand, and 38% silt. This soil is highly erodible. Units in this soil type: 14-1, 14-2, 23-1, 23-2.

Jayar very gravelly loam (NRCS soil type 45F): Convex, south-facing slopes of about 35 to 70 percent. The soil depth is 20 to 40 inches; well drained, 0.57 to 1.98 inches per hour water transmission; depth to water table more than 80 inches. This soil has a liquid limit of 32, a plasticity index of 4, and water contents of 8 and 15 percent at 15 bars and 1/3 bar, respectively. Grain size composition is about 23% clay, 39% sand, and 38% silt. This soil is very erodible. Units in this soil type: 22-1, 23-3, 24-1, 23-4.

Josephine gravelly loam (NRCS soil type 47E): Convex slopes of about 20 to 35 percent. The soil depth is 40 to 61 inches, well drained, 0.2 to 0.57 in/hr water transmission, water table more than 80 inches deep. This soil has a liquid limit of 42, a plasticity index of 17, and water contents of 17 and 28 percent at 15 bars and 1/3 bar, respectively. Grain size composition is about 29% clay, 36% sand, and 35% silt. This soil is moderately erodible and is subject to shrinking and swelling on changes in moisture content. Units in this soil type: 9-1, 15-1, 25-3.

Josephine gravelly loam (NRCS soil type 48F): Concave, north-facing slopes of about 35 to 55 percent. The soil depth is 40 to 61 inches, well drained, with the water table more than 80 inches deep. This soil has a liquid limit of 42, a plasticity index of 17, and water contents of 17 and 28 percent at 15 bars and 1/3 bar, respectively. Grain size composition is about 29% clay, 36% sand, and 35% silt. This soil is highly erodible and is subject to shrinking and swelling on changes in moisture content. Units in this soil type: 15-1, 26-1, 30-1, 30-2.

Perdin cobbly loam (NRCS soil type 60F): South-facing slopes of about 30 to 75 percent. This soil is shallow. This soil has a liquid limit of 41, a plasticity index of 17, and water contents of 18 and 29 percent at 15 bars and 1/3 bar, respectively. Grain size composition is about 33% clay, 32% sand, and 34% silt. Units in this soil type: 23-4.

Pollard loam (NRCS soil type 61E): Concave slopes of about 20 to 35 percent. The soil depth more than 80 inches, well drained, 0.2 to 0.57 in/hr water transmission, water table more than 80 inches. This soil has a liquid limit of 49, a plasticity index of 17, and water contents of 22 and 35 percent at 15 bars and 1/3 bar, respectively. Grain size composition is about 41% clay, 29% sand, and 30% silt. This soil is moderately erodible and is subject to shrinking and swelling on changes in moisture content. Units in this soil type: 10-2, 15-1.

Speaker-Josephine gravelly loam (NRCS soil type 72F): Convex, south-facing slopes of about 35 to 55 percent. Depth 20 to 40 inches, well drained, 0.20 to 0.5 in/hr water transmission, water table more than 80 inches deep. This soil has a liquid limit of 32, a plasticity index of 10, and water contents of 14 and 26 percent at 15 bars and 1/3 bar, respectively. Grain size composition is about 26% clay, 37% sand, and

37% silt. This soil is highly erodible and is subject to shrinking and swelling on changes in moisture content. Units in this soil type: 9-1, 10-3, 20-2, 21-2, 26-1.

Woodseye- Rock outcrop complex (NRCS soil type 87F): Rock outcrops on slopes of about 20 to 60 percent. This soil has a liquid limit of 28, a plasticity index of 5, and water contents of 7 and 15 percent at 15 bars and 1/3 bar, respectively. Grain size composition is about 20% clay, 40% sand, and 39% silt. This soil is highly erodible. Units in this soil type: 23-2, 23-4.

FIELD OBSERVATIONS

The proposed units and roads were observed in Sections 10, 11, 15, 17, 20, 21, and 30. The observations confirmed the general soil descriptions above. Detailed observations are described below.

Slopes and slope stability

Natural slopes in this proposed timber sale are generally steep to very steep. Most of the road cuts are sloped approximately 3/4H:1V to 1/2H:1V and are between 10 and 20 feet high, though cut heights exceeding 20 feet occur with moderate frequency. Cut slopes are generally sparsely to moderately vegetated with grasses, low-growing ground covers or, less frequently, timber. Slopes on the outside edge of the road are mainly timbered.

The terrain in portions of Section 17 contains a few areas of scarps and hummocky surfaces which indicate areas of past slope instability not associated with cut slope slumps. In Section 10 in Unit 10-3 the ground is laced with many closely spaced skid roads from logging that occurred in the 1950s and later. These skid roads were visible in historic photos of the site and are largely unchanged.

Creep, the continuous and gradual downslope movement of the surface soils, is evident throughout the sale area, especially immediately adjacent to road cuts, and is manifested by curved tree trunks. Occasional tilted mature trees were observed. Numerous sites of cut slope slumping were observed in Section 17 and Section 10 in cuts over 10 feet high.

Along the roadways, shoulder failures occur less frequently than cut slope failures, and appear to be mainly due to surface erosion. However, in Section 17 two separate occurrences of tension cracks were observed in the roadway about two feet in from the edge of the road, indicating shallow sloughing of the outside shoulder. In Unit 30-1, failures were observed in the cut slope of an unmapped, abandoned road bed located just downslope of a closed road, about a mile from where Road 33-6-24 first enters public lands.

Groundwater

Free moisture was found in Section 11 where an active seep exits the slope at the prism of a decommissioned road (Road 33-5-11.1). A dry seep was also observed in Section 11 in the cut slope of Road 33-5-10.1 about 0.3 miles from the junction with 33-5-11. This is close to and higher on the slope than the aforementioned active seep. A thick growth of horsetails growing in the outside edge of the turnout on Road 33-5-7 was observed near MP 1.6, indicating a place where the soil moisture is probably higher and more prolonged than usual. Otherwise, no groundwater was observed.

Large soil pores were a common observation in the soil portion of the cut slopes, especially on Roads 33-5-7 and 33-5-18. These are indicative of seepage during seasons of high soil moisture.

Erosion

Pronounced surface erosion was observed at most culvert crossings on most of the roads travelled, even where culverts are fitted with downspouts. This type of erosion was most severe on Road 33-5-18 about half a mile past the junction with Road 33-5-7. At this location, culvert erosion has produced a gully visually estimated at about eight feet deep.

Cut slopes are generally steep and prone to erosion throughout the sale area, evidenced by loose material accumulated at the base of cuts and by vertical scarps overhung by the root zone at the top of cuts. Vegetation on the cut slopes, where established, is sparse. Ravel and erosion by water are less pronounced on slopes with established vegetation; however, the steepness of the cuts and the pronounced tendency for raveling are not conditions that promote successful vegetation of slopes.

Roads

Road surfaces were generally in good to fair condition at the time of this assessment, but soft subgrades in winter in Sections 17, 18, and 30 are likely. Occasional potholes exist on the ridgetop portion of Road 33-5-10.1. Road subgrades in Sections 11 and 15 are likely to be excessively rocky and easily eroded.

FINDINGS AND RECOMMENDATIONS

This section contains findings and specific recommendations for areas of the sale that were directly observed in the field reconnaissance. Similar findings could apply to areas which were not directly observed. These include the units and roadways in Sections 20, 23, 25, 26, and 27, and Unit 21-2 in Section 21. It is recommended that these units and roadways be directly observed for conditions similar to those described above, especially for signs of past and current slope instability, before final decisions are made about unit locations and roadside treatments.

Slope Stability

Slope stability is the primary concern with respect to timber harvest activities in Section 18. Most of Unit 18-1 has already been dropped from the project and it is recommended that the remaining portion of Unit 18-1 south of Road 33-5-18 be dropped as well.

A possible scarp was observed above the cut slope of Road 33-5-18 in Unit 17-1 about 1.8 miles beyond the junction with Road 33-5-7, and Unit 21-1 contains a very small portion above road 33-5-18 about 2.1 miles beyond the same junction. Harvest areas in these two units should be planned to minimize their effect on soil moisture. The factors most greatly affecting soil moisture include the number, size, and spacing of remaining trees and undergrowth. Insufficient data exist to prescribe exact numbers, sizes, and spacings of trees left in any specific unit. However, in general the impacts on soil moisture can be minimized by retaining at least 50% of the existing trees and minimizing disturbance of the understory growth, if an understory is present.

Unit 30-1 has three road beds in close proximity at the top of the unit, with at least one past slump evident in the lowermost road. This upper portion of the unit from the lowermost road bed to Road 33-6-24 should be omitted from the unit, and the removal of timber from the lower portion of the unit should be planned to minimize ground disturbance in this roaded area.

Erosion

Erosion is a prominent but manageable concern for activities in the project area. All culverts within harvest units or along roadside treatments should be designed to dissipate their discharge energy before releasing flow onto the ground. This is normally done with rock splash pads, but a range of other options

can be designed if needed. Design options and details for specific applications are available on request. In addition to this recommendation, culverts on steep slopes should be directed through downspouts before being discharged through dissipaters onto splash pads.

Roads

The roads appeared to be in generally good condition with respect to accommodating timber sale traffic. Roads in Sections 17 and 18 have recently been resurfaced and culverts have been replaced. Culverts have also been replaced recently on Road 33-6-24 in Section 30. Other conditions are described in the Field Observations section above.

Road subgrades throughout the project area are expected to perform well in dry conditions. Standard road construction and maintenance recommendations apply with respect to supporting timber sale traffic in the project area. In wet conditions, road subgrades are likely to become soft and muddy. Increased rock depths is a typical means of providing additional support for haul over wet subgrades, is an applicable recommendation in this project area. Other methods of mitigating soft subgrades are the use of lower tire pressures, the addition of construction fabric (geotextiles) under the rock surface, or seasonal restriction of haul. The main concern for winter haul will be controlling erosion due to surface runoff and discharge from culverts. Managing culvert discharge is discussed in the Erosion section above. Again, monitoring is an effective means of managing the risk of erosion and sedimentation due to hauling on wet roads. Action triggers for this condition on this project would be the development of ruts in the road 2 inches deep or deeper, or the development of muddy runoff flowing in the wheel tracks.

Slumps in the cuts and/or outside shoulders can be expected after seasonal rain and snowmelt have raised the ambient soil moisture level above the plastic limit, especially in areas where a history of slumps is evident (Sections 10, 15, 17, 18, and 20). Exactly when this occurs each year is not predictable; simple soil moisture observations can narrow the window so that maintenance responses can be planned. Two incidences of incipient shoulder failure on Road 33-5-18 in Section 17, at about 0.9 mile past the junction with Road 33-5-7, with indicated by tension cracks, are likely to result in shoulder failures under wet conditions and heavy loads in the future. These could be treated ahead of time by removing and replacing the failed portion of the shoulder before harvest activities begin.

Roadside Clearing (Daylighting)

Roadside clearing is proposed along many of the roads in the project area. Roadside clearing would occur in a band up to about 15 feet wide (slope distance) above the top of cut and below the outside shoulder.

Most of the cut slopes in the project area are not timbered within this distance. Cuts more than 10 feet high are generally steep, and prone to erosion by gravity and by water. The root mass of trees along the top edge of the cuts clearly acts to retain the top of the slope against erosion, especially in Sections 10, 15, 17, 18, and 20. In addition, many of the cuts in these sections display evidence of past slumps. For these reasons, roadside treatments are not recommended on cut slopes throughout the project area.

The slope below the outside edge of the roads generally is timbered in much of the project area. Harvesting the timber from the 15 feet closest to the edge of the road is not likely to greatly exacerbate mass stability issues. It may increase the tendency for localized sloughing of the outside edge of the road, especially in the first two to five years post-harvest, caused by reduced evapotranspiration of near-surface moisture and by increased moisture from direct precipitation and runoff. This risk is greatly reduced by using low-impact methods that don't disturb the other vegetation on the slope. Hand falling is not recommended for roadside treatments in any of the project area.

Monitoring

Monitoring is an effective risk management tool in resource management work and it is recommended for this project. Before operations begin, resource area specialists and Engineering will together identify whether and where sites exist that should be monitored during operations, and if so, to develop predetermined action triggers and remediation plans. The monitoring sites should be representative of the site conditions of concern, and should be in locations where they can disclose impacts due to the project. Action triggers should be specific to the issue of concern and should be quantifiable and measurable. Remediation plans should include a specific response to each action trigger. Factors to consider in developing a response to an action trigger typically include the short-term weather forecast, the remaining duration of the current operations, the severity and extent of the condition being monitored, the potential risk involved, and the social and economic impacts of the potential solutions.

This concludes the preliminary assessment of the Speaking Coyote Timber Sale. Please feel free to contact me if you have questions about the contents of this report, if you need further information, or if you wish to visit the project area together at any time in the future.

Respectfully,



Miriam Liberatore, P.E.
District Engineer

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ROAD LOGS

Road 33-5-7

<u>MP</u>	<u>Remarks</u>
0.0	Jct County Road 1010.
0.4	Approx US boundary. Soil type: 47E or 7F, 61F – road is near edges of units. Soils in cut: reddish brown, cobbly, dry, silty clayey sand. Slopes on cut side are moderately steep; slopes on shoulder side are milder.
0.5	Fill approx. 10' deep, cut about 15-20' high. Soils: tan, very soft, weathered bedrock. Road surface – good condition.
1.0	Older slump in cut slope, 15-20' high cut, about ¾H:1V to ½H:1V with moderately steep slopes above the cut. Slump is about 75' long overall; could be multiple events. Soil: reddish-tan, dry, with highly weathered rock fabric.
1.1	Large slump or construction bench in cut slope, about 20' high within right of way. Cut slope ¾H:1V or steeper. Soil: tan, dry, highly weathered bedrock.
1.25	Creek crossing in Section 17. Cut slopes about 50' high, ¾H:1V to ½H:1V. Soil: light brown, dry, gravelly, highly weathered rock. Ravel probable; vertical section at top of slope, little to no vegetation at this MP; adjacent cut slopes are vegetated. Shoulder is very steep, very high slope, vegetated with occasional washouts and scoured narrow sections (e.g. MP 1.3).
1.5	Creek crossing in Section 17. Slump terrain on upslope side of road. Extends from crossing to about 175' up road and about 75-100' upslope. Thick fern growth. Dry now, but many pores indicating likely winter flows through cut face. Trees all less than 1' diameter; most are straight. Some trees 4-6" diameter located behind scarps show pronounced curvature from ground to about 10' up trunk. Few tilting trees at margins of the slide masses. Soil: light brown, dry, fine-grained, mapped as 6F.
1.6	Wet-area vegetation (horsetails) in turnout on outside edge of road, extending ahead about 100'. Culvert nearby with slump in cutslope at this location. Upslope side of road exhibits slump terrain less pronounced than at MP 1.5. Rut in turnout indicates probable seasonal softness. More slump terrain on upslope side of road to the next curve, about 200' ahead. Soils dry, but exhibiting many pores and sloughs, indicating seasonal wetness and weak soils.
1.7	Massive rock outcrop on upslope side of road.
2.1	Jct 33-5-18.
2.49	Above slump of MP 1.6, more or less. Cut slope exceeds 20' high, exhibiting many pores; moderately to well vegetated with grasses, low ground cover. Vertical scarp at top of slope about 1' high, many exposed tree roots at top of slope.

- 2.5 Culvert. Slump scar in cut slope. Culvert about 18" diameter with downspout about 20' long has produced deep scour about 8 to 10' deep. Slump block above road about 12' high, with about 5' vertical displacement, about 85' long. Soil: light brown, dry, stony, hard, fine-grained soil and highly weathered rock.
- 2.7 End of Unit 18-1. Road cut about 12' high, with a vertical top scarp about 1' high and with many exposed tree roots. Ravel likely. Trees at edge of slope are curved; trees on the slope above the cut are straight. Ferns present; soil exhibits pores indicating seasonal seepage. This whole segment is the same—marginal stability, slope above the cut is about 80%.
- 2.8 Probable top of slump block on downslope side of road. Large (about 24" diameter), back-tilted cedar and fir about 30 to 50' from the road.
- 2.9 Scarps in the cut slope.
- 3.0 Tension cracks in outside edge of road about 2' from edge.
- 3.9 Ravel from cut slope encroaching on the ditch in multiple locations. Possible scarp above the encroachment. Approximate end of Unit 17-1 on right (upslope side of road).
- 4.0 End of assessment.

Road 33-5-10.1, Segment 1

<u>MP</u>	<u>Remarks</u>
0.0	Begin measurement from first stream crossing.
0.01	Possible slump bench below road.
0.2	Cut slope soil: red, dry, weathered rock with colluvium in ditch line. Downslope: steep, dry, hummocky terrain. Rock scattered on duff surface: tan-pink, thinly bedded, weak, highly weathered metasedimentary rock. Soil mapped as type 7F. Cuts less than 10' high, ravelly but stable. Unit 10-3 below road.
0.4	Possible slump in cut slope. Cut about 10' high, slump about 8' high.
0.5	Downslope slump block at this MP and almost everywhere below the road throughout this segment. [This terrain confirmed by air photos to be scars from previous logging activity, circa 1950-1960.]
0.6	Jct 33-5-10.4
0.7	Cleared roadside and thinned unit on downslope side of road. No visible instability, roadside is thickly vegetated with ferns, grasses, daisy. Unit 10-3 is upslope. Most cut slopes are less than 10' high throughout this segment (MP 0.0 to 0.7).

- 1.0 End of assessment. Road condition generally good except for potholes in ridgetop segment.

Road 33-5-10.1, Segment 2

<u>MP</u>	<u>Remarks</u>
0.0	Jct 33-5-11 and 33-5-10.1. Soil: mapped as type 21F.
0.1	West-facing slopes, dry. Timbered slopes are in pine, cedar, fir. Cleared areas are brushy. Soil: whitish, hard, slickensided rock fragments and reddish-brown, blocky rock in cut slope; very rocky and erodible. Cut slope is about 15' high, ravelly.
0.3	Dry spring and eroded channel in cut slope about 3' deep, 2-4' wide, 6' high; grassy above spring.
1.0	End of segment and Unit 11-1. High erosion hazard, rocky subgrades, high risk of channeling runoff in the road bed. End of assessment.

Road 33-5-10.6

<u>MP</u>	<u>Remarks</u>
0.00	Jct 33-5-10.2
0.1	Stream crossing. Soil mapped as type 6F. Very similar to first half of 33-5-10.1 (Unit 10-3). Soil: light tan-brown, dry, rocky, well vegetated with grass and low ground cover. Trees are straight, mostly fir about 6-12" diameter, few madrone and maple. Hummocky terrain downslope from road; minor undulations in the ground surface upslope from the road. Cuts are about 8-18' high, about 3/4H:1V.
0.4	Large bench about 25' below road; old slump scar in cut slope; cut slope about 15-20' high. More madrone on slope below road. [This feature later confirmed to be a remnant of an old skid road.]
0.9	Hairpin turn around convex slope. Soil changes to reddish brown.
1.0	Stream crossing.
1.15	Small cut slope slump scar about 30' wide, 10' high.
1.2	End of assessment.

Road 33-6-24

<u>MP</u>	<u>Remarks</u>
0.0	Public land boundary. Begin culvert replacements throughout this segment.

- 0.8 Approximate beginning of Unit 30-1.
- 0.9 Jct spur road. Unit on left. Soils mapped as type 6F. Very similar to 33-5-10.1. Soil: pink-tan, thinly bedded metasedimentary rock. Cut slopes: red, dry, highly weathered rock and colluvium. Thick growth of fir, about 10-12" diameter, on downslope side of road. Slopes are steep, planar, smooth.
- 1.0 Old roadbed or slump bench below. Moderately high erosion at all culvert outlets here and throughout segment.
- 1.35 Jct 33-5-30.3.
- 1.4 Slump or old roadbed below.
- 1.6 End assessment at Jct. 33-5-30; end of Unit 30.2

APPENDIX 10 SILVICULTURAL PRESCRIPTION

Introduction

The Speaking Coyote Project proposes commercial thinning (CT) in 30 units (818 acres) within the Graves Creek watershed. Stands in the planning area can be classified as mixed conifer and generally fall into the Douglas-fir plant series with areas of Douglas-fir-Incense Cedar associations. The primary conifer species in the planning area is Douglas-fir with lesser percentages of ponderosa pine, sugar pine and incense cedar. White-fir, Jeffrey pine, and Pacific yew are present in some units. Hardwood and shrub species include: Pacific madrone, California black oak, tan oak, canyon live oak, Oregon white oak, poison oak, manzanita, ceanothus spp., and California hazel.

Objectives

Land Use Allocation Objectives:

Lands proposed for treatment within the planning area are allocated Matrix (including Connectivity/Diversity Blocks) and Riparian Reserves.

Matrix Lands: Objectives of Matrix lands include the following:

- Produce a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability.
- Provide connectivity between Late-Successional Reserves.
- Provide for a variety of organisms associated with both late-successional and younger forests.
- Provide for important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components such as down logs, snags, and large trees.
- Provide early-successional habitat.

Riparian Reserves: Objectives of this land allocation include:

- Aquatic Conservation Strategy objectives (1995 RMP pg. 22-23)
- Provide habitat for terrestrial species associated with late-successional forest habitat.
- Provide dispersal habitat for northern spotted owl (NSO).
- Implement strategies to achieve the goals established in the BLM's Riparian Wetland Initiative for the 1990's.

Treatment Objectives:

Commercial Thinning: The primary purpose of the proposed commercial thinning is to control stocking and to provide for increased and redistributed growth. The treatment intent is to enhance stand yield and stand quality. Commercial thinning will produce wood volume, increase and maintain conifer growth rates for wood volume production in the future and maintain and improve the vigor of selected leave trees. An additional objective for the upland will be to maintain the functionality of northern spotted owl nesting, roosting, foraging, or dispersal habitat. Stand densities would be reduced to increase the availability of light, water, nutrients and growing space for selected trees to be retained. A thinning treatment would promote increased tree size and vigor as well as the development of larger crowns on retained trees. Fewer, but larger trees would make up these stands.

Some units contain mature remnant pine and Douglas-fir trees. These legacy trees are generally much larger than the average stand diameter. The Speaking Coyote Project proposes culturing of some legacy trees. Where appropriate, selected legacy trees would have all competing conifers removed from around the bole at various distances which would not exceed 40 feet. This treatment would be applied only to selected legacy trees. The remainder of the unit would be thinned on a regular spacing interval.

Riparian Thinning: The primary objective of thinning within the Riparian Reserves is to create conditions that lead to the development of stands with characteristics of older forests. In younger more uniform stands, selected trees would be released and desired understory conditions could develop. In older more variable stands where some of these desired characteristics already exist, the objective would be to maintain those characteristics by reducing stand densities. In both cases the vigor of selected leave trees would improve or be maintained. The treatments would be designed to maintain northern spotted owl (NSO) nesting, roosting, foraging, and dispersal habitat. Many of these riparian reserves are currently overstocked with conifers and lack structural complexity. Long-term stand vigor is a concern in some units. Large woody debris, downed logs, and large tree structure are not to desired levels. Riparian thinning would reduce competition for light, water, nutrient, and growing space on retained trees. Retained trees would be better able to develop larger canopies, display better vigor and put on diameter growth faster than if left untreated. Incidental gaps in the canopy would promote the development of multiple canopy layers which would promote species diversity and structural complexity, key characteristics of older forest stands. Riparian thinning would also promote the development of larger trees for future wood recruitment for stream structure and stream temperature maintenance.

Thinning treatments within the Riparian Reserves would appear similar to thinnings in the upland portions of the units. Canopy cover would vary slightly. In Riparian Reserves classified as dispersal habitat for northern spotted owl, the target would be to maintain at least 50% canopy

cover averaged across the treatment reserve. Within areas classified as nesting, roosting and foraging habitat the target would be to retain at least 60% canopy cover.

Effects of Proposed Treatments

The following tables project short-term and long-term effects of proposed thinning treatments compared to no treatment. Projections for short-term effects have a higher degree of certainty compared to the projection of long-term effects. Stand condition and stand characteristics 11-100+ years into the future are highly dependent upon uncontrollable variables such as climate stability or change, extreme weather, wildfire, future management direction, societal pressures, available funding for follow-up treatments and random events.

Vegetation Effects – Short Term (1-10)

Stand Condition	No Treatment	Commercial Thinning
Vigor of residual trees	No change to decrease	No change to slight increase
Growth rate	No change to decrease	Remain the same to increase
Live crown ratio	No change to decrease	Increase
Conifer species	Remain the same	Remain the same to increase
Hardwood species	No change to decrease	No change
Shrubs/brush/forbs	Decrease	Remain the same to increase due to increased light reaching understory
Snags	Remain the same to increase due to mortality	Remain the same with potential increase or decrease. Dependent on retained trees and logging feasibility.
Course woody debris	Remain the same to increase due to mortality	Remain the same to potentially increase as low vigor and broken topped trees decay
Branching	Continued loss of lower limbs	No change
Individual tree stability	No change to decrease	No change to slight decrease.
Ability to respond to future treatments	No change to decrease	No change to slight increase
Rate of development of mature forest characteristics	No change	No change to slight increase

Vegetation Effects – Long Term (11+ years)

Stand Condition	No Treatment	Commercial Thinning
Vigor of residual trees	Decrease	Increase
Growth rate	Decrease	Increase
Live crown ratio	Decrease	Increase
Conifer species	No change to slight decrease	Increase as stand develops different canopy layers
Hardwood species	No change to decrease	Remain the same to increase slightly then decrease as canopy closes
Shrubs/brush/forbs	Decrease	Increase then decrease as canopy closes
Snags	Remain the same to increase due to mortality; mostly small diameter	Decrease in numbers, increase in size
Course woody debris	Remain the same to increase due to mortality; mostly small diameter	Remain the same with the potential to increase or decrease
Branching	Continued loss of lower limbs	Retention of limbs present until canopy closes. Development/retention of large branches
Individual tree stability	No change to decrease	Increase (after potential short-term decrease)
Ability to respond to future treatments	Decrease	No change to increase
Rate of development of mature forest characteristics	No Change	Increase

The processes that shape how these stands appear in the future and their character are dependent on many factors. The above table lists what is thought to be the most likely outcomes of the no action alternative and the Proposed Action. Fire, insects, disease, climate, drought and other management activities will be factors in the long term development of these stands.

Unit Specific Objectives

Units (30-120 year old stands): 9-1, 10-1, 10-2, 10-3, 11-1, 13-2, 14-1, 14-2, 15-1, 15-5, 17-1, 17-2, 20-1, 20-2, 21-1, 21-2, 22-1, 23-2, 23-3, 23-4, 23-5, 24-1, 25-2, 27-2, LP27-1, LP27-2, LP 27-3, LP27-4, LP34-1

T. 33S R. 5W Sections 10, 11, 14, 15, 17, 20, 21, 23, 24, 25, 27 and T. 33S R. 6W Section 27 and 34

Stand Description: The units proposed for treatment are in second growth stands that have resulted from past timber harvests that occurred between the 1920s and the 1980s. These units have had various commercial treatments including over-story removal, clear cutting, partial cutting and commercial thins. Past harvest and fire (natural and anthropogenic) activities have resulted in stand conditions that range from uniform to variable. These units have had differing levels of management since harvest. Non-commercial silvicultural treatments that have been done include: broadcast burning, spot burning, ripping, scarifying, seeding, planting, manual brushing, aerial herbicide applications, precommercial thinning, and aerial fertilization. Precommercial thinning spacing ranges from 12 ft x 12 ft to 16 ft x 16 ft which resulted in 302-170 trees per acre. Many of the units currently remain at these stocking levels. These treatments were not conducted on every acre in each individual stand resulting in differing stages of development within a single unit. Douglas-fir is the primary conifer species with ponderosa pine, sugar pine, incense cedar, white-fir and Jeffrey pine present. Tree diameters are primarily in the 8"-30" inch DBH range with an average quadric mean diameter (QMD) of 16" inches DBH. Some units contain large remnant pine and Douglas-fir. Remnant mature conifers are generally 40"-60" inches diameter at breast height. While present to some degree in some stands, there is generally a lack of large diameter trees, vegetative layering, ground cover, large course woody debris and snags that support prey species, or meaningfully contributed to the constituent elements of nesting, roosting and foraging habitat for northern spotted owls. Canopy cover generally ranges between 44% and 81%. Canopy gaps exist within some units. Live crown ratios (LCR) are variable across and within units and range from 10-90%. LCRs average about 42%. Areas of root rot are present within units but are generally small and isolated. The exception is unit 15-1 which has been highly altered by root rot. A restorative treatment which includes removal of trees adjacent to root rot centers to halt or slow their expansion into healthy portions of the unit is proposed for unit 15-1. Hardwood species present include madrone, golden chinquapin, canyon live oak, California black oak, Oregon white oak, tan oak, big leaf maple, and Oregon ash. Understory species include Pacific yew, hazel, oceanspray, manzanita, poison oak, huckleberry, salal, and ferns.

Analysis: These units are designated as being in the Matrix (Matrix-Connectivity/Diversity for units 17-1 and 17-2) and Riparian Reserves land use allocations. Most of the units are classified as dispersal habitat. Units 9-1, 14-1, 14-2, 20-2, 21-2, 22-1, 23-4, 23-5, 24-1, and 27-2 have been

classified as northern spotted owl nesting, roosting and foraging habitat (NRF). Units 14-1, 14-2, 24-1 and 27-2 are single storied with canopy closures of 60-80%+. Units 9-1, 20-2, 21-2, 23-4, and 23-5 have higher canopy closures and contain areas of multistoried structure. Treatment of these units should retain attributes associated with NSO nesting, roosting and foraging habitat. Portions of units meet regeneration harvest guidelines due to stand conditions. Trees in these areas have large height to diameter ratios and associated low live crown ratios. Due to the fact that many of these trees would respond slowly to release treatments and may be susceptible to stem bending, windsnap, and windthrow if the distance between tree crowns is made too wide, thinning treatments within these areas would retain greater trees per acre with associated higher canopy covers. Retention of a greater number of trees in these areas would help to meet desired levels of canopy cover, allow retained trees to gradually respond to thinning treatments and help avoid situations where tree failure may occur. Live crown ratios would continue to decline as canopies continue to close if no treatment is conducted at this time. Treating stands with these conditions is a high priority as release treatments will not be effective in the future as stand conditions further deteriorate. The majority of trees remaining after treatment would be dominants and co-dominants and are capable of responding to a release treatment. The proposed treatment would reduce stand densities and promote more vigorous growth in the residual trees while maintaining northern spotted owl nesting, roosting, foraging and dispersal habitat characteristics.

If left untreated it is expected that most conifers susceptible to laminated root rot in unit 15-1 would eventually perish. This would greatly reduce stocking levels, canopy cover, and overall stand health and vigor. By treating this unit and creating barriers between infected and uninfected conifer disease centers would decrease in size and spread into healthy portion of the unit would be minimized. Although not removed entirely disease spread would be mitigated and species resistant to laminated root rot would be established.

Desired Future Conditions/Results: Short term desired future conditions resulting from this treatment include the retention of canopy covers which define northern spotted owl nesting, roosting, foraging and dispersal habitat. Maintaining these habitat characteristics include retaining large down wood and non-hazardous snags, large diameter broken/forked topped trees along with maintaining a component of minor conifer and hardwood species. Resulting NSO dispersal habitat stands would retain an average of at least 40% canopy cover across the unit. Areas of Riparian Reserves within each unit would have an average of at least 50% canopy cover. Areas of nesting, roosting and foraging habitat would have an average of at least 60% canopy cover. Reducing the canopy to this level would result in reduced competition amongst retained trees. Growth rates of the remaining trees would increase where the stand was opened and would be maintained where the stand is currently open. Mortality of remaining conifers and hardwoods would decrease.

Long term desired future conditions for the units would be increased growth rates and stand vigor. Retained trees of multiple species would have fuller, deeper crowns. Eventually, crown closure would return to near pre-harvest levels. Instead of consisting of numerous smaller trees, the canopy would be formed from the crowns of fewer but larger trees. Large hardwoods would be part of the retained stand.

Recommended Treatment: The recommended treatment for these stands is a thin from below, to release dominant, and co-dominant, pine and Douglas-fir, as well as releasable minor species. Retain minor conifer species with the exception of individual trees that exhibit poor form or vigor, trees that have a high likelihood of not remaining in the canopy after treatment. Remove white-fir except when it is needed to meet desired canopy cover levels. Mark to retain 40% canopy cover in Matrix dispersal units and 60% canopy cover in Matrix nesting, roosting and foraging habitat units and 50% canopy cover in Matrix Riparian Reserves. Thin in Riparian Reserves to allow a diverse multi-layer, multi-species stand development. Retain existing decadent woody material such as snags and down wood. Favor retention of trees with 35-45% live crown ratios. Retain some cull trees with outward signs of deformities that could be used for future owl habitat (<5% of total retained). Variability in canopy cover and spacing is acceptable. Retain existing large hardwoods, snags, and down wood. To increase stocking levels in unit 15-1 some planting of species resistant to laminated root rot may be appropriate.

Retain minimum average canopy cover (across the treated area) of:

- 40% in areas of upland dispersal habitat, some dispersal units may have higher retention levels due to the unavoidable retention of trees that may be unable to support themselves and fail.
- 50% in the Riparian Reserve portion of these units
- 60% in areas classified as nesting, roosting and foraging habitat

It is recommended that selected legacy pine and Douglas-fir be cultured. These trees would be hand selected and assigned a clearing distance appropriate for release of the individual. Clearing distances could be 20 feet at minimum but would not exceed 40 feet. Clearing distances would be measured from the bole of the selected conifers and all conifers within this cylinder would be removed. Hardwoods and snags in the cylinder would be retained. Units where this treatment would occur would maintain canopy cover percentages associated with the appropriate NSO habitat type for that unit.

Variability in canopy cover and spacing is acceptable. Retain existing hardwoods greater than 12 inches dbh, snags, and down wood. Some areas may not receive commercial treatments. In these areas non-commercial conifers would be spaced at minimum of 12 ft x 12 ft and at maximum 16 ft x 16 ft, tree formed hardwoods less than 12 inches would be spaced to 40 ft x 40 ft, and shrubs cut. Units will be evaluated for fuels treatment needs. Slash brush, handpile, and

burn as appropriate. Some planting may be appropriate to establish an understory canopy with a conifer component. To increase stocking levels in unit 15-1 some planting of species resistant to laminated root rot may be appropriate. Evaluate for planting considering the potential for natural regeneration. Planting would occur where appropriate.

MAP

Speaking Coyote Environmental Assessment

 Project Boundary

Ownership

 Bureau of Land Management

 State

 Private

 Commercial Thin⁸ Units

 Roadway Clearing Units

 Temporary Route Construction

 Temporary Route Re-Construction

Existing Roads

 Paved Roads

 Rocked Roads

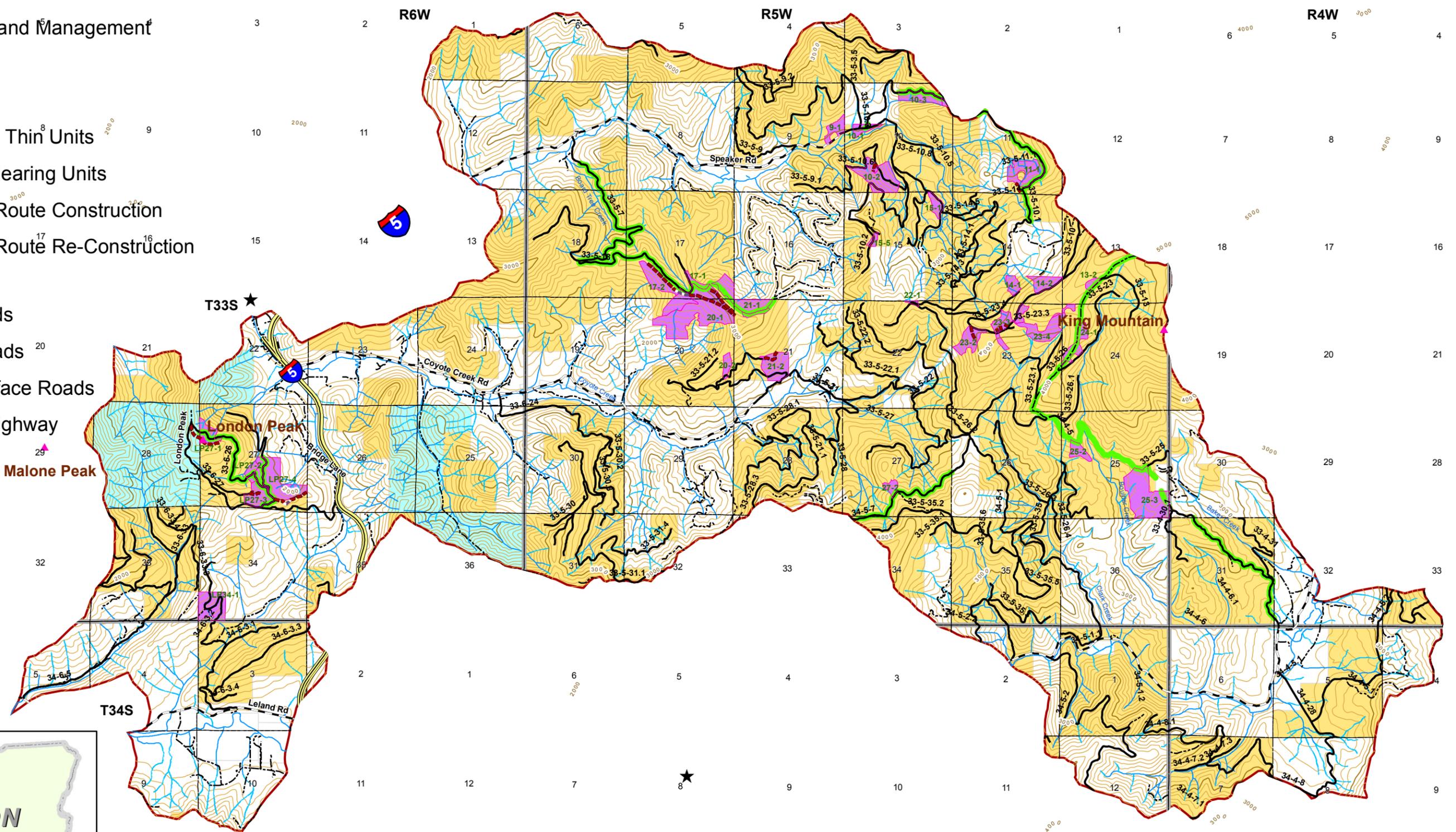
 Natural Surface Roads

 Interstate Highway

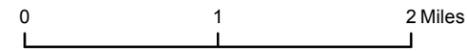
Streams

 Perennial

 Intermittent



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.



**Perennial and intermittent streams displayed for this map come from the Medford District GIS corporate information. Site-specific field stream surveys have been completed for this project and were used for the analysis in the Speaking Coyote Environmental Assessment. This survey information is currently being digitized to update the District's GIS corporate information and will be displayed in the Speaking Coyote and London Peak Timber Sale Prospectii, and the Mackin Gulch Stewardship Solicitation, should these projects be offered for sale.

Prepared By: Stimmons
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