

***DICKERSON HEIGHTS
REGENERATION HARVEST
TIMBER SALE***

**South River Field Office
Roseburg District
Bureau of Land Management**

Environmental Assessment
OR105-98-09

U.S. Department of the Interior, Bureau of Land Management
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Roseburg, Oregon 97470

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Chapter One

PURPOSE AND NEED FOR ACTION

I. Proposed Action

The proposed action is regeneration harvest of mature and late-successional forest lands in the Matrix land use allocations, managed by the South River Field Office, Roseburg District, Bureau of Land Management (BLM), yielding an estimated 5.5 million board feet (MMBF) of timber.

Timber management on the Revested Oregon and California Railroad Lands (O&C Lands) managed by the South River Field Office is principally authorized and guided by:

The Oregon and California Act of 1937: Section 1 of the O&C Act stipulates that suitable commercial forest lands revested by the government from the Oregon and California Railroad are to be managed for the sustained production of timber.

The Federal Land Policy and Management Act (FLPMA): Section 302 at 43 U.S.C. 1732(a), directs that “The Secretary shall manage the public lands . . . in accordance with the land use plans developed by him under section 202 of this Act when they are available . . .”

Roseburg District Record of Decision/Resource Management Plan (ROD/RMP): The ROD/RMP (USDI, BLM 1995a) approved in accordance with the requirements of FLPMA, provides specific direction for timber management.

The Roseburg District timber management program and annual allowable sale quantity (ASQ) of 45 MMBF are predicated on two primary actions. On lands allocated to the harvestable timber base within the Matrix, regeneration harvest will be conducted in mature and late-successional forest. Matrix lands are further allocated into the General Forest Management Area (GFMA) and Connectivity/ Diversity Blocks. In the GFMA, regeneration harvest will occur at Culmination of Mean Annual Increment¹ (CMAI), typically 80 to 110 years of age in the planning area (ROD/RMP, p. 61). In Connectivity/Diversity Blocks regeneration harvest is to be scheduled based on an area control rotation of 150 years (ROD/RMP, p. 153). Silvicultural treatments such as commercial thinning and density management will be applied in young stands in these land use allocations to enhance their value for timber production.

The Roseburg District *Proposed Resource Management Plan/Environmental Impact Statement* (USDI, BLM 1994 (PRMP/EIS)) assessed the cumulative effects of the Roseburg District timber management program. Based on this analysis, the ROD/RMP (p. 8) anticipated 1,190 acres of regeneration harvest and 150 acres of commercial thinning/density management annually in support of the sustained yield assumptions for an annual ASQ of 45 million board feet of timber.

¹ Culmination of mean annual increment, or CMAI, is defined as the age in the growth cycle of a tree or stand at which the mean annual increment for height, diameter, basal area, or volume is at a maximum. (The Dictionary of Forestry The Society of American Foresters 1998)

The proposed harvest would occur on approximately 150 acres located in Sections 9, 11, 15 and 21 of T. 29 S., R. 7 W., W.M., within the Olalla sixth-field subwatershed of the Olalla-Lookingglass fifth-field watershed. The project area lands are allocated as either GFMA (105 acres) or Connectivity/Diversity Block (45 acres) as part of the harvestable timber base on the Roseburg District.

The ROD/RMP assumed that suitable lands in the General Forest Management Area and Connectivity/Diversity Blocks would be managed in a manner consistent with the principles of sustained yield timber management. Once this decision was made, the primary unresolved issue regarding management of these lands is when and how timber harvest will occur, and not if the timber will be harvested.

Selection of the proposed units was made in consideration of recommendations contained in the Olalla-Lookingglass Watershed Analysis (USDI, BLM 1998 (WA)), which judged the Olalla sixth-field subwatershed to be the most preferable area in the watershed for regeneration harvest when timber, wildlife, and fisheries resources were considered together (WA, p. 115).

This EA will consider the environmental consequences of the proposed action and no action alternatives in order to provide sufficient evidence for determining whether there would be impacts exceeding those considered in the Roseburg District PRMP/EIS which would require preparation of a Supplemental Environmental Impact Statement (SEIS). In addition to the PRMP/EIS, this analysis is tiered to assumptions and analysis of consequences provided by:

- The *Final Supplemental Environmental Impact Statement (FSEIS) on Management of Habitat for Late-Successional and Old-Growth Related Species Within the Range of the Northern Spotted Owl* (USDA, USDI 1994a);
- The *FSEIS for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (USDA, USDI 2001);
- The *FSEIS to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (USDA, USDI 2004a); and
- The *FSEIS to Clarify Provisions Relating to the Aquatic Conservation Strategy* (USDA, USDI 2004b).

Implementation of the proposed action would conform to management direction from the ROD/RMP which incorporates as management direction the standards and guidelines of the *Record of Decision for Amendments (ROD) to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (USDA, USDI 1994b).

The ROD/RMP is further amended by the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (USDA, USDI 2001) and the *Record of Decision to Clarify Provisions Relating to the Aquatic Conservation Strategy* (USDA, USDI 2004c).

II. Objectives

The objective for the proposed action is to meet the following management direction from the ROD/RMP, pertaining to timber management on the lands in the planning area included in Matrix land use allocations:

- Produce a sustainable supply of timber and other forest commodities. (p. 33)
- Conduct regeneration harvest of GFMA stands on Dickerson Heights that are approximately 145 years old, consistent with management direction to conduct regeneration harvest of GFMA at or above the age of CMAI. (p. 61)
- Conduct regeneration harvest of a Connectivity/Diversity Block stand that is approximately 225 years old, consistent with management direction to conduct regeneration harvest on an area control rotation of 150 years in Connectivity/Diversity Blocks. (p. 153).
- Meet the objective of an annual ASQ for the Roseburg District of 45 MMBF, as declared in the ROD/RMP. (pp. 8 and 60)
- Achieve the socio-economic benefits envisioned in the PRMP/EIS (Vol. 1, p. xii) which estimated that BLM management programs (including timber sales) would support 544 jobs and provide \$9.333 million in personal income on an annual basis.
- Meet the requirement of Section 1 of the O&C Act which stipulates that suitable commercial forest lands revested by the government from the Oregon and California Railroad be managed for the sustained production of timber.

III. Decision Factors

Factors to be considered when selecting among alternatives will include:

- The degree to which the objectives previously described would be achieved by the alternative, including: the manner in which timber harvest would be conducted with respect to the type(s) of equipment and method of yarding to be employed, as well as the season(s) of operations; and the manner in which access would be provided, including road renovation, and the types and locations of any road construction;

- The nature and intensity of environmental impacts that would result from implementing the alternative and the nature and effectiveness of measures to mitigate impacts to resources including, but not limited to wildlife and wildlife habitat, soil productivity, water quality, and air quality; and
- Compliance with management direction of the ROD/RMP.

Chapter Two

DISCUSSION OF ALTERNATIVES

This chapter describes the basic features of the alternatives being analyzed in this environmental assessment.

I. Alternative One - No Action

Under this alternative, regeneration harvest of these stands would not occur at this time. This would not, however, constitute a decision to reallocate the lands to non-commodity uses. The stands proposed for regeneration harvest are located within the General Forest Management Area and Connectivity/Diversity Block land use allocations, within the Matrix, where the majority of timber harvest and silvicultural activities are scheduled to occur. Future harvest would not be precluded and could be analyzed under a subsequent EA.

Other suitable forest stands in the Matrix would be identified and scheduled for regeneration harvest in order to: meet ROD/RMP management direction; meet the ASQ projected by the ROD/RMP; and comply with the requirements of the O&C Act.

There would be no road construction. Maintenance to the existing roads would be conducted as needed for the purpose of keeping them open to traffic. Road renovation, improvements and decommissioning to improve drainage and reduce sediment would not be undertaken at this time.

II. Alternative Two – The Proposed Action

Under this alternative, regeneration harvest would be conducted on approximately 105 acres allocated as General Forest Management Area; and 45 acres allocated as Connectivity/Diversity Block. Maps of the proposed units are found in Appendix A of this document. These represent the approximate configuration of unit boundaries, subject to modification to address conditions and resources identified during field reconnaissance and analysis.

Mitigation, in addition to project design features prescribed in management direction, would be derived from Best Management Practices found in the ROD/RMP (Appendix D, pp. 129-143), or from reasonable and prudent measures prescribed in biological opinions issued in conjunction with consultation for threatened or endangered species.

A. Timber Harvest

Riparian Reserves would be established on all intermittent and perennial streams, with widths based on a site-potential tree height calculated from the average site index of inventory plots. These plots are located on forest lands throughout the project watershed that are capable of supporting commercial timber stands. For the Olalla-Lookingglass fifth-field watershed, the site-potential tree height is calculated as 160 feet (WA, p. 36).

Riparian Reserves on intermittent and perennial streams that are not fish-bearing would be 160 feet wide, slope distance, measured from the top of the stream bank. Riparian Reserves would be 320 feet wide on fish-bearing streams. Timber would be felled away from Riparian Reserves and yarding would be prohibited within or through them to protect and maintain their integrity.

Retention trees would be selected to proportionately reflect conifer species composition and the full range of diameter classes greater than 20 inches in diameter at breast height (DBH). Consideration would be given to the retention of trees displaying deformities, cavities and other defect that would provide habitat for many species of wildlife. Six to eight green conifers per acre, on average, would be retained in units in the General Forest Management Area (ROD/RMP, p. 150). Twelve to eighteen green conifers per acre would be retained in the unit located in a Connectivity/Diversity Blocks, along with up to two large hardwoods per acre where available (ROD/RMP, p. 152).

Snags would be reserved where practical to meet the analytical assumption of providing an average of 1.2 snags per acre (PRMP/EIS, p. 4-43) and management direction to provide snags in numbers sufficient to support cavity nesting birds at 40 percent of potential population levels (ROD/RMP, pp. 34-35). Retention trees with characteristics suitable for cavity nesters would be selected, where practicable, to supplement snag numbers. Worker safety and operational feasibility would be considered in selection and location of retention trees, and reservation of snags.

Decay Class 3, 4 and 5 down wood would be reserved by contract stipulation in addition to the retention of 120 lineal feet of large down wood, per acre in Decay Classes 1 and 2 (ROD/RMP, p. 65).

B. Yarding Operations

Table 2-1 summarizes the proposed sale units (See Appendix A) by land use allocation, approximate acreage, yarding method and season of operations.

TABLE 2-1 Summary of the Proposed Sale

Unit	Acres	Land Use Allocation	Yarding Method		Season of Operations	
			Ground-Based	Skyline	Dry Season	Any Season
A	45	Connectivity/Diversity Block		X		X
C	50	GFMA	~30 %	~70 %	X	
D	15	GFMA		X		X
F	18	GFMA		X		X
H	22	GFMA		X		X

Ground-based harvest would be restricted to the dry season when soil moisture is low and soil structure is most resistant to compaction (ROD/RMP, p. 131), generally mid-May until the onset of regular autumn rains in mid-to-late October. Skid trails and landings would cumulatively affect no more than ten percent of the ground-based harvest area (ROD/RMP, p. 131).

Cable harvest would be accomplished with skyline systems capable of maintaining one-end log suspension. Cable harvest units would be available for harvest in any season.

C. Access

Access would be provided by existing permanent roads, supplemented by the construction of three permanent spur roads totaling approximately three-eighths of a mile in length. These spur roads would all be constructed on ridge top locations outside of Riparian Reserves.

Approximately ten miles of roads would be renovated to accommodate all-season timber hauling. Renovation would generally consist of brushing roadside vegetation, blading and shaping road surfaces, replacing older cross-drain culverts, and spot resurfacing with crushed aggregate. Renovation would not involve installation or replacement of any stream-crossing culverts. Proposed road construction and renovation is summarized in Appendix B.

Approximately 700 feet of jeep road in proposed Unit C would be decommissioned. Decommissioning would consist of sub-soiling the road bed, seeding and mulching the road surfaces, and blocking the road to discourage any further vehicular use.

D. Site Preparation and Reforestation

Site preparation for reforestation would be accomplished by broadcast burning, or by hand piling and burning slash concentrations.

Broadcast burning is proposed for Unit C. It would be accomplished in the spring when moderate temperatures and high moisture content in soils, duff and large woody debris would minimize fire intensity and duration. This would: limit loss of or damage to snags and retention trees; limit consumption of duff, surface litter and large woody debris; and minimize the scope and duration of impacts to air quality (ROD/RMP, p. 77).

Site preparation on the remaining four units would be accomplished by hand piling and covering logging slash immediately following harvest. Piles would be burned during fall or winter months during periods of rain, and when soil and duff moisture content is high. This would minimize consumption of duff and litter, reduce the likelihood of broadcast burning the units, and minimize the scope and duration of impacts to air quality.

All units would be reforested within a year of completion of site preparation. The units would be replanted with a combination of Douglas-fir, ponderosa pine, and incense-cedar seedlings grown from seed collected from trees adapted to the local climate and growing conditions. Seedlings would be mulched to retain soil moisture and reduce competition from grasses. Retention trees would be dispersed, to the degree practical, to provide shading and increase seedling survival on south and west aspects.

III. Additions and Modifications to the Proposal as Initiated

Units A and B, as initially proposed, were merged into a single unit (A) by the addition of three to four acres which would have otherwise become isolated and inaccessible.

After the elimination of Units E and G from consideration, as described below, Units H and I were added to the analysis. Selection criteria required alternate units be located within the same subwatershed and be accessible from the same primary road system.

IV. Alternatives Considered But Not Analyzed in Detail

A. Units Dropped from Consideration

Proposed Unit E, in Section 21, T. 29 S., R. 7 W. was eliminated from consideration because: it overlapped portions of two other subwatersheds where it was recommended that regeneration harvest be deferred based on current levels of suitable habitat for northern spotted owls. Access would require costly renovation of private roads. Deferring harvest until the entire parcel can be managed effectively with other nearby lands would be more practical and efficient.

Proposed Unit D was modified to provide protection to rock balds adjacent to Dickerson Rocks, on private lands immediately to the north.

Proposed Unit G, in Section 15, T. 29 S., R. 7 W. was eliminated it provides dispersal habitat for wildlife following the harvest of adjoining parcels of privately-owned timberlands.

Proposed Unit I was dropped because of occupancy by marbled murrelets.

B. Roads Eliminated from Consideration for Decommissioning.

- An unnumbered spur road in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 11 is a ridge top spur that does not pose any water quality concerns and is needed for future management access.
- A road through proposed Unit F accessing private lands to the west is needed for management access by the adjacent landowner.

- A spur road near the center of the W½ of Section 11 is necessary for future management.
- A portion of Road No. 29-07-11.3 extending south past McNabb Pond is surfaced and is not affecting water quality.

C. Commercial Thinning or Density Management of the Stands Proposed for Regeneration Harvest

An intermediate harvest entry in the stands selected in this analysis, in the form of commercial thinning or density management was not considered because it would not meet the purpose of the proposed action which is regeneration harvest, nor would it meet management direction and silvicultural prescriptions for these stands for the following reasons:

- ROD/RMP management direction for the General Forest Management Area prescribes commercial thinning for stands less than 80 years of age, and regeneration harvest for stands older than 80 years of age (ROD/RMP, p. 151). As described in Chapter Three (p. 11), the General Forest Management Area stands proposed for harvest are, based on Forest Operations Inventory, approximately 145 years old and commercial thinning would not meet management direction.
- ROD/RMP (pp. 152-153) management direction for the Connectivity/Diversity Block allocation prescribes density management in stands less than 120 years of age. As described in Chapter Three (p. 12), the Connectivity/Diversity Block stands proposed for harvest in this analysis are in excess of 200 years old and density management in these stands would not meet ROD/RMP management direction. Regeneration harvest is also necessary to meet ROD/RMP management direction for a 150-year area control rotation and creation of an age class distribution for the land use allocation that represents 15-16 ten-year age classes (ROD/RMP, p. 153).

D. Commercial Thinning or Density Management of Young Stands in Place of Regeneration Harvest of Stands Selected for this Analysis

Commercial thinning and/or density management of young stands in lieu of regeneration harvest of the stands proposed in the action being analyzed was not considered because it would be inconsistent with the sustained yield assumptions of the ROD/RMP which declared an annual ASQ of 45 MMBF.

The assumption of sustainability is predicated on the anticipated accomplishment of certain silvicultural practices at various levels on the Matrix lands (ROD/RMP, p. 60). These include an average accomplishment annually of 1,190 acres of regeneration harvest in conjunction with 150 acres of commercial thinning and density management (ROD/RMP, p. 8).

If these practices were not implemented at the approximate levels anticipated in the ROD/RMP, the declared ASQ would not be sustainable. Restricting timber management solely to the practice of thinning while abandoning the practice of regeneration harvest in older stands would be inconsistent with management direction from the ROD/RMP.

V. Resources That Would Be Unaffected by Either Alternative

The following resources would not be affected by either of the alternatives, because they are absent from the project area: Areas of Critical Environmental Concern (ACEC); prime or unique farmlands; floodplains; wilderness; waste, solid or hazardous; and Wild and Scenic Rivers.

The proposed action is consistent with Executive Order 12898 which addresses Environmental Justice in minority and low-income populations. The BLM has not identified any potential impacts to low-income or minority populations, either internally or through the public involvement process, arising from this type of activity.

No Native American religious concerns were identified by the interdisciplinary team or through correspondence with local tribal governments.

As discussed in the Chapter 3, cultural resources would not be affected and no measurable increase or decrease in the introduction or rate of spread of noxious weeds is anticipated.

There are no energy transmission, transport facilities and/or rights-of-way in the immediate project area. No commercially usable energy sources are known to exist. As a consequence, no adverse effect on energy resources would be anticipated.

Chapter Three

THE AFFECTED ENVIRONMENT

This chapter summarizes the specific resources that are present or potentially present, and which could be affected by the proposed action. The description of the current conditions represents the cumulative effects of past land management activities undertaken by the BLM and private entities, because it inherently includes the effects of these past actions.

I. Timber Resources

At the Fifth-Field Watershed Scale

The Olalla-Lookingglass fifth-field watershed covers approximately 103,109 acres (WA, p. vii), which is equal to roughly 161 square miles. The South River Field Office, Roseburg District, BLM manages approximately 27 percent (27,390 acres) of the lands within the watershed (WA, p. vii). The forested lands within the watershed have been subject to: clearing and conversion to agricultural use; insect damage; stand-replacing wildfires; wind throw events; timber salvage; and regeneration harvest of mature and old-growth timber. These factors and others have shaped and influenced the vegetative cover and age-class distribution of forest stands within the watershed.

In 1997, digital interpretation of satellite imagery was used to characterize the existing vegetative conditions throughout the watershed (WA, pp. 26-28).

Approximately 21 percent (21,664 acres) of all ownership was non-forest land, primarily dedicated to residential and agricultural uses. Non-forested lands managed by the BLM totaled 246 acres, representing slightly less than one percent of all BLM lands in the watershed, and slightly more than one percent of all non-forest in the watershed. The remaining 79 percent (81,445 acres) of the watershed was coniferous forest land.

For all ownership, there were 28,583 acres of early seral forest, age 0-30 years, comprising nearly 46 percent of all forest land in the watershed (WA, p. 42). There were 16,432 acres of mid-seral forest stands, age 31-80 years, or approximately 29 percent of forested lands. Late-seral forest, age 80 years and older, made up the remaining 9,292 acres, representing 25 percent of all forested lands.

On BLM-managed lands there were: 8,768 acres of early seral forest representing 32 percent of BLM-managed forest and slightly less than 31 percent of all early seral forest in the watershed; 7,210 acres of mid-seral forest, representing 26 percent of BLM-managed forest land and slightly less than 44 percent of the total acreage of mid-seral forest in the watershed; and 11,167 acres of late-seral forest managed by the BLM, representing 41 percent of BLM-managed forest, and slightly less than 55 percent of all late-seral forest in the watershed (WA, p. 24).

Sixty-nine percent (18,887 acres) of all BLM-managed lands within the Olalla-Lookingglass fifth-field watershed are reserved or withdrawn from scheduled harvest (WA, p. 101). Within the Matrix, there are approximately 3,326 acres of early seral stands, 1,788 acres of mid-seral stands and 8,796 acres of late-seral stands available for timber management (WA, pp. 102-103).

At the Olalla Sixth-Field Subwatershed Scale

Within this subwatershed there are approximately 7,082 acres of forest land in all ownerships. In 1997, late-seral forest, defined as greater than 80 years old, in all ownerships comprised 1,862 acres, or 26 percent of all forested acres. From 1997 to 2004, harvest on private timber lands reduced the acreage of late-successional forest in the subwatershed to 1,729 acre. The BLM manages 1,991 acres or 28 percent of all forest land in the subwatershed. Based on Forest Operational Inventory (FOI), which represents ground verified conditions, there are 1,139 acres of late-successional forest on BLM-managed lands, or 66 percent of all late-successional forest in the subwatershed (WA, p. 23).

Within the Proposed Harvest Units

The Dickerson Heights project area is situated in the Grand Fir Zone, between the higher elevation moist hemlock forests and the Interior Valleys and Foothills Zone (Hickman 1994). Douglas-fir is the dominant species. Hardwoods are principally Pacific madrone with lesser numbers of big-leaf maple, and oak species. Ponderosa pine and incense-cedar are principal conifer associates. Grand fir is generally absent other than as a scattered understory component.

Proposed Units C, D, F and H are located within the General Forest Management Area in predominantly single-story stands approximately 145 years of age.

Proposed Unit A is located within Connectivity/Diversity Block No. 2 which contains 292 acres. The dominant stand component is a Douglas-fir overstory more than 200 years of age, with a 145 year old secondary canopy, generally sparse understory, and very little vertical stratification of the canopy. At present, 228 acres or 78 percent of the Block is late-successional forest.

Proposed units are generally situated near ridge tops, and with the exception of Unit A, on predominantly southern and western aspects. As a consequence, understory vegetation is generally sparse and primarily poison-oak, except on more northerly aspects and in moister areas near Riparian Reserves where sword fern, hazel and ocean spray are often present. Conifer seedlings and saplings are few and generally consist of suppressed grand fir and incense-cedar.

The project area is located within the range of Port-Orford-cedar as identified on Map 3 of the *Final Supplemental Environmental Impact Statement for Management of Port-Orford-Cedar in Southwest Oregon*. No Port-Orford-cedar is known to exist in the Olalla sixth-field subwatershed, and none was identified in or downstream of the proposed units or haul route. As a consequence, no implementation of any Port-Orford-cedar management practices is required.

Figure 2-1 is generally representative of forest stand conditions throughout the project area.

Figure 2-1 – General Forest Stand Conditions



II. Wildlife

Based upon geographic range, there are 24 Special Status Species that might be expected in the Dickerson Heights project area. Special status species include threatened or endangered species under the Endangered Species Act of 1973, as amended, candidate or proposed species for listing under the Act, and Bureau Sensitive or Bureau Assessment species designated under BLM Manual 6840 policy for Oregon/Washington. In addition, there is one additional species managed solely under Survey and Manage provisions that is suspected in the project area based on its range and the presence of suitable habitat.

As indicated in Appendix C, the proposed timber harvest would not affect 14 species because the project area is outside the species range, habitat for the species is not present, or species habitat is not present within proposed units. These 14 species will not be discussed further in this analysis. The remaining ten species are addressed below.

For the purpose of analysis, acres of late-successional forest habitat present in the Olalla sixth-field subwatershed are those identified as 80 years or greater in age in Table 5 – 1997 Age Class Distribution Data in the Olalla-Lookingglass Watershed Analysis (WA, p. 23).

A. Threatened and Endangered

The forest stands proposed for regeneration harvest are considered suitable habitat for two threatened animal species, the northern spotted owl (*Strix occidentalis caurina*) and the marbled murrelet (*Brachyramphus marmoratus*).

The Federally endangered Fender's blue butterfly (*Icaricia icarioides fenderi*) is not documented on the Roseburg District but is briefly discussed because Kincaid's lupine, the primary food for caterpillars of the species, is present adjacent to proposed Unit F.

Northern Spotted Owl (*Strix occidentalis caurina*)

The forest stands proposed for regeneration harvest are representative of nesting, roosting and foraging habitat for the northern spotted owl. This habitat is generally referred to as "suitable" habitat and is characterized by late-successional forest with 60 to 80 percent canopy closure and multiple canopy layers. Large conifers with large diameter limbs, crown deformities, broken tops, or bole cavities provide potential nest sites (Forsman 1984; Hershey 1995; Forsman and Giese 1997). In the Olalla sixth-field subwatershed, there are 1,139 acres of land under BLM management that provide suitable habitat.

Based on surveys conducted in 1991 and 1992, the most current information available, two home ranges overlap the proposed project area. Other occupied owl ranges are at distances of one-and-a-half to three miles away.

A home range represents the approximate area used daily by owls during the breeding season (Johnsgard 1990). In the Klamath Province, a home range is roughly 3,400 acres in size and generally represented as a 1.3-mile radius circle centered on the activity center. Activity centers are areas around a nest site where paired owls or single territorial owls are most active.

The Bushnell Creek home range is occupied by a breeding owl pair. There are 926 acres of suitable habitat on BLM-managed lands accounting for slightly more than 27 percent of the area in the entire home range. A home range centered in the North Fork Byron Creek drainage was once inhabited by a single adult, but has been unoccupied for more than three years. There has never been evidence of occupancy by a breeding owl pair. There are 911 acres of suitable habitat on BLM-managed lands accounting for slightly less than 27 percent of the area in the entire home range.

Proposed Units C, D, and F are located toward the western margins of the North Fork Byron Creek home range. No proposed units are located within the Bushnell Creek range, though proposed Unit D abuts the outer edge of the range. No units are within one-quarter of a mile of known activity centers, a distance employed to mitigate effects of habitat modification or removal during breeding season. There is no designated critical habitat in the project area.

Marbled Murrelet

Marbled murrelets feed in the ocean waters off the Pacific Northwest coast and nest in forests in the coast range and interior valleys west of the Cascade Range, generally within 50 miles of the ocean. The project area is located in the Marbled Murrelet Management Zone (Zone 2), which extends 35 to 50 miles inland from the coast.

Characteristics of suitable murrelet nesting habitat are similar to that used by the northern spotted owl. In contrast, though, murrelets are not as dependent on mature and old-growth forest and may nest in residual old-growth trees situated amid younger forest stands. Nests are generally located in well-protected areas in tree canopies on large, individual branches; clumps of branches covered with moss and/or lichens; on mistletoe brooms; or on abandoned animal nests (Mack et al. 2003).

Suitable nesting habitat is present in the Olalla sixth-field subwatershed at levels identical to those for the northern spotted owl, and is present within the proposed timber sale units. There is no designated critical habitat in the project area.

Surveys in 1993-1994 and 1998-1999 did not detect any murrelets in the area of the proposed timber harvest. Additional surveys conducted in 2004-2005 detected a murrelet flying below the canopy in Unit I, indicating occupancy. No occupancy was detected in any other proposed unit. The occupied site is approximately 230 yards from the road system and at least three-quarters of a mile from any other proposed units.

Fender's Blue Butterfly

The Fender's blue butterfly is a small bright blue butterfly strongly associated with Kincaid's lupine which is the primary food for the caterpillars of the species. The Willamette Valley is the expected range of the butterfly with no historical record south of Eugene, Oregon (Schulz et al. 2003), although the historic range is not really known (Federal Register 2000).

A population of Kincaid's lupine was found adjacent to proposed Unit F during botanical surveys in the spring of 2003. The lupine population was examined for the presence of Fender's blue caterpillars in May of 2004 and 2005, but none were identified.

The lupine population adjacent to proposed Unit F would be protected from any disturbance, and no effects to the butterfly or potential habitat would be expected. Consequently, no further discussion is necessary in this analysis.

B. Bureau Special Status Species

Northern Goshawk

The Roseburg District is on the periphery of the normal breeding range for the northern goshawk (*Accipiter gentilis*), but during migration and non-breeding periods goshawks have been observed throughout the state of Oregon.

Goshawks typically nest in mature to old-growth forests (Reynolds, R.T. 1982).with 60 to 90 percent canopy closure that provides a cool environment (Squires and Reynolds 1997). Nest territories typically contain more than one nest site, most often in larger trees on north slopes, near water.

The size of goshawks nesting territories is variable. Nesting has been occasionally documented in forest stands 25 acres in size, with frequent occupancy documented in forest stands greater than 49 acres in size (Desimone and Hays 2004). Daw and DeStefano (2001) describe the range of stand size as 7 to 927 acres, with an average size of 250 acres. They observed that, however, that stand quality in 30 and 60 acre circles around nest site is more important than stand size.

Although some of the proposed timber sale units are less than 25 acres in size, all possess habitat characteristics suitable for nesting. Surveys were conducted in 1998 and 1999, and again in 2005 but no goshawks were detected. Given these results, the probability that goshawks are present in the project area is considered low.

Purple Martin

Purple martins (*Progne subis*) are secondary cavity nesters, usually in old woodpecker holes. They prefer early-seral habitat with snags and may inhabit burned or logged areas if snags are present (Brown 1997). Some proximity to water bodies is necessary (Marshall et al. 1996). They are also known to use natural cavities in forest stands (Copley et al. 1999). Williams (2001) found that purple martins select clusters of large snags where large tree canopy cover is less than 10 to 30 percent within 300 feet of nest sites.

Two purple martin colonies have been identified approximately 3-4 miles from proposed Unit D in the adjacent six-field subwatershed, occupying snags that are grouped and out in the open (Herziger 2002). Purple martins have been observed feeding on insects above the forest canopy of the forest stands that comprise the proposed timber sale units. The lack of large open areas around clusters of large diameter snags, however, indicates that there would be a low probability of any purple martin colonies being present within any of the proposed units.

Fringed Myotis Bat

The fringed myotis (*Myotis thysanodes*) bat is generally found west of the Cascades in Oregon in forested or riparian areas (Csuti et al. 1997). The species is known to use tall snags in early stages of decay, and crevices beneath the loose bark of trees for single or multiple day roosts (Weller and Zabel 2001). Nursing colonies are only documented in caves, mines or buildings (Csuti et al. 1997).

Radio telemetry studies in the South River Resource Area found specimens roosting under the bark of large snags and live trees, and in crevices in rock outcrops under forest canopy (Cross and Waldien 1995), but species presence in the project area has not been affirmatively documented.

Pallid Bat

The pallid bat (*Antrozous pallidus pacificus*) is usually associated with the drier interior valleys west of the Cascade Range (Verts and Carraway 1998). It is known to roost in tree cavities, rock crevices, buildings, caves and mines. The species can be found in brushy areas, rocky terrain, edges of conifer and deciduous forest and woodlands, and in open farmland (Verts and Carraway 1998).

The pallid bat feeds over bodies of water and has been located under bridges in the South River Resource Area. It has not been found in forest habitats adjacent to ponds in sampling conducted by Cross and Waldien (1995). Overall there is a low probability this bat species is present in the project area.

Townsend's Big-eared Bat

The Townsend's big-eared bat (*Corynorhinus townsendii*) forages in the forest canopy (Wunder and Carey 1996). The species is known to use caves, bridges, snag cavities and crevices under the bark of large trees for roosting. Caves, mine shafts and adits, and buildings provide areas for raising young (maternity areas) and for over-wintering (hibernaculum), as well as roosting areas (reviewed in Pierson et al. 1999; Fellers and Pierson 2002).

Townsend's big-eared bats have been documented in abandoned mines in the South River Resource Area, but there are no caves or mines in the project area. Some small natural cavities are present in the rocky conglomerate outcrops of Dickerson Rock about a quarter of a mile northwest of proposed Unit D. These are short dead end openings suited for roosting during night foraging, rather than as maternity roosts or hibernaculum. Overall, there is a low probability that Townsend's big-eared bats are present in the proposed harvest units.

Chace Sideband Snail

The Chace sideband snail (*Monadenia chaceana*) has a range that includes the Klamath physiographic province and the adjacent southwestern portion of the Oregon Cascades Province (Duncan et al. 2003). It is known from a limited number of sites in Shasta, Siskiyou, and Trinity counties in northern California and Douglas, Jackson, and Josephine counties in southern Oregon.

The species utilizes talus, rocky soils and cobble habitat in close association with late-successional forest. Habitat patches are present in proposed Units C, D and H. Surveys of these areas located Chace sideband snails at three sites. Two sites are located in the southeastern portion of proposed Unit C, below BLM Road No. 29-7-3.0, while the third is in a Riparian Reserve adjacent to the southwest boundary proposed Unit H.

Oregon Shoulderband Snail

The Oregon Shoulderband (*Helminthoglypta hertleini*) has been found at various locations throughout the Roseburg District in basalt talus, under rocks and woody debris in moist conifer forests and shrubby riparian corridors (Weasma 1999). The species is not dependent on late-successional and old-growth forest, as more than half of all documented sites are in forest stands less than 80 years of age (USDA, USDI 2003).

Habitat patches are present in proposed Units C, D and H. Two shoulderband snail sites were identified in surveys. One is in the road right-of-way near the south end of proposed Unit C, in an area where rip-rap was used to armor the road cut bank along BLM Road No. 29-7-3.0. The second site is in piles of rock fragments in a quarry site located at the south end of proposed Unit H.

C. Special Attention (Survey & Manage) Species

There were three vertebrate species and seven mollusk species managed under the Survey and Manage standards and guidelines documented or suspected on the Roseburg District at the time of the implementation of the 2001 *Record of Decision (S&M ROD) and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl*.

Two vertebrate species, the Del Norte salamander (*Plethodon elongatus*) and Oregon red tree vole (*Arborimus longicaudus*), were removed from protection and management by the 2001 and 2003 Annual Species Reviews (ASR), a process provided for in the 2001 S&M ROD.

The blue-grey taildropper (*Prophyaon coeruleum*) was removed by the 2001 S&M ROD, with removal of the Oregon shoulderband snail (*Helminthoglypta hertleini*) coming in the 2002 ASR, and the Oregon megomphix snail (*Megomphix hemphilli*) in the 2003 ASR. In the 2003 *Survey Protocol for S&M Terrestrial Mollusk Species v3.0*, it was determined that the evening field slug (*Deroceras hesperium*) was not likely to occupy forest lands on the Roseburg District.

The three wildlife species remaining on the Roseburg District Survey and Manage list as of December 29, 2003, were the Siskiyou or Chace sideband snail (*Monadenia chaceana*), the Crater Lake tightcoil snail (*Pristiloma arcticum crateris*), and the great gray owl (*Strix nebulosa*).

The habitat requirements for the Chace sideband snail are described in the previous discussion of Bureau Sensitive species. As described in Appendix C, the project area is outside of the range of the tightcoil snail.

Suitable habitat for the great gray owl is characterized by: (1) large diameter nest trees, (2) forest canopy providing roosting cover, and (3) proximity [within 200m] to openings ten acres or larger in size that could be used as foraging areas (USDA, USDI 2004d). The survey and manage protocols (p. 14) do not suggest pre-disturbance surveys adjacent to man-made openings. A 26 acre natural opening was identified northwest of proposed Unit H that would be suitable as foraging habitat.

D. Other Wildlife Species

Red-tailed hawk

The red-tailed hawk (*Buteo jamaicensis*) is a common and widespread raptor in North America. In western states it uses open areas with patches of trees (Preston and Beane 1993). Red-tailed hawks often nest near the edge of forest stands. Nesting near the edge provides roost sites and an excellent view of the area beyond the forest edge where the birds forage. Because red-tailed hawk females show high fidelity to the breeding site (Preston and Beane 1993) they tend to return to old nest sites year after year.

A red-tailed hawk nest was located in proposed Unit H during the 2004 breeding season, within 50 feet of the lower stand edge facing an open area that had been previously harvested. In 2005 the pair nested within 300 feet of the 2004 nest location.

III. Botany

Based upon geographic range, there are 69 Special Status Species that might be expected in the Dickerson Heights project area. All species whose ranges overlap the Roseburg District and which were previously managed under Survey and Manage protocols were assigned to the Bureau's Special Status Species Program as Sensitive, Assessment or Tracking species.

Surveys were conducted for all Bureau Special Status Species for which it is considered practical to do so. As indicated in Appendix D, the proposed timber harvest would not affect 59 species because habitat for the species is not present, or surveys indicate that the species are not present.

Of the remaining ten species, two were located and are addressed below. Surveys for eight rare species of fungi are not considered practical, as discussed on page 20.

A. Threatened and Endangered

Kincaid's lupine (*Lupinus sulfureus* ssp. *Kincaidii*) is listed under the Endangered Species Act as a threatened species. It is an herbaceous perennial native to the prairies of the Willamette Valley and southwestern Washington. Species' vigor appears to be correlated with canopy openness (Menke, C.A. and T. Kaye 2003). The lupine has been found in openings, meadow gaps, and along forest fringes in Douglas County, Oregon. A population of Kincaid's lupine, occupying an area approximately one-tenth of an acre in size, was located east of proposed Unit F, in Section 11, T. 29 S., R. 7 W.

B. Bureau Special Status Species

Vascular Plants

Tall bugbane (*Cimicifuga elata*) is a perennial that occupies temperate forests, generally on north-facing slopes, west of the Cascade Mountains in Oregon, Washington, and British Columbia. Its association with deciduous trees suggests that it may respond to the creation of canopy gaps in coniferous forests (Kaye, T. and M. Kirkland 1993.)

It has been identified at five locations on BLM-managed lands in the South River Resource Area that include burned areas, recently harvested units, and mature forest. It is present in proposed Unit A, in a headwall near the center of the unit, above BLM Road No. 29-7-3.0, extending approximately 500 feet upslope in an area sparsely populated with larger trees.

Fungi

Four Bureau Sensitive species (*Dermocybe humboldtensis*, *Phaeocollybia californica*, *P. olivacea*, and *Ramaria spinulasa* var. *diminutiva*) have been documented in the South River Resource Area. Four other species (*Arcangeliella camphorata*, *P. gregaria*, *P. oregonensis*, and *Rhizopogon chamaleontinus*) are suspected based on habitat and host species present. All eight species are primarily associated with trees of the *Pinaceae* family, particularly Douglas-fir and western hemlock. Important habitat components include: dead, down wood; standing dead trees; live old-growth trees; many species of underbrush; a broad range of microhabitats; and for many, a well-distributed network of late-successional forest with moist and shaded conditions (USDA, USDI 2004c p. 148).

Most fungi species listed under the Special Status Species Program are highly isolated in their occurrence. Most produce short-lived, ephemeral sporocarps or fruiting structures that are seasonal in occurrence, and annually variable (USDA, USDI 2004c p. 148). Richardson (1970) estimated that sampling every two weeks would fail to detect about 50 percent of macrofungal species fruiting in a given season. In another study by O'Dell (1999), less than ten percent of species were detected in each of two consecutive years at any one of eight sites.

With the exception of one *Dermocybe humboldtensis* site in the vicinity of Irwin Rocks in Section 19, T. 28 S., R. 7 W., all documented occurrences of the four known species are located in the Myrtle Creek fifth-field watershed. These areas are located approximately five miles northwest and 15-20 miles east northeast of the Dickerson Heights project area, respectively.

IV. Fisheries and Aquatic Resources

A. Aquatic Habitat Conditions

The project area is in upland stands with a few intermittent streams and one perennial stream reach in proximity to proposed units. The haul route is predominantly a ridge-top system except where BLM Road No. 29-7-3.0 descends to the valley floor. This lower segment is on a flat gradient within a broad floodplain where it generally parallels the creek for approximately one-half mile before joining Douglas County Highway 38.

Site visits to McNabb Creek, an unnamed tributary to Olalla Creek, and another unnamed stream below proposed Unit A in Section 9, T. 29 S., R. 7 W. were conducted in July of 2004 to assess aquatic habitat conditions and determine fish presence.

Substrate

The availability of quality spawning substrate is important to fish productivity. Ideal spawning habitat for salmonids is provided by gravel and small cobble substrates 1.3 to 10.2 cm in diameter (Bell 1986) that are relatively free of embedded fine sediment.

During egg incubation, embryo development and emergence of larval salmonids, sediment in excess of 15 percent of total substrate can substantially reduce survival (Bjornn and Reiser 1991). Streams surveyed in the project area were dominated by gravel, with some larger cobble. Fine sediments accounted for less than ten percent of the total substrate and embeddedness was typically low. Areas of scoured and eroded stream banks are the probable contributors of fine sediment.

Large Woody Debris

Large woody debris is important for: formation of deep scour pools; creation of off-channel habitat; and retention of gravel substrate (Bilby and Ward 1989). Scour pools and off-channel habitat provide refuge for salmonids during high-flow events and cool water sources during low-flow months (Swanston 1991).

Streams in the project area have few pieces and low volumes of large woody debris, and no large key pieces, defined as greater than 24 inches in diameter and 33 feet in length (Foster et al 2001). Most in-stream wood consists of pieces about four inches in diameter or less in small debris jams that have captured and collected some gravels in some small scour pools.

Pool quality

Pools are important as rearing habitat for juvenile fish. During low-flow months when increased stream temperatures can stress fish, pools provide reservoirs of cooler water. During high-flow events, off-channel pools provide refuge. Salmonids are typically

found in greater numbers and larger sizes where deeper pool habitat is present (Rosenfeld et al. 2000). Very few pools are present in sections of streams surveyed. These were generally less than a half-foot in depth and less than four square feet in area, and inadequate to support fish during low-flow months. No off-channel pools or rearing habitat are present.

Habitat access

Insufficient stream flow is the greatest factor limiting migratory access to streams in the project area. A lesser factor is the culvert located beneath the main haul route (Road No. 29-7-3.0) in Section of T. 29 S., R. 7 W. that has almost a two foot outfall into a shallow pool. During higher winter and early-spring flows it may be accessible to adult coho salmon, but is impassable to the upstream migration of juvenile fish at all times.

B. Special Status Species

Salmonid species present in the Olalla-Lookingglass watershed include winter-run Oregon Coast steelhead trout and resident rainbow trout (*Oncorhynchus mykiss*), resident and sea-run Coastal cutthroat trout (*O. clarki clarki*), and the Oregon Coast coho salmon (*O. kisutch*).

Threatened species

The National Marine Fisheries Service originally designated the Oregon Coast coho salmon as a threatened species in 1998 (Federal Register 1998a Vol. 63/No. 153). In February 2004, the 9th Circuit Court of Appeals upheld a 2001 ruling in the U.S. District Court for the District of Oregon that rescinded the listing of the species. The species was proposed for re-listing as a threatened species (Federal Register 2004), but on January 18, 2006, a decision was issued that the species did not warrant listing under the Endangered Species Act (Federal Register 2006).

Coho salmon are found in Olalla Creek at distances of approximately one-half to two miles downstream of individual units proposed for timber harvest.

The Oregon Department of Fish and Wildlife identifies McNabb Creek as a coho-bearing stream. McNabb Creek is next drainage east, nearly one-quarter mile down slope of Road No. 29-7-3.0 located on the ridge top in Section 2, T. 29 S., R. 7 W. In all other respects it is removed from any potential effects from the proposed timber sale. Site inspections indicate the creek is dry in summer months when juveniles would be rearing.

During higher flows in autumn and spring, the potential exists that they could make their way upstream to spawn.

Candidate-threatened Species

The Oregon Coast steelhead trout was proposed as a candidate for designation as a threatened species in 1998 (Federal Register 1998b Vol. 63/No. 53). The status of the species has since been downgraded to that of a species of concern.

Distribution of steelhead trout closely parallels that of coho salmon. They can be found in Olalla Creek and could potentially enter the unnamed stream channel along the lower extent of the proposed haul route, but only during higher flows in the winter months.

The Umpqua chub (*Oregonichthys kalawatseti*) is a Bureau Sensitive Species. Umpqua chub is restricted to the main stem of the Umpqua River and is not present in any of the immediate project areas. It has not been documented in Olalla Creek.

The Pacific lamprey (*Lampetra tridentate*) is a Bureau Assessment Species. It can be found in small 3rd order or larger tributaries of the Umpqua River. Its distribution is currently unknown, but is suspected to mirror distribution of coho salmon.

C. Essential Fish Habitat

Stream habitat currently or historically accessible to Chinook and coho salmon is considered Essential Fish Habitat. Essential Fish Habitat is designated for fish species of commercial importance under the Magnuson-Stevens Fishery Conservation and Management Act of 1996 (Federal Register 2002, Vol. 67/No. 12). Olalla Creek is the only designated Essential Fish Habitat in the project vicinity. At its closest point it is a minimum of one-half mile from any proposed harvest unit.

V. Water Resources

A. Stream Flow

The watershed has a climate characterized by cool, wet winters and warm, dry summers. The majority of precipitation is in the form of rain, but some snow is likely at the highest elevations of the watershed in the winter months. The volume of stream flow closely parallels the timing of precipitation. Peak stream flows occur from November to March, with the lowest base flows occurring from July to October. Small 1st and 2nd order headwater streams are generally intermittent with no surface flow during the dry season.

Small, intermittent streams are located along the west and southeast sides of Unit A; south side of Unit D; west side of Unit F; and south side of Unit H. A small stream on the southwest edge of Unit C becomes perennial along the lower half of the unit. An intermittent tributary and a small wet area, less than one acre in size, extend a short way into the unit.

Peak Flows and the Timber Harvest

In the Transient Snow Zone (TSZ) a potential for higher than normal peak flows exists in association with timber harvest (Harr and Coffin, 1992) where creation of openings may allow abnormal snow pack accumulation. If subjected to a warm rain-on-snow event, the snow pack can melt quickly and create higher than normal flows. The largest effect, however, is on smaller peak flows at recurrence intervals of less than one year (i.e. less than bankfull event), whereas larger flows are dominated by the rainfall component of a storm rather than the snowmelt (Harr 1976, Harr 1986, Zeimer 1998).

In Southwestern Oregon, the lower extent of the TSZ is between 2,000 and 3,000 feet (USDI 1998, Greenberg and Welch 1998). Proposed harvest units are between 960 feet and 1620 feet and would not be subject to abnormal snow accumulations or higher peak flows associated with rain-on-snow events.

Peak Flows and Roads

Midslope roads may increase peak flows by intercepting surface and subsurface water, effectively acting as an extension of the stream network resulting in: rapid diversion of water into streams; reduction of storage time in the watershed; and increases in peak flows (Beschta 1978, Wemple et al. 1996). The access route runs from the valley bottom to the ridge line along a short, steep midslope section without stream crossings. The balance of the route is ridge top and does not intercept any subsurface flow.

B. Water Quality

Water quality standards are established by the Oregon Department of Environmental Quality. Water bodies that do not meet standards are placed on the 303(d) list as Water Quality Limited (ODEQ 2002). The water quality parameters most likely to be influenced by timber harvest and hauling are sedimentation and stream temperature. No streams in the project area are currently listed for either of these factors.

Sediment

MacDonald (1991, p. 98) found that increased sediment load is often the most adverse effect from past forest management activities. Excess fine sediment can reduce the quality of water used for domestic purposes; cause detrimental changes to the stream morphology; impair the quality of aquatic habitat; and adversely affect aquatic flora and fauna (Castro and Reckendorf 1995).

Studies by Reid (1981), Reid and Dunne (1984), and others have shown that forest roads can be a major contributor of fine sediment. Sediment may be derived from erosion of unsurfaced roads and down-cutting of ditches, but road drainage must be connected to stream channels via stream crossings in order to deliver sediment. Landslides can occur and cause sedimentation when drainage is concentrated on unstable or erosive slopes.

As previously described the proposed haul route parallels an unnamed 3rd order stream for approximately one-half mile and crosses the stream approximately one-third mile from the junction of the road with Douglas County Highway 38. There is no ditch line along this stretch of the road, and no concentration of run-off at the stream crossing.

Ditches along the midslope portion of the haul route are revegetated, and several cross drain culverts are plugged. There is little evidence of road erosion as run-off appears to drain evenly off the road onto the adjacent slope. The remainder of the proposed haul route is on or near ridge tops with potential connections to the stream network limited to a few small, intermittent 1st-order streams largely disconnected from the drainage system.

Stream Temperature

Harvest directly adjacent to stream channels can reduce shade resulting in increased solar heating and increased stream temperatures. Unit layout would incorporate full Riparian Reserves of at least 160 feet in width, as described on page 3 of this assessment. According to FEMAT (1993, p V-28), “. . . riparian buffers of 100 feet or more have been reported to provide as much shade as undisturbed late successional/old-growth forests. . .”. Consequently, effects of timber harvest on streamside shading are not considered likely and will not be discussed further in this analysis.

C. Water Rights

There are no registered surface water rights for domestic use within one mile downstream of any of the project area that could be affected by the proposed harvest of timber.

VI. Soils

Excepting proposed Unit D, soils in the project area are primarily derived from weathered sandstone. In proposed Unit D the soils are gravel and cobble derived from conglomerate materials. The competent bedrock has moderate to high strength, with low weathering and erosion potential. Soils are primarily gravelly loam with low to very low erosion potential, but moderately sensitive (Category 2) to the effects of broadcast burning based on slope steepness.

There is a slumped area proposed Unit C below Road No. 29-7-15.2, slightly more than an acre in size, the result of concentration of road run-off onto road fill, rather than one of slope instability. The southern third of proposed Unit C and an area near the lower center portion of Unit H exhibit signs of deep-seated slope movement that is characteristic of slow and gradual erosional processes.

No evident signs of active erosion or slope instability such as hummocky terrain, areas with leaning trees, springs, deeply incised draws, and deep fine-grained soils are present. Sporadic occurrence of leaning trees are the result of micro-site soil conditions rather than slope instability. The large, wide benches in proposed Unit C are likely the result of ancient, deep-seated block movement in the hard bedrock, induced by large magnitude earthquakes. Slow movement of these slopes will continue whether or not timber is harvested.

VII. Air Quality/Rural Interface

The proposed timber sale area is approximately 15 miles southwest of the City of Roseburg, a Designated Area for smoke management purposes. The City of Winston is located approximately six miles northeast of the project area and is included in the Designated Area.

There are no lands zoned as R-5 for 1-5 acre residential properties located within ¼-mile of any proposed units. As a consequence, there are no special management considerations required for urban/rural interface, and it will not be discussed further in this analysis.

VIII. Cultural/Historical Resources

Literature searches and pedestrian surveys have not identified any cultural or historical resources which could be affected. As a consequence, they will not be discussed further in this analysis.

IX. Recreation/Visual Resource Management

There are no unique recreational resources or planned developments in the project area. Recreational activities are limited to dispersed-use, similar to opportunities present throughout the South River Resource Area. These activities may include wildlife observation, hunting, and the gathering of greenery and other forest commodities. The use of “Off-Highway Vehicles” is restricted to the use of existing roads and trails.

Lands in the project area are classified as VRM IV. Under this designation there are no specific visual constraints (ROD/RMP, p. 53).

Neither of these resources would be affected by the proposed timber harvest, and they will not be discussed further in this analysis.

X. Noxious Weeds

An inventory of noxious weed species is ongoing on the Roseburg District. Twenty-two species have been positively identified on BLM-managed lands in the South River Resource Area, with approximately forty other species suspected based on their presence on adjacent lands.

Comprehensive weed inventories have been completed for each proposed unit, and for the entire haul route. Scotch Broom and Himalayan blackberry are the most common weeds, particularly along roadsides. Active treatment of Scotch broom is ongoing. Canada thistle and Malta starthistle are common in recently harvested units in the area. Pre-project surveys and risk assessments are planned to determine the need for treatment to prevent further weed spread.

Implementation of the *Integrated Weed Control Plan* is ongoing in an effort to prevent or reduce rates of spread of weed populations. It includes aggressive eradication of target species in areas where management activities are planned, and implementation of practices aimed at reducing spread of weeds to uninfected areas or establishing favorable conditions for weed germination.

Management practices aimed at reducing the potential for spread or establishing conditions favorable for weed germination would include: required steam cleaning or pressure washing of heavy equipment used in logging and road construction to remove soils and other materials that could transport weed seed or root fragments; scheduling projects in uninfested areas prior to initiating work in infested areas; seeding and mulching soil with native seed; or revegetating with indigenous plant species where natural regeneration is unlikely to prevent weed establishment. As a consequence, negligible changes in noxious weed populations are under either alternative, and no further discussion of noxious weeds is necessary in this analysis.

Chapter Four

ENVIRONMENTAL CONSEQUENCES

This chapter discusses specific resource values that may be affected, the nature of the short-term and long-term effects, including those that are direct, indirect and cumulative, that may result from implementation of the alternatives. This discussion is organized by individual resources. It addresses the interaction between the effects of the proposed regeneration harvest with the current environment, describing effects that might be expected, how they might occur, and the incremental effects that could result. It does not address effects of a negligible or discountable nature, focusing instead on direct and indirect effects including those with a realistic potential for cumulative effects.

An analysis of the cumulative impacts of the proposed action is presented for those resources considered likely to be affected. The Council on Environmental Quality (CEQ) provided guidance on June 24, 2005, as to the extent to which agencies of the Federal government are required to analyze the environmental effects of past actions when describing the cumulative environmental effect of a proposed action in accordance with Section 102 of the National Environmental Policy Act (NEPA). CEQ noted the “[e]nvironmental analysis required under NEPA is forward-looking,” and “[r]eview of past actions is only required to the extent that this review informs agency decisionmaking regarding the proposed action.” This is because a description of the current state of the environment inherently includes effects of past actions. Guidance further states that “[g]enerally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historic details of individual past actions.”

The cumulative effects of the BLM timber management program in western Oregon have been described and analyzed in the PRMP/EIS and FSEIS, incorporated herein by reference.

For effects on the age class distribution of forest stands analysis is considered most appropriate at the scale of the Olalla-Lookingglass fifth-field watershed. Measuring effects on wildlife in the project area, fish, aquatic habitat, and water resources is considered more appropriate at the scale of the Olalla sixth-field subwatershed as it encompasses all of the proposed harvest units and the transportation system accessing the project area.

I. Timber Resources

A. Alternative One - No Action

Under this alternative, regeneration harvest of the proposed units would not occur at this time. As noted on page 4, this would not constitute the reallocation of the lands to non-commodity uses. Harvest of the stands would simply be deferred to a future date and other stands in the Matrix lands of the South River Resource Area would be analyzed for regeneration harvest.

This alternative would not meet the objectives for regeneration harvest described on page 2 of this document, because it would not meet the ROD/RMP objective of producing a sustainable timber supply and other forest commodities from the Matrix lands, nor meet management direction to implement silvicultural practices designed to provide a declared objective of an annual ASQ of 45 MMBF.

Stands proposed for harvest in the General Forest Management Area are over 140 years of age, beyond the Culmination of Mean Annual Increment at which regeneration harvest is indicated (ROD/RMP, p. 151). Deferring harvest would not support the sustained yield assumptions of the ROD/RMP (p. 60) predicated on implementing silvicultural practices that include an average annual regeneration harvest of 1,190 acres on the District.

The proposed unit located in a Connectivity/Diversity Block is over 150 years old. Deferring harvest would be inconsistent with the sustained yield assumptions of the ROD/RMP, management direction for regeneration harvest on a 150-year area control rotation, and the objective of developing and maintaining 15-16 ten-year age classes across the entire land use allocation (ROD/RMP, p. 153). These objectives can only be achieved through scheduled regeneration harvest.

Height growth and crown expansion of individual trees has slowed or ceased even as photosynthesis and diameter growth continue. The decline in canopy expansion will eventually leave individual trees more susceptible to attack from insects and disease, and more prone to wind damage.

Canopy gaps and openings will periodically occur as individual trees or small groups of trees die. Over time, overstory and understory trees will reoccupy the gaps and openings. In time some understory trees would become suppressed and die. Forest fuels comprised of branches, needles, and dead and suppressed trees would accumulate and pose an increased risk of fire (Oliver and Larson 1996). A fire occurring under conditions of drought and extreme fire weather could result in catastrophic stand replacement.

B Alternative Two - Proposed Action

This alternative would meet the objectives described in Chapter One. Silvicultural treatments and practices would be implemented to achieve a sustainable annual ASQ of 45 MMBF of timber and other forest commodities in contribution to the local economy, consistent with the requirements of the O&C Act, management direction from the ROD/RMP, and socio-economic assumptions of the PRMP/EIS.

In the General Forest Management Area, regeneration harvest of stands past Culmination of Mean Annual Increment would be followed by reforestation and management actions designed to provide a high level of sustainable supply of timber consistent with the silvicultural assumptions that form the basis of the Roseburg District timber management program and in keeping with management direction from the ROD/RMP (p. 61).

Proposed Unit A is located in Connectivity/Diversity Block 2 and has an overstory more than 200 years of age, with a 140-to-150 year old secondary canopy. Harvest would be consistent with management direction to schedule regeneration harvest in late-successional stands, and manage available forest land within each block on a 150-year area control rotation (ROD/RMP, p. 34). It would be the second regeneration harvest authorized in the Connectivity/Diversity Block land use allocation in the second decade of the ROD/RMP, representing about two and a half percent of the decadal allowance for regeneration harvest in the land use allocation.

Harvest would reduce by approximately 45 acres the amount of late-successional forest in Block 2, leaving approximately 187 acres or 64 percent of the Block as late-successional forest. This would be consistent with management direction to maintain 25 to 30 percent of individual Blocks in late-successional forest at any point in time (ROD/RMP, p. 38).

Regeneration harvest in the Block would also meet the objectives of providing ecotypic richness and diversity; habitat connectivity for old-growth dependent and associated species within the General Forest Management Area; and a moderately high level of sustained timber production (ROD/RMP, p. 151).

The risk of spreading Port-Orford-cedar root disease was evaluated using the risk key contained in the *Record of Decision and Resource Management Plan Amendment for Management of Port-Orford-Cedar in Southwest Oregon, Coos Bay, Medford, and Roseburg Districts* (USDI, BLM 2004a p. 33). There is no Port-Orford-cedar within any proposed unit or along the haul route. No 7th field watersheds (drainages) in which the project area is within the range of Port-Orford-cedar. As a consequence, no special management practices are required.

C. Cumulative Effects

BLM-Managed Lands on the Roseburg District

Since implementation of the ROD/RMP in 1995, regeneration harvest in the Matrix allocations has been substantially less than anticipated in the ROD/RMP (p. 8) which projected 1,190 acres annually on a decadal basis. Accomplishments are reported in the *Roseburg District Annual Program Summary (APS) and Monitoring Report*, including those for the timber management program.

As illustrated in the 2004 APS (USDI, BLM 2004b), for the period of Fiscal Year (FY) 1995 through FY 2004, only 3,130 acres of regeneration harvest have been authorized (2004 APS, (Table 17, p. 33). No regeneration harvest sales were offered in FY 2005. The 3,130 acres authorized represents approximately 29 percent of the 11,991 acres projected to be harvested. Of the 3,130 acres authorized, fewer than 1,200 acres have been harvested.

Because levels of regeneration harvest have been substantially less than anticipated there has been an overall trend toward a forest age-class distribution older than envisioned by the PRMP/EIS (pp. 4-27&28). This trend is expected to continue for the foreseeable future as the BLM does not anticipate preparing and offering additional acres to offset the deficit. In the second decade of the ROD/RMP, it is assumed that regeneration harvest, including the 150 acres proposed in this analysis, would be undertaken at decadal levels comparable to those originally anticipated.

The ROD/RMP (p. 8) allocated 26,900 acres to Connectivity/Diversity Blocks and specified regeneration harvest at the rate of 1/15 of the available acres in the entire land use allocation per decade (ROD/RMP, p. 153), an amount of approximately 1,790 acres per decade. The ROD/RMP was approved and implemented in June of 1995. This date established the baseline against which accomplishments are measured. For this reason, June of 2005 is the beginning of the second “decade”, for measuring compliance with these decadal harvest limitations. The proposed regeneration harvest of 45 acres from the Connectivity/Diversity Block land use allocation would represent only two and a half percent of the decadal allowance.

As illustrated in the 2004 APS (Table 17, p. 33), and summarized in Table 4-1, from Fiscal Year (FY) 1995 through FY 2004, 490 acres of regeneration harvest were authorized in the entire Connectivity/Diversity Block land use allocation. None was offered in FY 2005.

Table 4-1 Regeneration Harvest in Connectivity/Diversity Block First Decade

	FY 95	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04
Acres	32	40	123	151	63 ¹	0	0	0	81	0
Σ	32	72	195	346	409	409	409	409	490 ²	490

¹ Incorrectly reported in the 2004 APS as 36 acres.

² Incorrectly reported in the 2004 APS as 463 acres because of error noted above.

As displayed above, regeneration harvest authorized in Connectivity/Diversity Blocks in the first decade totaled only 490 acres, or approximately 27 percent of the anticipated amount. Only 222 acres were harvested, creating less than 13 percent of the anticipated acreage of early-seral stands 0-10 years of age.

Effects of road construction on removal of forest habitat have been substantially less than envisioned. Only 39.1 miles of permanent BLM roads were constructed in the first decade compared to 65 miles anticipated in the PRMP/EIS (p. 4-78). The half-mile of permanent road construction proposed would not exceed anticipated levels.

New permanent road construction has been offset by 44 miles of road decommissioning during the same period, although no notable decrease in overall road density is considered achievable. This is because almost all of the more than 3,000 miles of road managed by the Roseburg District are constrained by reciprocal right-of-way agreements that do not permit the BLM to act unilaterally in designating roads for closure and removal.

Forested Lands in the Olalla-Lookingglass 5th-Field Watershed

In 1936, seral forest stages were less fragmented and generally occurred in large uniform blocks (WA, p. 15). Approximately 23 percent of the watershed was in agricultural use, while forests consisted of approximately five percent hardwood forest, one percent early seral conifer, 29 percent mid-seral conifer, and 42 percent late-seral conifer. Estimated distribution of seral stages was based on a correlation between diameter class and age. Early-seral forest 0 to 30 years of age corresponds to 0 to 6 inches in diameter breast height. Mid-seral forest, 30 to 80 years of age, corresponds to 6 to 20 inches in diameter, and late-seral forest over 80 years of age and over 20 inches in diameter.

Approximately 79 percent of the watershed is conifer forest, an increase of seven percent since 1936, due to conversion of agricultural land and hardwood forest into conifer forest. Early-seral forest constitutes nearly 46 percent of all forest lands in the watershed. Mid-seral forest remains at 29 percent, and late-seral forest has declined to 25 percent.

Since 1997, there has been no regeneration harvest on BLM managed lands in the watershed. BLM timber management activities have been limited to commercial thinning and density management treatments that do not alter the overall age class distribution of forest lands. The harvest proposed in this analysis would reduce BLM-managed late-successional forest in the watershed from 11,167 acres to 11,017 acres, a reduction of about one and a half percent. No other regeneration harvest of BLM-managed lands is planned in the watershed in the foreseeable future.

Based on aerial photo interpretation, it is estimated that harvest of private timber lands in the watershed totaled 4,560 acres for the period of 1994 to 2004, an annual average of 456 acres. Effects of this harvest on the current age class distribution in the Olalla-Lookingglass fifth-field watershed is displayed in Table 4-2.

Table 4-2 Age Class Distribution and Harvest in the Olalla-Lookingglass Watershed 1994-2004

Olalla-Lookingglass Watershed	Age 0 to 30 (early seral) Acres	Percent of forested acres	Age 31 to 80 (mid seral) acres	Percent of forested acres	Age 81+ (late seral) acres	Percent of forested acres	Total forested acres
Acres in 1994	37349	46 %	23636	29 %	20459	25 %	81444
Acres Harvested 1994 - 2004							
BLM			0		297*		
Private			3248		1312		
Acres in 2004	42206	52 %	20388	25 %	18850	23 %	81444

* Harvested pre-1997

Assuming a rate of private harvest comparable to that illustrated in Table 4-2, and including the Dickerson Heights timber sale, there would be an approximate 15 percent reduction in mid-seral forest and an eight percent reduction in late-seral forest in the watershed over the next decade. The 150 acres proposed for harvest in the Dickerson Heights timber sale represents approximately 0.8 percent of present amount of late-seral forest within the entire Olalla-Lookingglass watershed.

Other potential forest removal could occur in association with road construction conducted under reciprocal rights-of-way agreements. The exact amounts are difficult to quantify but are not anticipated to exceed tens of acres on a decadal basis.

Forested Lands in the Olalla 6th-Field Subwatershed

Table 4-3 displays effects of timber harvest from all ownership on forest seral stages in the Olalla sixth-field subwatershed in the past ten years.

Table 4-3 Age Class Distribution and Harvest in Olalla Subwatershed 1994-2004

Olalla Subwatershed	Age 0 to 30 (early seral) acres	Percent of forested acres	Age 31 to 80 (mid seral) acres	Percent of forested acres	Age 81+ (late seral) acres	Percent of forested acres	Total forested acres
Acres in 1994, all ownerships	3386	52 %	1224	19 %	1862	29 %	6472
Acres Harvested 1994 - 2004							
BLM			0		0		
Private			40		133		
Acres in 2004	3559	55 %	1184	18 %	1729	27 %	6472

The proposed harvest of 150 acres on the Dickerson Heights timber sale would reduce current levels of late-seral forest in the subwatershed by approximately nine percent. Assuming harvest levels comparable to what has occurred in the past decade, the amount of late-seral forest would decline by an additional eight percent over the next decade, as a result of private timber harvest. Harvest of mid-seral forest stands would account for approximately three and a half percent of existing mid-seral forest.

II. Wildlife

A. Alternative One - No Action

There would be no direct effects to wildlife as harvest in the proposed project area would be deferred to a future point in time. Normal successional processes that include growth and decline of forest stands in the proposed project area would have an indirect effect on wildlife that use the stands. Direct effects to wildlife and habitat would occur elsewhere in the South River Resource Area as other BLM-administered lands in the Matrix allocations are analyzed and selected for regeneration harvest.

Species dependent on late-successional forest for habitat would be affected by the harvest of late-seral forest on private lands. The PRMP/EIS assumed (Vol. I, p. 4-4) that “. . . most private forest lands would be intensively managed with final harvest on commercial economic rotations averaging 50 years.” This would result in a long-term reduction in available late-successional forest habitat available to wildlife, including special status species, as was anticipated when the ROD/RMP was implemented in 1995. Conversely, shorter timber harvest rotations on these private lands would provide abundant habitat for species adapted to early-successional forest conditions.

B. Alternative Two – Proposed Action

1. Threatened and Endangered

Northern Spotted Owl

The proposed harvest would remove 150 acres of late-successional forest, reducing available nesting, roosting and foraging on BLM-administered lands in the Olalla sixth-field subwatershed by 11 percent. The harvested stands with their respective complement of large green conifer retention trees would not: provide sufficient canopy cover for nesting and roosting; provide habitat for prey species upon which owls forage; or provided sufficient dispersal cover which could result in owls being subject to an increased risk of predation.

Within 30 to 40 years following harvest, the reforested stands would provide dispersal habitat. At approximately 50 years of age the harvested stands would begin providing roosting and foraging habitat, and at 80 years of age will begin to develop structure and characteristics suitable for nesting.

No habitat would be removed from the occupied Bushnell Creek home range. Harvest of 86 acres of suitable habitat from the unoccupied North Fork Byron Creek home range would reduce available suitable habitat by 9.4 percent.

The proposed timber harvest would not preclude continued breeding and persistence of the Bushnell Creek owl pair because levels of suitable habitat in the home range would be unchanged, and 989 acres of suitable habitat remaining in the Olalla six-field subwatershed would also be available for use by the pair. Disruption from harvest and hauling activities would not be expected because the occupied home range is entirely outside of the project area, and the activity center is well beyond the 65 yard disruption threshold and quarter-mile threshold for habitat modification during the nesting and fledging period.

To preclude potential effects to owls that may move into the project area, whether from disruption or habitat modification during the nesting and fledging period, seasonal restrictions on operations would be implemented between March 1 and September 30, unless protocol surveys indicate that: spotted owls are not present; they are present but have not nested; or nesting attempts have been unsuccessful.

Marbled Murrelet

The proposed harvest would result in the loss of 150 acres of suitable habitat. While retention trees would be potentially capable of providing nest trees, open canopy conditions would expose nest sites to the weather and subject murrelets to an increased risk of predation (reviewed by McShane et. al 2004).

The probability of harvest operations affecting occupied murrelet sites is considered very low based on the results of multiple years of surveys indicating no other occupied sites. The documented occupied site would not be affected because of its distance from the proposed harvest units and haul route.

2. Bureau Special Status Species

Northern Goshawk

The probability that the harvest of 150 acres of suitable nesting habitat would directly affect goshawks is remote based upon the results of surveys conducted in 1998, 1999 and 2005, which indicate that the stands are unoccupied.

Harvest would reduce, by approximately 11 percent, the amount of suitable habitat present on BLM-administered lands in the Olalla sixth-field subwatershed. The removal of forest canopy would create areas suitable for foraging but would render them unsuitable as nesting habitat.

Purple Martin

The proposed harvest would conceivably reduce available perching sites and potential nest sites provided by live, dying and dead trees with woodpecker cavities or rot pockets. The abundance of these components is not known, particularly cavities made by primary excavators. Consequently, the abundance and quality of habitat potentially provided by retention trees cannot be quantified. Given the propensity of the purple martin to nest in snags and trees in the open, however, retention trees may provide desirable habitat because of the open canopy conditions between the individual trees. Harvest would not prevent use of the areas for foraging.

Fringed Myotis Bat, Pallid Bat and the Townsend's Big-eared Bat

Potential effects would be from a reduction in available roosting habitat. Retention trees, snags that survive harvest and site preparation operations, and forest in Riparian Reserves associated with the proposed units would continue to provide some roosting opportunities, however.

The degree to which individual species might be affected would be related to the suspected probability of their presence. Effects to the fringed Myotis bat would likely be the greatest as it is the species whose presence is the most probable in the project area. The low probability that the pallid and Townsend's big-eared bats are present decreases the likelihood of either species being directly affected.

Chace Sideband Snail

Consequences of timber harvest would include loss of forest canopy providing summer shade, and disturbance of large woody debris and leaf litter (Weasma 1999), leading to changes in microclimate conditions such as soil temperature and moisture, and the availability of forage. To mitigate these potential effects and provide for persistence of the known populations, the following measures would be applied.

- Retention trees would be clumped inside the southwest boundary of proposed Unit H, above the site to maintain shading and provide protection from any disturbance associated with timber felling and yarding.
- For the sites in proposed Unit C, patches of retention trees would be marked to reduce the area subject to edge influence and to minimize potential increases in solar radiation that would lead to increased soil temperatures and reduced soil moisture (Chen et al. 1993).

The size and shape of the retention tree patches would be based on the aspect, because edge effects are strongest on southwest aspects and weakest on north-facing aspects (Chen et al. 1995). The retention patches would:

- Prevent soil compaction and disturbance of soil and substrate in and near the population sites;
- Retain vegetative ground cover and forest canopy maintain soil temperature and moisture; and
- Retain coarse woody debris and forest litter to ensure that sufficient cover and forage is available to sustain the snail populations.

Oregon Shoulderband Snail

The shoulderband site on the cut bank of Road No. 29-7-3.0 across from proposed Unit C would be unaffected. It is not in a location that would be disturbed by excavation for a landing and patches of retention trees within the unit, designed to provide for the Chace sideband snails described above, would provide canopy cover sufficient to maintain favorable temperature and soil moisture.

The site adjacent to proposed Unit H is located in piles of tailings and waste rock in a quarry site which might be needed for staging vehicles or setting up equipment. This could require leveling of the area to facilitate use, resulting in displacement of substrate in which snails may be present. This could result in compaction of substrate, modification of micro-climate, and possible exposure or crushing of individual snails.

Quarries are considered single use facilities and as such are not managed for other resource values that include habitat. Because the shoulderband snail is not an old-growth obligate, and the species has been found in a range of habitats at multiple locations in the South River Resource Area, the potential loss of this site would not be considered likely to lead to a future need for listing of the species.

3. Special Attention (Survey & Manage) Species

Protocol surveys of suitable great gray owl nesting habitat within 200m of suitable foraging habitat in proximity to proposed Unit H would be conducted. Absent the detection of any nesting owls, no effects would be anticipated.

In the event nesting great gray owls are detected, a 300-foot “no-harvest” buffer would be established around the meadow habitat, and a one-quarter mile protection zone would be established around the nest tree to maintain habitat integrity providing for continued persistence and productivity of the site.

4. Other Wildlife

Red-tailed Hawk

Harvest of proposed Unit H could result in loss of trees providing cover to the known nest tree(s), changes in the micro-climate surrounding the nest tree(s), abandonment of the area or even loss of the nest tree(s). To mitigate these potential effects and increase the probability that the area would remain suitable for nesting, the following measures would be implemented:

- Establish a two to three acre buffer around the 2004 nest tree. Limit harvest to understory trees no greater than 10 inches diameter breast height;
- Mark additional retention trees to create a four to five acre nest grove;
- Designate rub trees to protect the alternate nest tree located in 2005; and
- Implement seasonal operational restrictions from March 1 to July 15 which may be waived after June 15 if hawks have not nested successfully.

Because red-tailed hawks return to previously occupied nest sites, they would likely return to one of the existing nest trees. Implementation of the mitigation described would maintain conditions favorable for continued use of the site.

C. Cumulative Effects

Table 4-3 (p. 33) displays effects of timber harvest from all ownership on forest seral stages in the Olalla sixth-field subwatershed in the past ten years. With one exception, that being the northern spotted owl, this information provides a context for assessing cumulative effects on wildlife species as a function of the type of habitat utilized.

Because one of the two northern spotted owl home ranges is primarily located in the Middle Olalla sixth-field subwatershed but extends into the Olalla sixth-field subwatershed, a discussion of the cumulative effects of the proposed harvest on northern spotted owls is provided in the context of the two subwatersheds together.

As previously discussed, the PRMP/EIS assumed (Vol. I, p. 4-4) that “. . . most private forest lands would be intensively managed with final harvest on commercial economic rotations averaging 50 years.” Harvest on private forest lands will eventually remove the remaining late-successional forest remaining there, as well as those mid-seral stands trending toward late-seral status.

Because BLM-administered Matrix lands are managed on longer rotations than private forest lands (i.e. regeneration harvest at 80 to 110 years of age in the GFMA and regeneration harvest on a 150-year control rotation for stands in Connectivity/Diversity Blocks) and because Late-Successional Reserves and Riparian Reserves are not scheduled for regeneration harvest, overall age-class distribution will tend toward older seral stages, as illustrated in the PRMP/EIS (Chapter 4 – 27 & 28). There will be an overall decline in early-seral habitat on Federal lands that will be primarily offset by shorter rotational management of private forest lands.

Over a period of 100 years, implementation of management direction from the ROD/RMP is projected to result in a 51 percent increase in the amount of old-growth forest (PRMP/EIS, Chapter 4 – 29) managed on the Roseburg District. This is projected to provide an additional 151,000 acres of nesting, roosting and foraging habitat for the northern spotted owl (PRMP/EIS, Chapter 4 – 57), and habitat for those other species dependent on late-successional forest habitat.

1. Threatened and Endangered Species

Northern Spotted Owl

As discussed above, for the purpose of this analysis the Olalla and Middle Olalla subwatersheds are considered together as they contain the two home ranges in close proximity to the proposed timber sale. Within the two subwatersheds there are approximately 13,735 acres of forested lands in all ownerships. It is assumed that forest stands less than 30 years of age were previously capable of providing suitable nesting, roosting and foraging habitat.

Excluding the 150 acres proposed for harvest by this assessment, past timber harvest on BLM administered lands has removed 1,202 acres of suitable nesting, roosting and foraging habitat over the past 30 years. Based on estimates derived from aerial photo interpretation, private harvest has removed 4,220 acres of late-successional forest within the same period of time.

No additional regeneration harvest of suitable nesting, roosting and foraging habitat is planned on BLM-managed lands in these sixth-field subwatersheds within the next 10-20 years. The proposed harvest would reduce suitable nesting, roosting and foraging habitat provided by late-successional forest on BLM lands from 3,120 acres to 2,970 acres, a reduction of five percent.

Over the next 20 to 30 years, on BLM-administered lands, approximately 1,200 acres of early-seral forest will develop into dispersal habitat and 840 acres of mid-seral stands will begin to provide suitable roosting and foraging habitat with limited nesting opportunities. As a result, suitable nesting, roosting and foraging habitat provided by BLM lands will increase to 3,810 acres.

Late-successional forest on private lands in the two sixth-field subwatersheds is presently estimated at approximately 1,200 acres. Based on recent trends in harvest, this late-successional forest would be harvested within the next 30 years or less. Private timberlands would cease to provide any suitable nesting, roosting and foraging habitat for owls in these subwatersheds based on the assumption that future management of private timber lands would be on a commercially economic rotation of 50 years or less.

Assuming that the private timber lands are managed on a sustainable rotation of 50 years, it is assumed that approximately one-fifth of private forest lands would provide dispersal habitat at any given point in time. For private lands in the Middle Olalla and Olalla sixth-filed subwatersheds, this would amount to between 1,700 and 1,800 acres.

As discussed in Appendix E, the BLM, U.S. Forest Service, and the U.S. Fish and Wildlife Service have conducted a coordinated review of four recently completed reports containing information on the northern spotted owl. The reports included *Scientific Evaluation of the Status of the Northern Spotted Owl* (Courtney et al. 2004), *Status and Trends in Demography of Northern Spotted Owls, 1985-2003* (Anthony et al. 2004), *Northern Spotted Owl Five Year Review: Summary and Evaluation* (USFWS, November 2004), and *Northwest Forest Plan – The First Ten Years (1994-2003): Status and trend of northern spotted owl populations and habitat, PNW Station Edit Draft* (Lint, Technical Coordinator, 2005).

BLM planning regulations (see 43 CFR § 1610.4-9) require that “The District Manager shall be responsible for monitoring and evaluating the plan at “established intervals . . . and at other times as appropriate to determine whether

there is sufficient cause to warrant amendment or revision of the plan”. Based on the information provided in these reports, it was concluded that the consequences of the removal of 150 acres of suitable habitat would not modify or change the overall status of the northern spotted owl population in the Roseburg District.

Marbled Murrelet

The cumulative effects to marbled murrelets are not as clear because much of the suitable habitat in the subwatershed, as well as throughout the western half of the South River Resource Area, has not been surveyed making historic and potential population estimates difficult to make. About 18 percent of the total available has been surveyed, resulting in the location of a single occupied murrelet site.

The reduction in late-successional habitat from 3,120 acres to 2,970 acres would represent a loss of approximately five percent in available suitable habitat, but it is not expected that this would prevent the persistence of murrelets in the Olalla sixth-field subwatershed.

The PRMP/EIS (4-52 & 53) concluded while suitable habitat and numbers of birds are not expected to increase from present low levels on private lands in the short or long term., there was a 50 to 75 percent likelihood that murrelet populations on Federal lands will remain stable and well distributed through the next 100 years. This conclusion is based on protection of occupied sites, protection of suitable habitat in Late-Successional Reserves, and future in-growth and development of additional suitable habitat on Federal lands. In the Olalla sixth-field subwatershed, this in-growth is represented by the 264 acres of mid-seral forest that will develop into late-successional forest over the next 45 years.

2. Bureau Sensitive

Northern Goshawk

As with the marbled murrelet, effects to the goshawk are unclear because only a small percentage of the available suitable habitat in the South River Resource Area has been surveyed. In the Olalla sixth-field subwatershed, 14 percent of suitable habitat has been surveyed without any documented occupancy.

At the subwatershed scale, the decline in suitable goshawk habitat would be comparable to the decline in suitable murrelet habitat. As for murrelets, the maturation of mid-seral forest would provide an additional 264 acres of suitable habitat over the next 45 years. At the landscape scale, the PRMP/EIS (page 4-54) concluded that essential habitat for breeding populations of the goshawk would be available in large blocks of BLM and provide for retention of older forest habitat and development of future stands.

Purple Martin

Cumulatively, the harvest of 150 acres of timber would not be expected to affect foraging opportunities for purple martins. As the species favors nesting in snags in open areas, the creation of additional early seral forest with retention trees and snags and open canopy may provide additional habitat capable of supporting new colonies of martins.

Fringed Myotis Bat, Pallid Bat and the Townsend's Big-eared Bat

No cumulative effects to nursery habitat and hibernaculum would accrue as there are no caves or mines in the project area that would be affected. The single effect would be the loss of 150 acres or approximately five percent of the late-successional forest in the Olalla sixth-field subwatershed that may provide night roosts for individual or small groups of bats in the form of snags, bole cavities and spaces beneath loosened tree bark. No effects on foraging opportunities would be expected.

Chace Sideband and Oregon Shoulderband Snails

Chace sideband and Oregon shoulderband snails are considered likely to persist for the following reasons:

- The shoulderband snail is not a late-successional forest obligate and can inhabit younger seral stages of forest where talus and cobble habitat are present;
- All identified snail sites in forested habitat would be protected as described on pages 34 and 35; and
- The Final Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines (USDA and USDI BLM 2004) found that although some known sites could be lost, Federal timber lands will provide sufficient habitat, including known sites, to support stable populations range-wide.

3. Special Attention (Survey & Manage) Species

The cumulative effects of the proposed harvest would be to supplement foraging habitat for great gray owls at the subwatershed scale by four to five percent. This habitat would persist for approximately ten years after which time it would become unsuited for foraging as the new forest stands grow and develop.

4. Other Wildlife Species

Cumulative effects to red-tailed hawks would be substantively the same as the direct effects, loss of 150 acres of suitable nesting habitat. No other regeneration harvests are planned in the subwatershed in the foreseeable future, so this would represent a cumulative reduction of approximately five percent in available nesting habitat. Open areas in the form of harvested private timber lands and agricultural lands would continue to provide abundant foraging opportunities. Consequently, there would be no concerns for successful reproduction and persistence of red-tailed hawks.

III. Botany

A. Alternative One – No Action

1. Threatened and Endangered

In the absence of any timber harvest, there would be no direct effect to the population of Kincaid's lupine adjacent to proposed Unit F. Without timber harvest to create and maintain gap and edge habitat, or other management that controls competing vegetation, habitat conditions would decline over the next two decades as competing vegetation reduces the availability of light sufficient to trigger flowering and reproduction.

2. Bureau Special Status Species

Vascular Plants

Absent timber harvest, there would be no direct effects to the population of tall bugbane in proposed Unit A as canopy closure would be unchanged stable.

Fungi

Absent timber harvest, there would be no modification of habitat conditions. Trees would remain as hosts for ectomycorrhizal fungi. Shade provided by forest overstory would be maintained and forest litter, soil organic matter and large woody debris would continue to provide reservoirs of moisture. . The area would continue to function as fungi habitat.

B. Alternative Two – Proposed Action

1. Threatened and Endangered

There would be no direct effect to the Kincaid's lupine population in the project area because it is located entirely outside of proposed timber sale unit boundaries.

The plant population has been clearly marked and any disturbance of the area would be prohibited. Between April 1 and July 31, during timber hauling dust abatement measures would be applied on the haul route in proximity to the plant population to prevent possible interference with plant pollination.

Harvest of timber adjacent to the lupine site may also benefit the population. A study by Menke and Kaye (2003) indicates a correlation between canopy openness and plant vigor with increased availability of sunlight resulting in greater growth, flowering, and seed production.

2. Bureau Special Status Species

Vascular Plants

There would be no direct effect to the tall bugbane population in proposed Unit A as the clumping of retention trees in and around the perimeter of the site would prevent disturbance and maintain existing levels of canopy closure.

Harvest outside of the site could improve overall growth conditions of the population by creating forest gaps that the species may respond to (Kaye, T. and M. Kirkland 1993). In studies by Kaye and Kirkland (1999) opening of the forest canopy has been shown to promote flowering in tall bugbane resulting in increased seed production and seedling establishment.

Fungi

The proposed timber harvest would not affect any known sites for Bureau Sensitive fungi species described on page 20, as the known sites are several miles away and in different watersheds.

Surveys for these species are not considered practical for reasons discussed on page 19, so their presence is unknown. If sites are present in the proposed timber sale units, loss of the sites would likely result as a consequence of the removal of substrate and modification of microclimate, as described in the *FSEIS to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines* (pp. 150-154).

Direct effects to mycorrhizal fungi would also include the loss of photosynthetic host species, comprised primarily of trees that provide the primary source of energy for sporocarp production.

It is anticipated these effects would be short-term, lasting 20-30 years at the site level. Luoma (1996) found that harvested units would not be expected to function as habitat for the first 20 years following harvest (Luoma D.L. et. al. 1996).

Studies by Pilz and Molina (1994) found that surviving mycelium or spores from elsewhere may quickly colonize the roots of new trees, but several decades typically pass before edible ectomycorrhizal species fruit again. In most instances, ectomycorrhizal fungi diversity increases with stand age and a trend toward a higher diversity of species was observed in mature stands (Bradbury, S.M. et. al. 1998). Molina (1993) found that reestablishment of fungi would occur in 20 to 30 years after a new stand has been established and canopy closure has returned.

C. Cumulative Effects

As the populations of Kincaid's lupine and tall bugbane are isolated populations, and any effects would likely be benign in nature, no cumulative effects would be anticipated.

The proposed harvest would reduce, by 150 acres, suitable habitat for fungi available on lands administered by the BLM in the Olalla sixth-field subwatershed. Almost 1,000 acres of late-successional forest habitat and another 264 acres of mid-seral forest habitat would remain on BLM-administered lands in the subwatershed, however.

At the fifth-field watershed level, forests on BLM-managed lands would provide nearly 19,000 acres of suitable fungi habitat, with the proposed harvest resulting in a reduction of less than one percent. Nearly 45 percent of the total habitat provided on BLM-managed lands is allocated to Riparian and Late-Successional Reserves that will provide long-term habitat stability.

When considering all ownership, there are over 39,000 acres of suitable fungi habitat in the watershed, as illustrated by Table 4-2 on page 31. Based on the average annual harvest on private lands over the past decade, and including the Dickerson Heights timber sale, a reduction of twelve percent in available suitable habitat could be expected over the next decade. While difficult to precisely estimate, this loss would be partially offset by growth and development of younger forest stands such that habitat would remain abundant and well-distributed. Consequently, it is not anticipated that the proposed timber sale would contribute to a future need to list any of the eight fungi species discussed on page 20 as threatened or endangered.

IV. Fisheries and Aquatic Resources

A. Alternative One – No Action

Under this alternative, there would be no timber harvest, log hauling, road renovation, road construction and road decommissioning. Absent any of these activities, there would be no direct effects to aquatic habitat, anadromous or resident fish, or Essential Fish Habitat located downstream of the project area.

Fish and habitat downstream of the project area would continue to be indirectly and cumulatively affected by management activities private forest lands and agricultural lands. The results of these actions could include harvest of riparian forest, run-off from fields and pastures, and run-off from natural surface roads and tractor skid trails.

The use of natural surface roads in the watershed, particularly during periods of wet weather, would continue to generate sediments. Where these roads are improperly designed or have insufficient or improperly functioning drainage, these sediments could be concentrated and delivered to the stream network rather than being dispersed across the landscape and filtered out before reaching active waterways. The overall effect would be the continued degradation of water quality and spawning substrates with a resulting impairment of feeding and rearing conditions for fish other aquatic wildlife, and continued degradation of Essential Fish Habitat.

B. Alternative Two – Proposed Action

1. Aquatic Habitat Conditions

Potential effects on aquatic habitat conditions would be associated with timber harvest operations and road related activities.

No timber felling, yarding or loading would occur within Riparian Reserves. Based on the width of Riparian Reserves, such activities would remain at least 160 feet away from streams. Timber would be directionally felled away from the Riparian reserves.

All proposed road construction and decommissioning would be conducted outside of Riparian Reserves. Road renovation would not include the replacement of any stream crossings nor involve any in-stream work.

Timber hauling will utilize roads that cross or parallel perennial and intermittent stream channels.

Substrate

It is considered improbable that stream substrate would be affected by harvest operations. Riparian Reserves would be adequate to prevent transport of any waterborne sediment from harvested slopes because the vegetated buffer would filter out sediment before it reached streams and affected substrate (FEMAT 1993). Absent yarding or harvest operations in Riparian Reserves there would be no ground disturbance that could affect stream bank stability and cause erosion.

Roads can contribute sediment to live streams that can affect substrate (Furniss et al. 1991). The actions that may result in such effects include the construction, renovation, and decommissioning of roads, and hauling of timber.

All new road construction would be located outside of Riparian Reserves on ridge top locations and surfaced with rock. These new roads would be disconnected from any drainage system such that there would be no vehicle by which transport of sediment to streams would occur.

Timber hauling would include both dry and wet season operations because harvest operations on proposed units A, D, F and H would be authorized year round. Dry season hauling would have a negligible potential to create or deliver road-derived sediment to live stream channels because of the absence of precipitation.

The wet season normally extends from late October into May. Hauling during the wet season does have the potential to contribute fine sediment to streams, especially at stream crossings (Waters 1995).

The haul routes are largely free of stream crossings. The only noteworthy crossing is over a perennial stream located about one-half mile upstream from the limits of coho salmon presence. The location of the road in proximity to the stream and the presence of the stream crossing create a potential for sediment delivery. The road is on a flat gradient in a gentle floodplain where there is little potential for overland flow. There is no ditch to collect run-off and deliver it to the stream at the crossing. In light of these factors, the risk for sediment at this crossing would be negligible.

Along other portions of the haul route and at crossings over small intermittent streams the following Best Management Practices would be implemented to further reduce the risk of stream sedimentation and effects on fish.

- The installation of splash pads at cross drain culvert outlets would prevent erosion at the outlet by reducing the energy generated by ditch drainage.
- Locating new road construction on ridge tops disconnected from the road drainage network would prevent sediment delivery to live or intermittent streams.
- Surfacing new roads would minimize future erosion potential and the delivery of fine sediment to streams.
- Ditch lines, when possible, would be left well vegetated so that sediment in ditch drainage can be filtered and evenly distributed onto adjoining slopes. Elsewhere, well contoured ditches can prevent runoff from washing over roads and eroding road surfaces.
- Adding water bars to sections of the road where surface runoff is expected would intercept and direct runoff off of the road prism and onto forested slopes rather than allow it to become concentrated at stream crossings.

Large woody debris

There would be no removal of either downed or live trees from Riparian Reserves. While it could be necessary to establish tailholds in Riparian Reserves, any trees but would be felled toward streams and left on site as large woody debris. Live trees and down wood would remain available for future recruitment into streams where it would retain and store gravel substrate and create pool and off-channel rearing habitat and refugia. As there would be no road construction in Riparian Reserves and no road renovation requiring in-stream work, there would be no removal of existing large wood or future sources of large wood for in-stream recruitment.

Pools

The present quality and availability of pool habitat would be unaffected as there would be no project actions taking place within the Riparian Reserves. Over time, as trees in Riparian Reserves die and fall, recruitment of large wood into streams would be expected to increase both the quantity and quality of pool habitat in stream reaches adjacent to the harvest units and in reaches downstream.

Habitat access

Access to spawning and rearing habitat would be unaffected because there would be no road construction or renovation activities involving the placement or replacement of stream crossings with the potential to block fish migration.

2. Special Status Species

Direct effects to fish species from harvest and haul of timber result from the additional fine sediment and a temporary increase in turbidity. As previously addressed, fine sediment can hinder survival of eggs and alevin still buried in spawning gravels. Turbidity can reduce foraging ability, impair breathing by clogging gill membranes, and increase overall stress levels (Waters 1995).

No direct effects would be expected because no harvest would take place within 320 feet of any fish bearing reaches, and no road construction would occur within Riparian Reserves. Consequently, there would be no disturbance or degradation of aquatic habitat conditions, as described above.

Indirect effects from sediment associated with run-off during wet season hauling could result in a reduction in spawning success and egg and alevin survival in spawning gravels embedded with accumulated fine sediment. These effects would be expected to be negligible and immeasurable as application of Best Management Practices and project design features described above would eliminate or minimize the delivery of fine sediment to stream channels.

3. Essential Fish Habitat

As discussed above, timber harvest would not be expected to have any effect on aquatic habitat conditions. Consequently, no effects to downstream Essential Fish habitat would be anticipated.

Effects from timber hauling, specifically in wet weather, could include sediment. As described above, it is anticipated that such effects negligible and immeasurable such that no effects on substrate and pool habitat would be noted and, consequently, no adverse effect on Essential Fish Habitat would ensue.

C. Cumulative Effects

As any effects on fish and aquatic habitat would be negligible at the project scale, and no effects anticipated at the scale of the sixth-field subwatershed, no cumulative effects would be expected at the scale of the fifth-field watershed.

V. Water Resources

A. Alternative One – No Action

1. Stream Flow

Annual Yield and Low Flows

Absent any timber harvest in the project area, there would be no effect to annual yield or low flows at the project level or beyond, because present rates of run off and infiltration of precipitation would be unchanged, and current rates of evapotranspiration by the forest stands would be maintained.

Peak Flows and Roads

Some midslope forest roads in the affected watersheds would continue to marginally increase magnitude of peak flows due to their capacity to extend the drainage network. Jones (2000) found that roads created a 13-36 percent increase to peak flows (>1-year return period) in seven of eight small basins studied, and the “magnitude of increases was related to the density of mid-slope roads.”

The magnitude of flow enhancement is also based on whether or not road segments drain directly into stream channels. Roads not connected to stream channels, or those with adequate drainage that efficiently direct surface flow to the forest floor where it can re-infiltrate, would continue to have a negligible effect on flow magnitude and timing.

2. Water Quality

Sediment from Roads

The forest road system in the affected watershed would continue to deliver fine sediment to stream channels, the magnitude of sediment delivery dependent on road surfacing, road location in relation to streams, steepness of slopes, the amount and season of traffic, and other factors (Reid and Dunne 1984). Actions such as road improvements and road decommissioning would be implemented over time as funding becomes available.

B. Alternative Two – Proposed Action

1. Stream Flow

Annual Yield and Low Flows

Regeneration harvest has the potential to temporarily increase annual water yield and low flows in summer (Harr 1979). The increase is due to a reduction in evapotranspiration as vegetation is removed. However, increases are usually only detected when a substantial portion of the watershed has been harvested. Harr (1979) and Keppeler and Ziemer (1990) found that regrowth of shrubs and small trees commonly returns rates of evapotranspiration to pre-logging levels within four to eight following harvest.

Approximately 70 percent of the Olalla sixth-field subwatershed is forested (6,380 acres out 9,102) with most of the remaining 2,722 acres dedicated to agricultural uses. Of the 6,380 forested acres, approximately 160 acres, or two and a half percent of forested lands in all ownerships, has been harvested within the last 10 years. The proposed harvest of 150 acres would roughly double this amount to slightly less than five percent. Given the small percentage of the subwatershed affected effects to annual yield and low flows would be negligible.

Peak Flows and Roads

Since only a small portion of the proposed haul route is located midslope in the watershed, renovation of these roads would not measurably affect peak flows. Although surface flow is apparent at the site level, most of the roads are located on or near ridge tops and would have little potential to alter flow routing.

The new roads proposed would be located on ridge tops where they would not intercept any subsurface flow. The roads would also be out-sloped to disperse water evenly across slopes. Consequently, there would be little potential for concentrating and diverting flows into streams and little potential to alter the magnitude and timing of streamflow.

2. Water Quality

Road Renovation

The project would include renovation of haul roads to reduce sediment delivery from segments that have poor drainage, are subject to erosion, and which may be contributing fine sediment to streams. This would include renovation to Road No. 29-7-3.0 where it parallels an unnamed stream in Section 3, the midslope portion of the road where it climbs to the ridge line in Section 3, and Road No. 29-7-15.0 Section 15 adjacent to two intermittent stream crossings.

The remainder of the proposed haul route is located on or near ridge tops with no direct connection to the stream network. Many of the ditches are revegetated, and several of the cross drain culverts are plugged. There is little evidence of erosion of the road prism, however, and there would be little demonstrable benefit to road drainage from excavation of ditches on ridge top roads as this could result in an increased potential for erosion. Luce and Black (2001) found that blading road ditches had a much greater effect than traffic on sediment yield.

Renovation and drainage improvements on some portions of the haul route would aid in diverting sediment-laden flow from intercepted groundwater and road surfaces away from stream channels and toward the forest floor where it could re-infiltrate. This renovation may include: installing additional cross drain culverts or drainage dips; providing additional rock surfacing; stabilizing cut banks and fill slopes, and restoring out slope or crown sections (ROD/RMP 136-137), with resultant long term benefits to water quality.

Road Construction

Permanent road construction would incorporate Best Management Practices and other design features to minimize erosion and the capacity to transport sediment that would include: avoidance of fragile or unstable areas; minimizing excavation and height of cuts; end haul of waste material where appropriate; and construction during the dry season (ROD/RMP 131-136).

These roads would be located on ridge tops and would not be connected to any drainage network, as previously noted. Road segments need to be connected directly to stream channels in order to deliver sediment-laden water so consequently, there would be a negligible effect on flow routing or risk of sediment delivery to the stream network.

Winter Haul

Short term sediment delivery to stream channels from winter haul activities would be negligible due to proposed renovation of the haul roads. Also, subject to determination by the contract administrator, prior to log hauling, sediment-control devices such as silt fences and hay bales would be placed in ditch lines and cross drain culvert outlets to trap sediment locally and prevent migration into streams.

C. Cumulative Effects

As the potential for sediment generation from all aspects of the proposed timber sale are anticipated to be negligible and the effect localized in nature, no cumulative effects would be anticipated at the scale of the subwatershed or beyond.

VI. Soils

A. Alternative One – No Action

Under this alternative there would be no direct effect on soils in the project area at this time. There would be no displacement or compaction of soils associated with road construction, cable yarding, or ground-based yarding. There would be no reduction of surface litter and organic material, or exposure of mineral associated with broadcast burning for site preparation. Harvest would only be deferred, and other forest stands within the Matrix would be selected and analyzed for timber harvest where soils could be subject to the same potential impacts.

B. Alternative Two – Proposed Action

Compaction and soil displacement could be expected as a consequence of both cable and ground-based yarding.

In order to minimize soil displacement and the potential for soil erosion associated with cable yarding, the following practices would be implemented:

- Equipment used in cable yarding would have the capacity for maintaining a minimum of one-end log suspension to reduce the amount of soil disturbance that would occur, and
- Yarding roads would be water barred where necessary to reduce the potential for water channeling and erosion.

In order to minimize soil compaction and displacement, and reduce the potential for soil erosion associated with ground-based yarding:

- Yarding operations would be limited to the dry season, typically mid-May to mid-October when soils have dried out and are less susceptible to compaction;
- Yarding operations would be prohibited on slopes in excess of 35 percent;
- Skid trails would be pre-designated and use any existing trails to the greatest degree practicable. Cumulatively, landings and primary skid trails would affect less than ten percent of the entire ground-based harvest area; and
- Landings and skid trails would be sub-soiled which would reduce anticipated increases in soil bulk density by 80 percent. After sub-soiling, trails would be mulched or treated in some other manner to reduce the potential for erosion.

The slump area on the northern side of proposed Unit C would be tagged out and excluded from harvest so that trees in the area would continue to provide rooting strength to maintain soil cohesion, and to prevent possible slope disturbance and destabilization that could result in a slide. Additional culverts would be installed or water dips constructed along Road No. 29-7-15.2 to divert excess water away from the area, allowing the fill slope to dry out and effectively eliminating potential slope failure.

Broadcast burning on Category 2 soils would be planned to minimize the duration and intensity of the fire, and conducted under conditions of high soil moisture. As a consequence, consumption of litter and organic material, and exposure of mineral soil would be minimized.

C. Cumulative Effects

No cumulative effects to soils would be anticipated as effects would remain confined to the proposed units and would not exceed the level and scope of effects considered and addressed in the PRMP/EIS (Chapter 4, pp. 12-16).

VII. Air Quality

A. Alternative One – No Action

Under this alternative there would be no effect on air quality in the project area, because there would be no need to conduct prescribed burning for site preparation. Potential impacts to air quality associated with prescribed burning would occur elsewhere in the South River Resource Area, in association with timber harvest and site preparation of other suitable forest lands within the Matrix.

B. Alternative Two – Proposed Action

The proposed prescribed burn treatments would be conducted under approved clearances and in accordance with the objectives and directives of the Oregon Smoke Management Plan. Air quality objectives would be included in unit-specific prescribed fire plans. Potential adverse impacts to air quality would be minimized through the implementation of various smoke management strategies that include:

- Burning when the wind is blowing away from sensitive areas such as Roseburg to avoid smoke intrusions;
- Burning slowly to allow atmospheric dilution and dispersal of particulates;
- spatially separating units to be burned; and/or
- Burning under atmospheric conditions that favor good vertical mixing of air masses so that smoke is lifted to an elevation where it may be borne away by favorable transport winds.

Oregon State Smoke Management restrictions also limit burning during periods of stable atmospheric conditions when residual smoke from previously burned unit(s) may be trapped below a surface inversion. Under these conditions, a strategy of aggressive mop-up would be implemented to extinguish smoldering fires that would contribute smoke. Additional ignitions would also be limited or entirely curtailed under these circumstances.

As a consequence, the effects of broadcast burning on air quality would be consistent with the assumptions described and analyzed in the PRMP/EIS (Chapter 4-8 through 12).

IV. Monitoring

Monitoring would be done in accordance with the ROD/RMP, Appendix I (pg. 84, 190-191, & 193-199). Specific Resources to be monitored would include: Riparian Reserves; Matrix; Air Quality; Water and Soils; Wildlife Habitat; Fish Habitat; and Special Status and SEIS Special Attention Species Habitat.

Chapter 5

LIST OF, AGENCIES AND INDIVIDUALS CONTACTED, PREPARERS AND LITERATURE CITED

This project was originally included in the Roseburg BLM Spring 1997 Quarterly Planning Update. A notice of reinitiation of the analysis was published in the Summer 2004 Quarterly Planning Update. A Notice of the availability of the EA for public review and comment will be published in *The News-Review*, Roseburg, Oregon.

I. Agencies & Persons Contacted:

Adjacent Landowners & Down-stream Water Users
Cow Creek Band of Umpqua Tribe of Indians
National Marine Fisheries Service
U.S. Fish and Wildlife Service

II. The following agencies, organizations, and individuals will be notified of the completion of the EA:

Cascadia Wildlands Project
Douglas Timber Operators, Robert Ragon - Executive Director
National Marine Fisheries Service
Oregon Department of Environmental Quality
Oregon Department of Fish and Wildlife
Oregon Department of Forestry
Oregon Natural Resources Council
U.S. Fish and Wildlife Service
Umpqua Watersheds, Inc.
Umpqua Valley Audubon Society, Stanley Vejtasa – Conservation Chair
Ronald S. Yockim, Attorney-at-Law

III. List of Preparers:

Paul Ausbeck	Environmental Coordinator	Writer/Editor
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Helmut Kreidler	Engineer	Transportation
Gary Basham	Botanist	Special Status Plants and Noxious Weeds
Karel Broda	Geo-technical Engineer	Slope Stability
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Dennis Hutchison	Soil Scientist	Soils
Cory Sipher	Fisheries Biologist	Fisheries
Larry Standley	Hydrologist	Water Quality/Resources
John Royce	Sup. Multi-Res. Spec.	Management Representative

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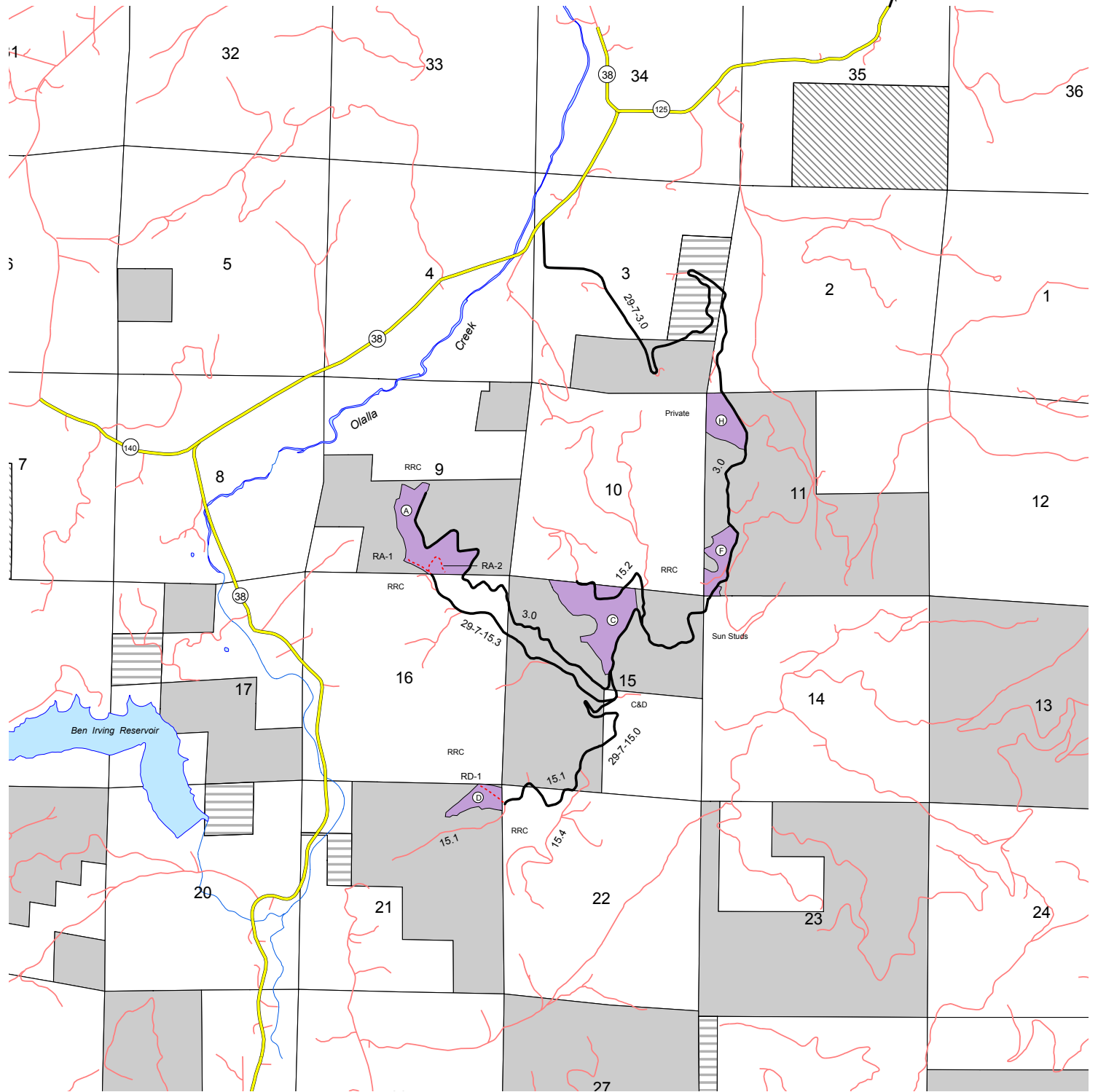
APPENDIX A

Maps of the Proposed Units and Haul Routes

DICKERSON HEIGHTS

Regeneration Harvest

Winston,
4 Miles



T29S, R7W

Willamette Meridian, Douglas Co., OR.



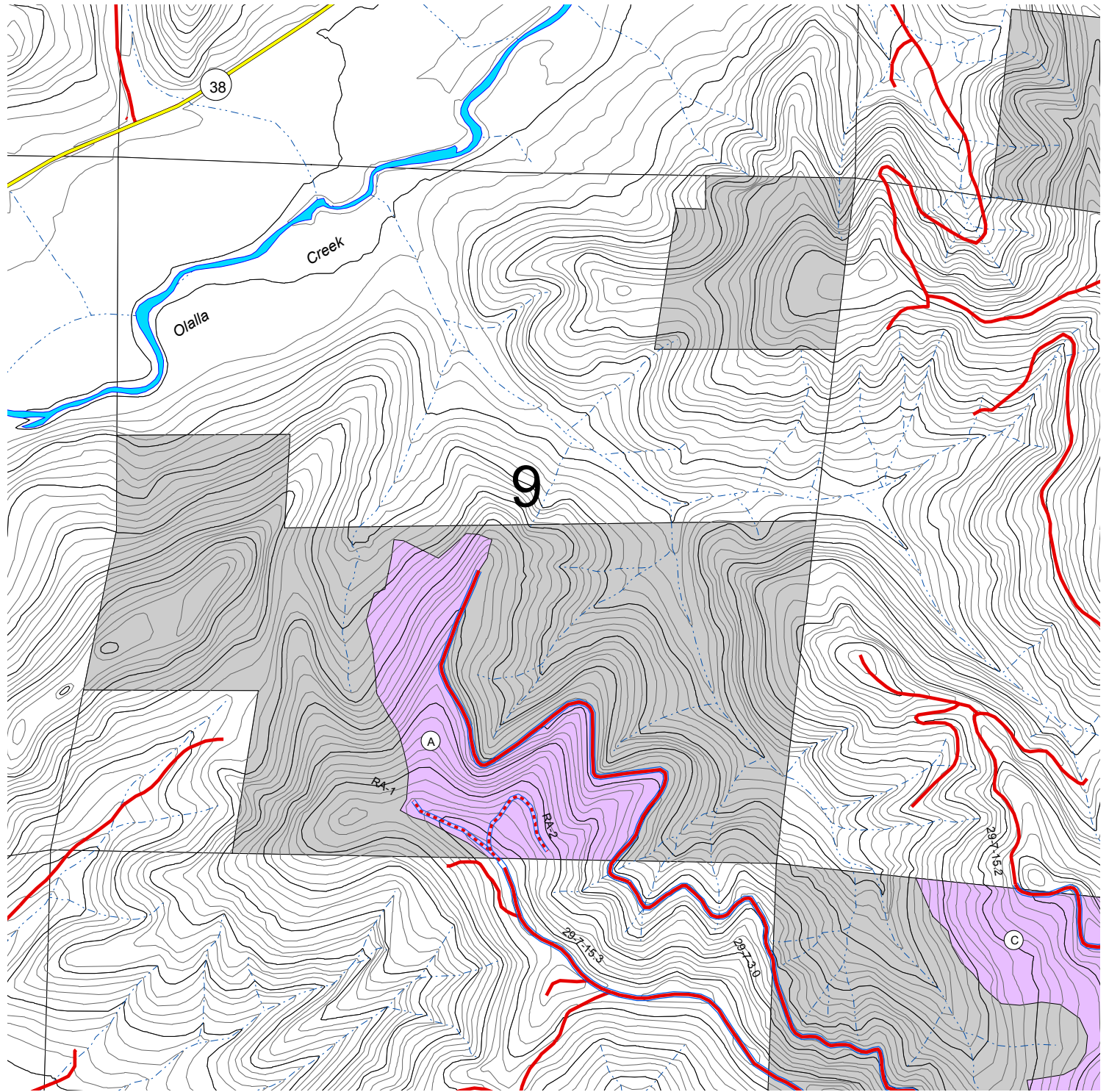
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual or aggregate use with other data. Original data was compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.



- County Road
- Existing Road
- Access/Haul Route
- Road to be Constructed
- Harvest Area
- BLM (O&C) Land
- BLM (Coos Wagon Rd.) Land
- BLM (PD) Land
- Non-BLM Land

DICKERSON HEIGHTS

Regeneration Harvest



T29S, R7W

Willamette Meridian, Douglas Co., OR.



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual or aggregate use with other data. Original data was compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

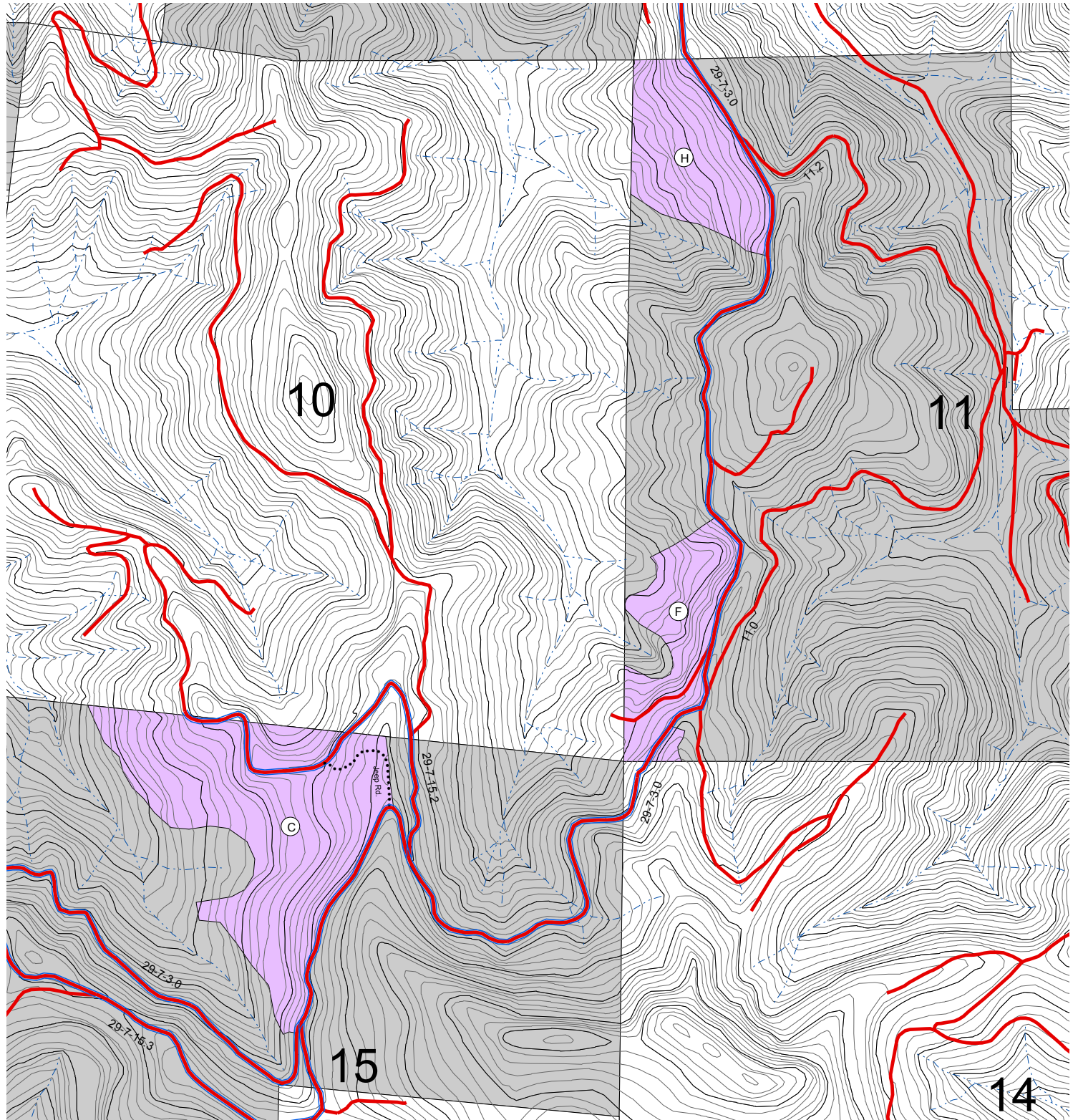


- Existing Road
- Access/Haul Route
- Construct, Permanent Rock
- Construct, Decommission
- Road to be Decommissioned
- Stream
- 20 ft. Contour
- 100 ft. Contour

- Harvest Area
- BLM (O&C) Land
- Non-BLM Land

DICKERSON HEIGHTS

Regeneration Harvest



T29S, R7W

Willamette Meridian, Douglas Co., OR.

0 1,000 Feet



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual or aggregate use with other data. Original data was compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

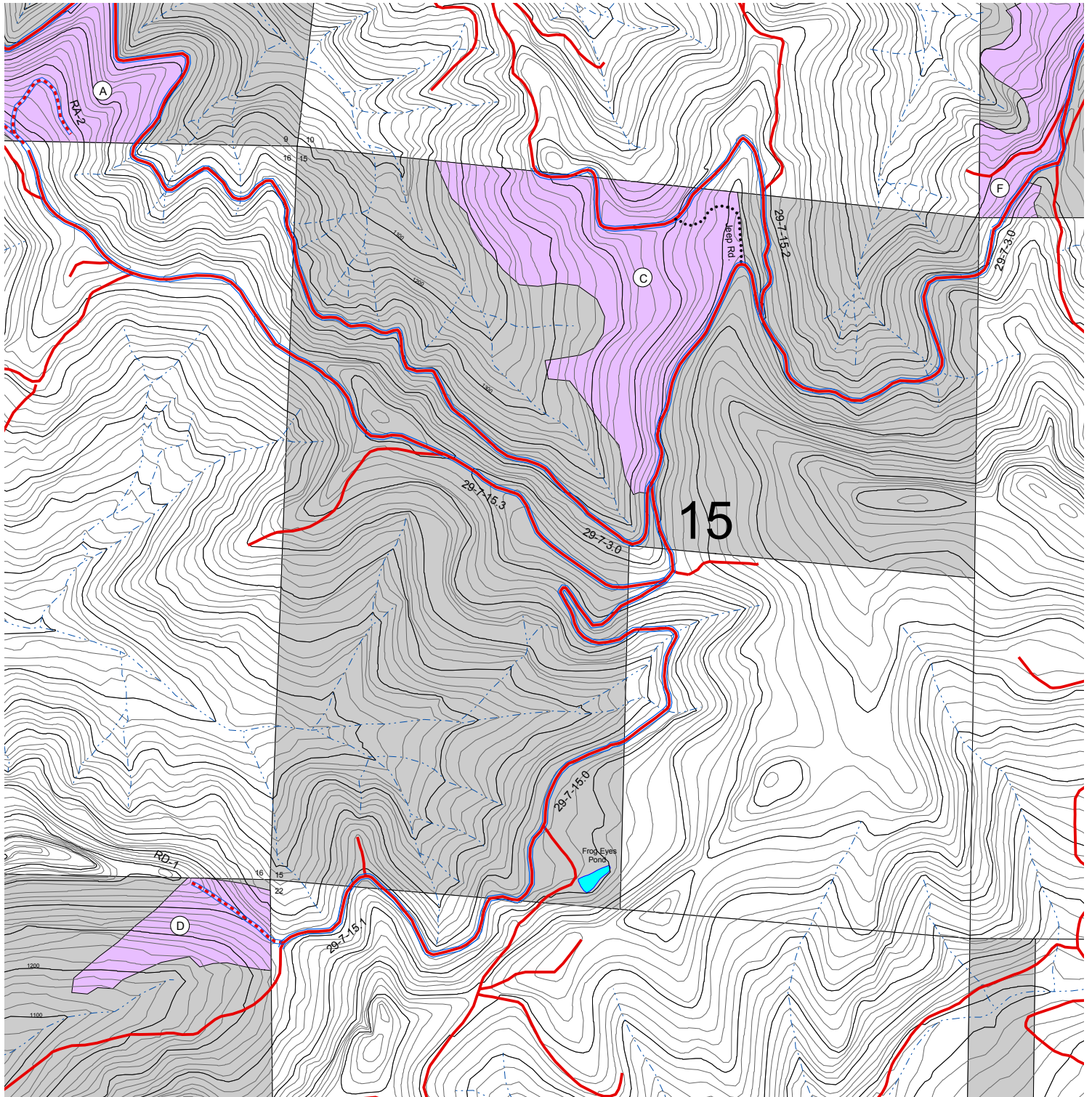


- Existing Road
- Access / Haul Route
- Construct, Decommission
- Road to be Decommissioned
- Stream
- 20 ft. Contour
- 100 ft. Contour

- Harvest Area
- BLM (O&C) Land
- Non-BLM Land

DICKERSON HEIGHTS

Regeneration Harvest



T29S, R7W

Willamette Meridian, Douglas Co., OR.



- Existing Road
- Access/Haul Route
- Construct, Permanent Rock
- Construct, Decommission
- Road to be Decommissioned
- Stream
- 20 ft. Contour
- 100 ft. Contour

- Harvest Area
- BLM (O&C) Land
- Non-BLM Land

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APPENDIX B

Summary of Proposed Road Construction and Renovation

Spurs 1, 2, and 3 would be permanent new construction with a 16-foot out-sloped subgrade, no cross-drain culverts or ditch, and 12 inches of aggregate surfacing.

Segments A and B of Road No. 29-7-15.2, owned by Roseburg Resources Company, would be renovated, consisting of slide removal, grading, surfacing, cleaning existing cross drains, cleaning and reshaping ditches, and road side brushing. All excess excavated material would be hauled to a designated disposal area.

All disturbed soil areas would be seeded and mulched to protect against erosion.

Total stations of road renovation = 34+75

Total stations for permanent new construction = 19+75

APPENDIX C

Special Status Wildlife Species Eliminated From Further Discussion

Species	Status ¹	Preferred Habitat	Reason for Elimination
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	FT	Nests in large conifers in mature to old-growth stands within 1-2 miles from major rivers, lakes and reservoirs (Marshall et al. 1996)	Presence unlikely
American Peregrine Falcon (<i>Falco peregrinus anatum</i>)	BS	Natural shelves, ledges, and potholes in rocky cliffs or outcrops in open or forested areas (Marshall et al. 1996)	No Habitat
Columbian white-tailed deer (<i>Odocoileus virginianus leucurus</i>)	BSO	Known breeding population restricted to Roseburg and vicinity, lowlands riparian in oak savannah, grasslands (Marshall et al. 1996)	No Habitat
Crater Lake Tightcoil Snail (<i>Pristiloma arcticum crateris</i>)	BSO	Talus areas and down woody debris in western Cascade Province above 2000 ft (Duncan et al 2003)	Out of Range
Green Sideband Snail (<i>Monadenia fidelis beryllica</i>)	BSO	Deciduous trees and brush, western side of Resource Area. Associated with forest floor litter, in wet undisturbed low elevations riparian areas, seeps, and springs (Duncan 2004)	Out of Range
Klamath Tail-dropper (<i>Prophysaon</i> sp. nov.)	BSO	Not officially described in the literature. Found in moist open areas associated with floodplains and spring margins in Ponderosa-Douglas fir forests (Duncan 2004)	Outside known range
Lewis' Woodpecker (<i>Melanerpes lewis</i>)	BSO	Riparian areas with large cottonwoods logged or burned over ponderosa pine forests, or open oak or oak-conifer woodland (Marshall et al. 1996)	No Habitat

Species	Status¹	Preferred Habitat	Reason for Elimination
Northwestern Pond Turtle (<i>Clemmys marmorata marmorata</i>)	BSO	Larger mountain and valley streams with deep pools, soils high in clay or silt fraction, south-southwest aspects and slope about 25%(range 0-60%, egg laying mostly June and July and incubation time average 70-80 days) (Holland 1994)	No Habitat
Oregon Vesper Sparrow (<i>Podiceps gramineus affinis</i>)	BSO	Open grassland areas (Marshall et al. 1996)	No Habitat
Rotund Lanx Snail (<i>Lanx subrotundata</i>)	BSO	Aquatic snail, large river systems (Duncan 2004 personal communication)	No Habitat
Scotts Appatanian Caddisfly (<i>Allomyia scotti</i>)	BSO	Lives in small, cold mountain streams, often at high elevation, turbulent waters, vertical rock faces in a thin layer of water (Wiggins 1978)	No Habitat
Spotted Tail-dropper (<i>Prophyaon vanattaie pardalis</i>)	BSO	Leaf litter under bushes in mature conifer forests in the Coast Range and the east side of the Coast Range (Duncan 2004)	Out of Range
Foothill yellow-legged frog (<i>Rana boylei</i>)	BAO	Deep slow moving water in larger streams (Marshall et al. 1996)	No Habitat
Harlequin Duck (<i>Histrionicus histrionicus</i>)	BAO	Clean fast flowing streams with abundance of riffles, rapids, gravel, coble, and boulders. Nests in riparian zone and often hidden in rock cavities, on the ground, on logs, in hollow trees, snags, undercut stream banks, under woody debris (Dowland 1996; Marshall et al. 1996)	No Habitat
White-tailed Kite (<i>Elanus leucurus</i>)	BAO	Open grassy areas, marshes, riparian woodlands, and meadows for foraging. Nests on trees or tall shrubs (Csuti et al. 1997)	No Habitat

1-FT-Federally Threatened; FE-Federally Endangered; BSO-Bureau Sensitive Oregon; BAO-Bureau Assessment Oregon.

APPENDIX D

Special Status Botany Species Eliminated From Further Discussion

Scientific Name	Taxon	Status	Habitat	
<i>Arabis koehleri</i> var. <i>koehleri</i>	Vascular Plant	Bureau Sensitive	Dry, rocky serpentine slopes, ridges (Hickman 1993)	No Habitat
<i>Bensoniella oregana</i>	Vascular Plant	Bureau Sensitive	Along the margins of bogs, meadows, and springs in mixed coniferous forests in partial and full sun (USDI BLM 1991)	Surveyed Not found
<i>Calochortus coxii</i>	Vascular Plant	Bureau Sensitive	Dry open slopes or under open canopies on serpentine soils (USDI BLM 1991)	No Habitat
<i>Calochortus umpquaensis</i>	Vascular Plant	Bureau Sensitive	Grassland and forests on serpentine soils (USDI BLM 1991)	No Habitat
* <i>Corydalis aquae-gelidae</i>	Vascular Plant	Bureau Sensitive	Perennial streams seeps and springs	No Habitat
<i>Cypripedium fasciculatum</i>	Vascular Plant	Bureau Sensitive	Dry to moist conifer and mixed evergreen forest (USDI BLM 1991)	Surveyed Not found
<i>Epilobium oreganum</i>	Vascular Plant	Bureau Sensitive	Bogs and marshes (USDI BLM 1991)	No Habitat
<i>Eucephalis vialis</i>	Vascular Plant	Bureau Sensitive	Mixed evergreen/hardwood forests typically with open canopies (Alverson & Kuykendall 1989)	Surveyed Not found
<i>Frasera umpquaensis</i>	Vascular Plant	Bureau Sensitive	Moist meadows and moist coniferous forest. Mostly grows in shaded conditions but can also occur in full sun (USDI BLM 1991)	Surveyed Not found
<i>Horkelia congesta</i> ssp. <i>congesta</i>	Vascular Plant	Bureau Sensitive	Meadows and open woods (USDI BLM 1991)	Surveyed Not found
<i>Kalmiopsis fragans</i>	Vascular Plant	Bureau Sensitive	Dry, stony mountain slopes (USDI BLM 1991)	Surveyed Not found
<i>Limnanthes gracilis</i> var. <i>gracilis</i>	Vascular Plant	Bureau Sensitive	Vernally moist to wet rocky slopes and meadows on various substrate including serpentine (USDI BLM 1991)	No Habitat
<i>Perideridia howellii</i>	Vascular Plant	Bureau Sensitive	Meadows or along the edge of coniferous forest (USDI BLM 1991)	Surveyed Not found
<i>Romanzoffia thompsonii</i>	Vascular Plant	Bureau Sensitive	Seasonally wet rock outcrops on open slopes (USDI BLM 1991)	Surveyed Not found
<i>Sisyrinchium hitchcockii</i>	Vascular Plant	Bureau Sensitive	Valley grasslands and oak savannahs (USDI BLM 1991)	No Habitat
<i>Asplenium septentrionale</i>	Vascular Plant	Bureau Assessment	Volcanic or granite rock crevices and ledges under a forest canopy (Hickman 1993, USDI BLM 1991)	Surveyed Not found
* <i>Botrychium minganense</i>	Vascular Plant	Bureau Tracking	Riparian and old growth redcedar	Surveyed Not found
* <i>Botrychium montanum</i>	Vascular Plant	Bureau Assessment	Riparian and conifer forest	Surveyed Not found
<i>Carex gynodynamis</i>	Vascular Plant	Bureau Assessment	Moist meadows, open forests (University and Jepson Herbaria Website accessed 6/23/2004)	Surveyed Not found

* Indicates species formerly managed under Survey and Manage protocols through 2003 Annual Species Review

Scientific Name	Taxon	Status	Habitat	
<i>Carex serratodens</i>	Vascular Plant	Bureau Assessment	Wet Meadows	Surveyed Not found
<i>Cicendia quadrangularis</i>	Vascular Plant	Bureau Assessment	Meadows	Surveyed Not found
* <i>Coptis trifolia</i>	Vascular Plant	Bureau Assessment	Riparian and wetland conifer forest	Surveyed Not found
* <i>Cypripedium montanum</i>	Vascular Plant	Bureau Tracking	Mixed conifers	Surveyed Not found
<i>Eschscholzia caespitosa</i>	Vascular Plant	Bureau Assessment	Fields and brushy slopes of the foothills and valleys (USDI BLM 1991)	Surveyed Not found
<i>Iliamna latibracteata</i>	Vascular Plant	Bureau Assessment	Streambanks and moist ground in the shade or open (USDI BLM)	Surveyed Not found
<i>Mimulus tricolor</i>	Vascular Plant	Bureau Assessment	Vernal pools and wet meadows (USDI BLM 1991)	No Habitat
<i>Pellaea andromedaefolia</i>	Vascular Plant	Bureau Assessment	Dry rock outcrops mostly in the open sun but at times along shaded stream banks (USDI BLM 1991)	Surveyed Not found
<i>Polystichum californicum</i>	Vascular Plant	Bureau Assessment	Rock outcrops beneath forest canopies or on open slopes. Often inside rock overhangs or on shear bluffs and cliffs (USDI BLM 1991)	Surveyed Not found
<i>Sedum laxum</i> ssp. <i>heckneri</i>	Vascular Plant	Bureau Assessment	Rock outcrops which are typically serpentine and occasionally gabbro (USDI BLM 1991)	No Habitat
<i>Utricularia gibba</i>	Vascular Plant	Bureau Assessment	Shallow water in the valleys and mountains (USDI BLM 1991)	No Habitat
<i>Utricularia minor</i>	Vascular Plant	Bureau Assessment	Shallow standing or slow moving water (USDI BLM 1991)	No Habitat
<i>Wolffia borealis</i>	Vascular Plant	Bureau Assessment	Lakes, ponds, and pools of standing water (USDI BLM 1991)	No Habitat
<i>Wolffia columbiana</i>	Vascular Plant	Bureau Assessment	Lakes, ponds, and pools of standing water (USDI BLM 1991)	No Habitat
<i>Chiloscyphus gemmiparus</i>	Bryophyte	Bureau Sensitive	Rocks in the bed of cold water streams (Christy and Wagner 1996)	No Habitat
<i>Crumia latifolia</i>	Bryophyte	Bureau Assessment	Wet calcareous cliffs near the coast (Schofield 1992)	No Habitat
<i>Diplophyllum plicatum</i>	Liverwort	Bureau Assessment	Bark of hardwoods and conifers, on thin soil over rock, and on decaying wood, primarily in cool, moist sites (USFS-USDI 1997)	Surveyed Not found
<i>Funaria Muhlenbergii</i>	Bryophyte	Bureau Assessment	Shaded forests on fine textured soil. (Schofield 1992)	Surveyed Not found
<i>Pseudoleskeella serpentinensis</i>	Bryophyte	Bureau Assessment	Serpentine endemic	No Habitat

* Indicates species formerly managed under Survey and Manage protocols through 2003 Annual Species Review

Scientific Name	Taxon	Status	Habitat	
<i>Schistostega pennata</i>	Bryophyte	Bureau Assessment	On damp rocks, soil and decaying wood , in dark places. (Christy and Wagner 1996)	No Habitat
<i>Tetraphis geniculata</i>	Bryophyte	Bureau Assessment	Decomposing stumps and logs of coniferous trees. (Schofield 1992)	Surveyed Not found
<i>Tetraplodon mnioides</i>	Bryophyte	Bureau Assessment	Soil and rotten wood enriched by old dung. (Christy and Wagner 1996)	Surveyed Not found
<i>Tripterocladium leucocladulum</i>	Bryophyte	Bureau Assessment	Shaded to exposed rocks, cliffs and bark of hardwoods. (Christy and Wagner 1996)	Surveyed Not Found
* <i>Bryoria pseudocapillaris</i>	Lichen	Bureau Sensitive	Coastal Sites. (Leshar 2000)	No Habitat
* <i>Bryoria spiralifera</i>	Lichen	Bureau Sensitive	Coastal Sites. (Leshar 2000)	No Habitat
<i>Bryoria subcana</i>	Lichen	Bureau Assessment	Bark and wood of conifers in forest in stream and high precipitation ridges within 30 mile of the ocean. (Leshar 2000)	Surveyed Not found
<i>Calicium adpersum</i>	Lichen	Bureau Assessment	Habitat unknown	Surveyed Not Found
* <i>Hypogymnia duplicata</i>	Lichen	Bureau Tracking	Old-growth conifer. (Leshar 2000)	Surveyed Not found
* <i>Leptogium cyanescens</i>	Lichen	Bureau tracking	Mixed Conifers	Surveyed Not Found
<i>Lobaria linita</i>	Lichen	Bureau Assessment	Mature forests in the Western Hemlock Zone. (Leshar 2000)	Surveyed Not found
* <i>Niebla cephalota</i>	Lichens	Bureau Assessment	Coastal Sites. (Leshar 2000)	Surveyed Not found
* <i>Nephroma occultum</i>	Lichen-	Bureau Tracking	Old-growth conifers. (Leshar 2000)	Surveyed Not found/
<i>Pannaria rubiginosa</i>	Lichen	Bureau Assessment	Mature Douglas-fir/western hemlock forest. (Leshar 2000)	Surveyed Not found
<i>Pilophorus nigricaulis</i>	Lichen	Bureau Assessment	Non-forest communities on talus slopes, cliffs, and rock outcrops. (Leshar 2000)	Surveyed Not found
* <i>Pseudocyphellaria perpetua</i>	Lichen	Bureau Tracking	Coastal Site. (Leshar 2000)	No Habitat
* <i>Pseudocyphellaria rainierensis</i>	Lichen	Bureau Tracking	Old-growth conifers. (Leshar 2000)	Surveyed Not found
<i>Sulcaria badia</i>	Lichen	Bureau Assessment	Bark and wood mainly from oak and maple. (McCune 1997)	Surveyed Not found
<i>Stereocaulon spathuliferum</i>	Lichen	Bureau Assessment	Rock (McCune 1997)	Surveyed Not Found
* <i>Teloschistes flavicans</i>	Lichen	Bureau Assessment	Coastal Sites. (Leshar 2000)	No Habitat
<i>Bridgeoporus nobilissimus</i>	Fungi	Bureau Sensitive	Range of Pacific Silver Fir and Noble Fir. (Hibler and O'dell 1998)	No Habitat

* Indicates species formerly managed under Survey and Manage protocols through 2003 Annual Species Review

Appendix E

Evaluation of the Roseburg District Resource Management Plan Relative to Four Northern Spotted Owl Reports

Evaluation of the Roseburg District Resource Management Plan
Relative to Four Northern Spotted Owl Reports
September 12, 2005

I. Introduction

The Roseburg District Record of Decision (ROD) and Resource Management Plan (RMP), June 1995, incorporates and adopts the Northwest Forest Plan ROD (April 1994) based on the Interagency (BLM and Forest Service) Final Supplemental Environmental Impact Statement (February 1994) and the Roseburg District Proposed Resource Management Plan/Final Environmental Impact Statement (PRMP/EIS)(October 1994).

The overall objectives of the Northwest Forest Plan (NFP) and the Roseburg District RMP/ROD are to manage for healthy forest ecosystems with habitat that will support populations of native species, particularly those associated with late-successional habitat, and respond to the need for a sustainable supply of timber and other forest products. In addition, these plans are based on the principles of adaptive management. Adaptive management is a continuing process of monitoring, research, evaluation and adjusting, as determined necessary, with the objectives of improving the implementation and achieving the goals of the RMP/ROD. Under the concepts of adaptive management new information is evaluated and a decision is made to determine if adjustments or changes are deemed necessary (Roseburg RMP/ROD, June 1995).

The Bureau of Land Management (BLM), Forest Service (FS), and US Fish and Wildlife Service (USFWS) have conducted a coordinated review of four recently completed reports containing information on the NSO. The reviewed reports (hereinafter collectively referred to as “the reports”) include the following:

- *Scientific Evaluation of the Status of the Northern Spotted Owl* (Sustainable Ecosystems Institute, Courtney et al. 2004);
- *Status and Trends in Demography of Northern Spotted Owls, 1985-2003* (Anthony et al. 2004);
- *Northern Spotted Owl Five Year Review: Summary and Evaluation* (USFWS, November 2004); and
- *Northwest Forest Plan – The First Ten Years (1994-2003): Status and trend of northern spotted owl populations and habitat, PNW Station Edit Draft* (Lint, Technical Coordinator, 2005).

The interagency review and summary of the findings from those reports is described below.

The BLM planning regulations require that , “The District Manager shall be responsible for monitoring and evaluating the plan at “established intervals . . . and at other times as appropriate to determine whether there is sufficient cause to warrant amendment or revision of the plan” (see 43 CFR 1610.4-9).

As a key element of the Northwest Forest Plan monitoring strategy, completion of the NSO status and trend portion of *The First Ten Years* monitoring report, as well as the other timely studies pertinent to the NSO, is considered appropriate to warrant this focused evaluation. The monitoring report and this evaluation carry out the process of monitoring (ROD/RMP pp. 84-86 and adaptive management (ROD/RMP pp. 79-80) envisioned by the Northwest Forest Plan (NWFP), as adopted and implemented through the Roseburg District RMP.

Following is the interagency review and summary of key findings from the four reports regarding the NSO. This summary has been reviewed by report authors Dr. Steven P. Courtney and Dr. Robert G. Anthony to ensure that it accurately reflects their findings. In addition, agency representatives Terry Rabot and Joseph Lint reviewed the document to verify that the USFWS five-year review and the ten-year NSO status and trend report, respectively, were appropriately incorporated.

II. Review and Summary of Key Findings Regarding the Northern Spotted Owl

The most important conservation concerns addressed in the reports are: 1) the precipitous NSO population declines in Washington, and declining trends in the three northern Oregon demographic areas, as described by Anthony et al. (2004); and 2) the three major current threats identified by Courtney et al. (2004), i.e., lag effects from prior harvest of suitable habitat, habitat loss due to wildfire in portions of the range, and competition from barred owls.

Anthony et al. (2004) indicated that NSO populations were doing poorest in Washington, with precipitous declines on all four study areas. The number of populations that declined, and the rate at which they declined, were noteworthy (Anthony et al. 2004). In northern Oregon, NSO population declines were noted in all three study areas. The declines in northern Oregon were less than those in Washington, except in the Warm Springs study area, where the decline was comparable to those in Washington (Anthony et al. 2004). The NSO has continued to decline in the northern portion of its range, despite the presence of a high proportion of protected habitat on federal lands in that area. Although Courtney et al. (2004) indicated that population declines of the NSO over the past 14 years were expected, they concluded that the accelerating downward trends on some study areas in Washington where little timber harvest was taking place suggest that something other than timber harvest is responsible for the decline. Anthony et al. (2004) stated that determining the cause of this decline was beyond the scope of their study, and that they could only speculate among the numerous possibilities, including competition from barred owls, loss of habitat from wildfire, timber harvest including lag effects from prior harvest, poor weather conditions, and defoliation from insect infestations. Considering the fact that the NSO is a predator species, Anthony et al. (2004) also noted the complexities of relationships of prey abundance on predator populations, and identified declines in prey abundance as another possible reason for declines in apparent survival of NSO.

In southern Oregon and northern California, NSO populations were more stationary than in Washington (Anthony et al. 2004). The fact that NSO populations in some portions of the range were stationary was not expected within the first ten years, given the general prediction of continued declines in the population over the first several decades of NWFP implementation (Lint 2005). The cause of the better demographic performance on the southern Oregon and

northern California study areas, and the cause of greater than expected declines on the Washington study areas are both unknown (Anthony et al. 2004). Courtney et al. (2004) noted that a rangewide population decline was not unexpected during the first decade, nor was it a reason to doubt the effectiveness of the core NWFP conservation strategy.

Lint (2005) indicated that loss of NSO habitat did not exceed the rate expected under the NWFP, and that habitat conditions are no worse, and perhaps better than expected. In particular, the percent of existing NSO habitat removed by harvest during the first decade was less than expected. Courtney et al. (2004) indicated that models of habitat growth suggest that there is significant ingrowth and development of habitat throughout the federal landscape. Courtney et al. (2004) also noted that management of matrix habitat has had a lower impact on NSO populations than predicted. Owls are breeding in substantial numbers in some matrix areas. The riparian reserve strategy and other habitat management guidelines for the matrix area appear to preserve more, better, and better-distributed dispersal habitat than earlier strategies, and there is no evidence to suggest that dispersal habitat is currently limiting to the species in general (Courtney et al. 2004). Anthony et al. (2004) noted declining NSO populations on some study areas with little harvest, and stationary populations on other areas with consistent harvest of mature forest. No simple correlation was found between population declines and timber harvest patterns (Courtney et al. 2004). Because it was not clear if additional protection of NSO habitat would reverse the population trends, and because the results of their study did not identify the causes of those trends, Anthony et al. (2004) declined to make any recommendations to alter the current NWFP management strategy.

Reductions of NSO habitat on federal lands are lower than those originally anticipated by the Service and the NWFP (Courtney et al. 2004). The threat posed by current and ongoing timber harvest on federal lands has been greatly reduced since 1990, primarily because of the NWFP (Courtney et al. 2004). The effects of past habitat loss due to timber harvest may persist due to time-lag effects. Although noting that it is probably having a reduced effect now as compared to 1990, Courtney et al. (2004) identified past habitat loss due to timber harvest as a current threat. The primary current source of habitat loss is catastrophic wildfire (Courtney et al. 2004). Although the total amount of habitat affected by wildfires has been small, there is concern for potential losses associated with uncharacteristic wildfire in a portion of the species range. Lint (2005) indicated that the NWFP recognized wildfire as an inherent part of managing NSO habitat in certain portions of the range. Courtney et al. (2004) stated that the risk to NSO habitat due to uncharacteristic stand replacement fires is sub-regional, confined to the dry eastern and to a lesser extent the southern fringes of the NSO range. Wildfires accounted for 75 percent of the natural disturbance loss of habitat estimated for the first decade of NWFP implementation (Courtney et al. 2004). Lint (2005) cautioned against relying solely on the repetitive design of the conservation strategy to mitigate effects of catastrophic wildfire events, and highlighted the potential to influence fire and fire effects through active management.

Anthony et al. (2004) indicated that there is some evidence that barred owls may have had a negative effect on NSO survival in the northern portion of the NSO range. They found little evidence for such effects in Oregon or California. The threat from barred owl competition has not yet been studied to determine whether it is a cause or a symptom of NSO population declines, and the reports indicate a need to examine threats from barred owl competition.

The synergistic effects of past threats and new threats are unknown. Though the science behind the NWFP appears valid, new threats from barred owls, and potential threats¹ from West Nile virus and Sudden Oak Death may result in NSO populations in reserves falling to lower levels (and at a faster rate) than originally anticipated. If they occur, such declines could affect NSO recovery (Courtney et al. 2004). According to Courtney et al. (2004), there exists a potential for habitat loss due to Sudden Oak Death in the southern portion of the range, however the threat is of uncertain proportions. In addition, Courtney et al. (2004) indicated there is no way to predict the impact of West Nile virus, which is also identified as a potential threat. The reports do not provide supporting analysis or recommendations regarding how to deal with these potential threats. Courtney et al. (2004) concluded that the risks currently faced by the NSO are significant, and their qualitative evaluation is that the risks are comparable in magnitude to those faced by the species in 1990.

According to the USFWS (November 2004), the current scientific information, including information showing declines in Washington, northern Oregon, and Canada, indicates that the NSO continues to meet the definition of a threatened species. Populations are still relatively numerous over most of the species' historic range, which suggests that the threat of extinction is not imminent, and that the subspecies is not endangered even in the northern part of its range where greater than expected population declines were documented (USFWS, November 2004). The USFWS (November 2004) did not consider the increased risk to NSO populations due to the uncertainties surrounding barred owls and other factors sufficient to reclassify the species to endangered at this time.

In summary, although the agencies anticipated a decline of NSO populations under land and resource management plans during the past decade, the reports identified greater than expected NSO population 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 NSO populations, and they were inconclusive as to the cause of the declines. Lag effects from prior harvest of suitable habitat, competition with barred owls, and habitat loss due to wildfire were identified as current threats; West Nile virus and Sudden Oak Death were identified as potential new threats. Complex interactions are likely among the various factors. The status of the NSO population, and increased risk to NSO populations due to uncertainties surrounding barred owls and other factors, were reported as not sufficient to reclassify the species to endangered at this time. The reports did not include recommendations regarding potential changes to the basic conservation strategy underlying the NWFP, however they did identify opportunities for further study.

The full reports are accessible on the internet at the following addresses:

- Courtney et al. 2004:
<http://www.sei.org/owl/finalreport/finalreport.htm>
- Anthony et al. 2004:
<http://www.reo.gov/monitoring/trends/Compiled%20Report%20091404.pdf>

¹ Courtney et al. (2004) distinguish between operational threats (perceived as currently negatively influencing the status of the NSO) and potential threats (factors that could become operational threats in 15-20 years, or factors that may be threatening the NSO currently and for which the extent of the threat is uncertain).

- USFWS, November 2004:
<http://www.fws.gov/pacific/ecoservices/endangered/recovery/5yearcomplete.html>
- Lint, Technical Coordinator, 2005:
http://www.reo.gov/monitoring/10yr-report/northern-spotted-owl/documents/owl_text%20and%20tables.pdf

III. Comparative Evaluation of the Roseburg District Resource Management Plan with the Four, Previously Referenced, Reports on the Northern Spotted Owl.

Following are excerpts from the Roseburg District RMP, the supporting Roseburg District Proposed Resource Management Plan/Environmental Impact Statement (PRMP/EIS) and the Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (FSEIS). These excerpts form the basis for short discussions of consistency of the report findings with effects described for the NSO in the PRMP/EIS and FSEIS, and the ability to meet RMP goals and objectives.

The Roseburg District PRMP/EIS summarizes discussions from the FSEIS regarding NSO populations. “The overall results [declining populations across much of their range] of the demographic analysis were not surprising since the data was gathered during a time of habitat decline that was of sufficient concern to serve as the primary reason for listing of the owl as a threatened species” and “the result that should be of most concern is the declining rate of adult survival”. “While there is strong reason to believe that the owl populations have declined across much of their range there is ample reason to believe that the pattern of population change is not the same everywhere” and “It is unlikely that a single factor, with the exception of habitat loss, is primarily responsible for the declines in owl populations across its range” (PRMP/EIS pp. 4-63 – 4-64). Also as stated in the FSEIS under the strategies proposed, both the Interagency Scientific Committee (Thomas et al 1990) and the Northern Spotted Owl Recovery Team (USDI 1992) projected that owl habitat and owls would continue to decline for up to 50 years before reaching a new equilibrium.

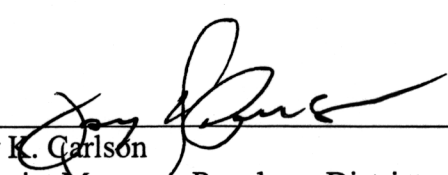
The continuing decline in NSO populations was anticipated and is consistent with the analysis in the Roseburg PRMP/EIS and Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (FSEIS) (USDA; USDI, 1994a). The Roseburg PRMP/EIS incorporated by reference (PRMP/EIS 4-54, 4-63) the discussion and conclusions of the FSEIS relating to the analysis of the spotted owl population trends (FSEIS Chapter 3&4, pages 3&4-212 to 245 and Appendix J3). The discussion and conclusions in the FSEIS and the Roseburg PRMP/EIS anticipate that NSO populations had declined throughout much of their range and would continue to decline for the first few decades of the NFP implementation. It also concluded that the effects or rate of decline from implementation would not be the same everywhere across the range and for all habitat types. These conclusions are consistent with the information in Section II of this evaluation in that the reports did not find a direct correlation between habitat conditions and changes in NSO populations and were also inconclusive as to the cause of the population declines.

Lint (2005) indicated that the NWFP recognized wildfire as an inherent part of managing NSO habitat in certain portions of the range. Courtney et al. (2001) also added "The Forest Plan acknowledges the potential for the loss of owls and habitat from catastrophic events such as wildfire, particularly in the East Cascade Provinces and the Klamath Province." (pp 6_25) Even though stand replacing wildfire is identified as a continuing threat to NSO suitable habitat in the reports, it is not considered a widespread threat throughout the range of the NSO. Stand replacing wildfire did have some local negative effects, but these were most notable in the Klamath Provinces in northern California and southern Oregon.

The threat from barred owls competition was not considered specifically in the Roseburg PRMP/EIS or the FSEIS although it did consider other factors outside of habitat loss. It was a concern that other factors may be responsible for population decline outside of those that could be managed under land management practices. "... it is unlikely that a single factor, with the exception of habitat loss, is primarily responsible for the declines in [Northern spotted] owl populations across the range" (PRMP/EIS 4-64). Anthony et al indicated that there is some evidence that barred owls may have had a negative effect on NSO survival in the northern portion of the range. They have found little evidence for such effects in Oregon and California. The threat from barred owl competition has not yet been studied to determine whether it is a cause or a symptom of NSO declines, and the reports indicate a need to examine these threats from barred owl competition.

IV. Conclusions/Findings

Based on the above evaluation of pertinent elements of the Roseburg District ROD/RMP and its associated PRMP/EIS, I find that effects on NSO populations identified in the four reports are within those anticipated in the PRMP/EIS, and that the RMP goals and objectives are still achievable in light of the information from the reports. As such, I find that the latest information on the NSO does not warrant a change in RMP decisions pertinent to the NSO, and therefore does not warrant amendment or revision of the Roseburg District RMP. I also find that the underlying analysis in the EIS remains adequate for purposes of tiering NEPA analyses of NSO effects from proposed actions implementing the RMP.



Jay K. Carlson
District Manager, Roseburg District

9/14/05

Date

References

- USDA; USDI, 1994a. U.S. Department of Agriculture, Forest Service; U.S. Department of Interior, Bureau of Land Management, February 1994. Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl.
- USDA; USDI, 1994b. U.S. Department of Agriculture, Forest Service; U.S. Department of Interior, Bureau of Land Management, April 1994. Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl.

APPENDIX F CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT

The following elements of the human environment are subject to requirements specified in statute, regulation, or executive order.

These resources or values either **not present** or **would not be affected by the proposed actions or alternative**, unless otherwise described in this EA. This negative declaration is documented below by individuals who assisted in the preparation of this analysis.

ELEMENT	NOT PRESENT	NOT AFFECTED	IN TEXT
Air Quality			X
Areas of Critical Environmental Concern	X		
Cultural Resources	X		X
Environmental Justice	X		
Farm Lands (prime or unique)	X		
Floodplains	X		
Native American Religious Concerns	X		
Non-Native and Invasive Species		X	X
Threatened or Endangered Wildlife Species			X
Threatened or Endangered Plant Species			X
Wastes, Hazardous or Solid	X		
Water Quality Drinking/Ground		X	
Wetlands/Riparian Zones		X	X
Wild & Scenic Rivers	X		
Wilderness	X		
Visual Resource Management			X