

**U.S. Department of Interior
Bureau of Land Management
Roseburg District, Oregon**

Environmental Assessment for the Swiftwater Field Office

**FY 2002 Commercial Thinning Harvest (West)
Cat Tracks and Hayhurst Tributaries Timber Sales**

EA No. OR - 104 - 02 - 02

The Swiftwater Field Office proposes to do a commercial thinning harvest on approximately 460 acres of second growth forest located in the Elk Creek Watershed located in Section 31, T21S R4W; Section 7, T22S R4W; and Section 3, T23S R6W; W.M. This project is within the Matrix and Riparian Reserves Land Use Allocations and is designed to help meet the Roseburg District's annual harvest commitment and to enhance late-successional characteristics in the Riparian Reserve.

Acronyms Used:

ACS	-	Aquatic Conservation Strategy
BA	-	Biological Assessment
BLM	-	Bureau of Land Management
CWD	-	Coarse Woody Debris
EA	-	Environmental Assessment
FONSI	-	Finding Of No Significant Impact
GFMA	-	General Forest Management Area
ID Team	-	Interdisciplinary Team
LUA	-	Land Use Allocation
NEPA	-	National Environmental Protection Act
NFP	-	Northwest Forest Plan
NMFS	-	National Marine Fisheries Service
NSO	-	Northern Spotted Owl
PDF	-	Project Design Features
RMP	-	Resources Management Plan
ROD	-	Record Of Decision (used only to refer to the NFP ROD)
T&E	-	Threatened or Endangered

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INTRODUCTION

This Environmental Assessment (EA) has been prepared for the Swiftwater Field Office's proposed **FY 2002 COMMERCIAL THINNING (WEST) Projects (Cat Tracks and Hayhurst Tributaries Timber Sales)**. The EA is a site-specific analysis of potential environmental impacts that could result with the implementation of a proposed action or alternative. The EA assists the Agency in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from analyzed actions. "Significance" as defined by NEPA is found in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a "Finding of No Significant Impact" (FONSI). The FONSI is a document that briefly presents the reasons why implementation of the proposed action will not result in "significant" environmental impacts (effects) beyond those already addressed in the Roseburg District's *Proposed Resource Management Plan / Environmental Impact Statement* (PRMP/EIS, October 1994).

A Decision Document would be completed after the FONSI is signed to document the decision, however, Forest Management Regulation 43 CFR 5003.2 states that "[w]hen a decision is made to conduct an advertised timber sale, the notice of such sale shall constitute the decision document." This notice would be placed in *The News Review*, a daily newspaper of general circulation in Roseburg, Oregon and constitute a decision document with authority to implement the proposed action.

I. PURPOSE OF AND NEED FOR ACTION

This section provides a general overview of the proposed action. Included are: the need for the action, purpose of the action, a general description and objectives of the proposal, and conformance with existing land use plans.

1. Need for Action

The BLM has a need to implement the *Roseburg District Record of Decision and Resources Management Plan* (RMP, June 1995). The RMP "responds to dual needs: the need for forest habitat and the need for forest products" (RMP, pg. 15). "The need for forest products . . . is . . . for a sustainable supply of timber and other forest products that will help maintain the stability of local and regional economies . . . on a predictable and long-term basis". The BLM also needs to offer for sale "Commercial thinnings . . . after developing stands reach a combination of stem diameter and surplus volume to permit an entry that is economical" (RMP, pg. 149). Silvicultural stand exams indicate that the stands identified in this project would benefit from a thinning at this time.

The RMP employs the strategy known as "ecosystem management". "Ecosystem management emphasizes the complete ecosystem instead of individual components and looks at sustainable systems and products that people want and need. It seeks a balance between maintenance and restoration of natural systems and sustainable yield of resources" (RMP, pg. 18). The NFP (ROD, pg. 6) divides the

federal landbase into seven land use allocations (LUA) or categories. This project is within the "Matrix" LUA. "Stands in the matrix can be managed for timber and other commodity production, and to perform an important role in maintaining biodiversity" (S&G, pg. B-6) by providing for biological legacies (snags, large woody debris and retention trees) that bridge past and future forests. The RMP further classifies the Matrix into two categories: the "General Forest Management Area" (GFMA); which are lands available for timber harvest and "Connectivity / Diversity Blocks" which are lands that are available for timber harvest and also provide connectivity between Late-Successional Reserves and Riparian Reserve. This project is in GFMA.

This project is also in the "Riparian Reserves" LUA. The "Riparian Reserves are areas along all streams, wetlands, ponds, lakes, and unstable or potentially unstable areas where the conservation of aquatic and riparian-dependent terrestrial resources receives primary emphasis." (ROD, pg. 7). Much of the Riparian Reserve consists of homogeneous second growth trees resulting from past harvest. Silvicultural practices are needed to reintroduce complexity and accelerate old growth characteristics within the Riparian Reserve to "... acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy [ACS] objectives" (RMP, pg. 25).

These needs would be met by actions consistent with the following objectives:

1. For the Matrix portion:
 - a. "Produce a sustainable supply of timber and other forest commodities " and "Provide connectivity . . . between Late-Successional Reserves" (RMP, pg. 33).
 - b. Improve stand health by reducing the excess stocking in the forest stand to increase the growth and vigor of the remaining individual trees (RMP, pg. 149).
2. For the Riparian Reserve portion:
 - a. "... protect the health of the aquatic system and its dependent species; . . . [and] . . . also provide incidental benefits to upland species" (ROD, pg. 7).
 - b. Accelerate the development of large conifers of various form and structure for large trees and future recruitment of coarse woody debris (CWD) within the Riparian Reserve and meet the Aquatic Conservation Strategy objective to restore the "structural diversity of plant communities in riparian zones" (RMP, pg. 20).
3. Implement ecosystem management as outlined in the RMP.
 - Avoid damage to riparian ecosystems and meet the objectives of the "Aquatic Conservation Strategy" (RMP, pg. 19).
 - "Provide habitat for a variety of organisms associated with both late successional and younger forests." (RMP, pg. 33).
 - Maintain "ecologically valuable structural components such as down logs, snags and large trees" (RMP pg. 33).
 - Improve and/or maintain soil productivity (RMP pg. 35).
 - "Maintain or enhance the fisheries potential of the streams . . . " (RMP pg. 40).
 - Protect, manage and conserve all special status and Supplemental Environmental Impact Statement (SEIS) special attention species habitat (RMP pg. 41).

B. Purpose of Action

The purpose of the action described in this EA is to respond to the need to implement the RMP decision to provide a sustainable supply of timber to the local economy. This would be met through the offer of the **Cat Tracks** and **Hayhurst Tributaries** Timber Sales for auction in fiscal year 2002 or later. This proposal would help meet the Roseburg District's annual harvest commitment or allowable sale quantity.

C. Description of the Proposal

The Swiftwater Field Office of the Bureau of Land Management (BLM) proposes to harvest timber in the Elk Creek Watershed located in Section 31, T21S R4W; Section 7, T22S R4W; and Section 3, T23S R6W; W.M. (see maps, Appendix A through C). Approximately 500 acres were analyzed for potential harvest activities. New road construction and renovation of existing roads would also occur. Section II C (pg. 5) of this EA provides a more detailed description of the Proposed Action Alternative.

D. Conformance with Existing Land Use Plans

The Proposed Action and all alternatives were developed to be in conformance with the *Final - Roseburg District Proposed Resource Management Plan / Environmental Impact Statement* (PRMP/EIS) dated October 1994 and its associated *Roseburg District Record of Decision and Resources Management Plan* (RMP) dated June 2, 1995. The RMP was written to be consistent with 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); dated Feb. 1994 and its associated *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (ROD) and *Standards and Guidelines for Management of Habitat for Late-Successional and Old Growth Related Species Within the Range of the Northern Spotted Owl* (S&G=s) dated April 13, 1994; generally referred to as the "Northwest Forest Plan" (NFP).

II. ALTERNATIVES INCLUDING THE PREFERRED ALTERNATIVE

This section describes the No Action and Proposed Action alternatives, and any alternatives considered but eliminated from detailed analysis. These alternatives represent a range of reasonable potential actions that would meet the Purpose and Need. This section also discusses specific design features that would be implemented under the action alternatives.

A. The No Action Alternative (Alternative A)

The No Action Alternative is required by NEPA and provides a baseline for the comparison of the alternatives. This alternative represents the existing condition. If this alternative were selected there would be no harvesting of timber within the bounds of the project area. Harvest would, however, occur at another location within Matrix lands in order to meet harvest commitments identified in the RMP (pg. 7 and 60). Selection of this alternative would not constitute a decision to reallocate these lands to non-commodity uses. Future harvesting in this area would not be precluded and could be analyzed under a subsequent EA. There would be no entry into Riparian Reserves for the purpose of enhancing conditions of late-successional forest ecosystems and applying silvicultural practices to meet ACS objectives at this time.

B. The Action Alternatives

Two action alternatives were considered:

Alternative B - No entry into the Riparian Reserves

Alternative C - Entry into the Riparian Reserves (Proposed Alternative)

TABLE 1. Comparison of the Action Alternatives

Alternative B	Alternative C
330 acres of commercial thinning harvest on seven units.	330 acres of commercial thinning harvest and 125 acres of density management harvest on seven units
Approximately 1.4 miles (11 spurs) of temporary road construction (6.0 acres of road right-of-way clearcut)	Same as Alternative B
Skyline cable and ground-based logging	skyline cable and ground-based logging
7.2 MCF (4.8 MMBF)	10.0 MCF (6.7 MMBF)

Features common to all action alternatives

1. Thinning from below (i.e. removal of the smallest diameter trees).
2. All the Project Design Feature's (PDF's) described in paragraph D below.
3. Retain all individual remnant old growth trees and snags, except those within the road right-of-ways and snags to be felled for safety considerations.
4. Maintain a hardwood component (RMP, pg. 151-152).
5. Treatment within the Riparian Management Zone (see pg. 6) to restore riparian habitat.
6. Pile and burn all landing slash.

C. The Proposed Action Alternative (Alternative C)

Implementation of the Proposed Action Alternative would result in the harvest of approximately 10.0 MCF (thousand cubic feet) or 6.7 MMBF (million board feet) of the Roseburg District's FY 2002 harvest commitment of 7.0 MMCF (45 MMBF). A small amount of additional timber could potentially be included as a modification to this project. These additions would be limited to removal of individual trees or small groups of trees that are blown down, injured from logging, are a safety hazard, or trees needed to facilitate the Proposed Action (ex. guyline and tailhold trees, cable yarding corridor trees, or trees within the road construction prism). Historically this addition has been less than 10% of the estimated sale quantity. Other activities would include: temporary road construction, road renovation, subsoiling of previously compacted skid trails, and fuel hazard reduction (burning of landing piles). An undetermined number of trees would need to be felled prior to the signing of a Decision Document for sampling purposes. This is considered a separate action and was analyzed under the *3-P Fall, Buck and Scale Sampling* EA (EA# OR-100-00-06).

Approximately 1.4 miles (11 spurs) of **temporary road construction** (roads built, used and decommissioned) would occur on government land and 0.06 miles on private land. Approximately 5.2 miles of BLM and private road would have **road renovation** (restoring the road back to its original design). This would consist of cleaning culverts, reshaping the road surface and ditches, and brushing road shoulders. **Road closure** would occur on BLM and private road, blocking access to approximately 3.3 miles of road (see Section D1(d), pg. 7).

Timber harvest would consist of a combination of commercial thinning and density management. **Commercial thinning** is designed to reduce the density of the forest stand in order to maintain stand vigor and increase wood quality, to promote increased growth on the remaining trees and recover wood fiber that would ordinarily be lost through natural mortality (RMP, pg. 149; Silvicultural Prescription, pg. 1). **Density Management harvest** in the Riparian Reserves is designed to reduce the stocking of the forest stand around selected trees in order that the growth of the remaining trees would be accelerated. Other trees are left quite dense to promote mortality. This would accelerate the attainment of old growth forest characteristics by encouraging the development of larger trees more quickly along with patches of mortality for stand diversity (RMP, pg. 103). A noncommercial aspect (falling and girdling trees) would occur within 0 to 40 ft. (intermittent streams) and 0 to 100 ft. (fish-bearing streams) (See page 6).

The Proposed Action would require a mix of skyline cable logging (approximately 350 acres or 76%), and ground based (harvester-forwarder, shovel, or tractor) logging (approximately 110 acres or 24%).

The Authorized Officer (Contract Administrator) may determine that additional isolated minor ground based logging would be necessary (ex. removal of guyline anchor trees, isolated portions of units, etc.). Up to ten acres were assumed in the analysis.

Firewood cutting and salvaging of logging debris (slash) could occur in landing cull decks and near roads. The burning of **landing cull decks and slash piles** could occur as a means of reducing fire hazard.

Subsoiling would occur on selected skid trails, haul roads and landings compacted from previous entries as well as trails and landings that would be created for this entry (see Section D2(c), pg. 7).

D. Project Design Features and Management Practices as part of the Action Alternatives

This section describes PDF's and management practices that would be incorporated as part of the action alternatives to avoid or reduce environmental harm. PDF's are site-specific measures, restrictions, requirements or physical structures included in the design of a project in order to reduce adverse environmental impacts. The RMP (Appendix D, pg. 129) lists "Best Management Practices (measures designed to protect water quality and soil productivity) and "management actions/direction" (" . . . the rules and limits governing actions, and the principles specifying the environmental conditions or levels to be achieved and maintained." [pg. 19]). Mitigating measures (measures designed to avoid, minimize or rectify impacts on resources [40 CFR 1508.20]) may also be incorporated with the implementation of the action alternatives.

1. To meet the objectives of the "Aquatic Conservation Strategy (ACS)" (RMP, pg. 19):

- a. **Riparian Reserves (Component #1)** were established. Riparian Reserves consist of: (1) lands incorporating permanently flowing (perennial) and seasonally flowing (intermittent) streams, (2) the extent of unstable and potentially unstable areas that may directly impact streams, and (3) wetlands. The RMP (pg. 24) specifies Riparian Reserve widths equal to the height of two site potential trees on each side of fish bearing streams and one site potential tree on each side of perennial or intermittent non-fish bearing streams and wetlands greater than an acre. Data has been analyzed from District inventory plots and the height of a site potential tree for the Elk Creek watershed has been determined to be the equivalent of 200 ft. therefore, Riparian Reserve boundaries would be approximately 200 ft. slope distance from the edge of non-fish bearing streams and 400 ft. from fish bearing streams in the project area (East Elk Watershed Analysis, pg. 1-4 and Roseburg District Memo, Jan. 18, 1995).

There are two fish bearing streams (Andrews Creek and Green Ridge Creek) in the project area adjacent to Units 3A and B (Hayhurst Tributaries). No wetlands were found within the project area.

- 1). Silvicultural practices (density management) would be applied within the Riparian Reserves (Alternative C) of Units 3A, 7A, 7C, 31A and 31B "to control stocking . . . and acquire vegetation characteristics needed to attain Aquatic Conservation Strategy objectives" (RMP pg. 25). The objective is to develop late seral forest structure and enhance existing diversity by accelerating tree growth to promote larger trees and canopies, and provide a future source of large woody debris for stream structure. Approximately 125 acres of the Riparian Reserve would be thinned for this purpose.
- 2). Streambank stability and water temperature would be protected by maintaining the full RMP prescribed Riparian Reserve (Alternative B) or a 40 - 100 ft. minimum Riparian Management Zone (Alternative C) along all streams.
- 3). Riparian habitat would be protected by maintaining a Riparian Management Zone. No removal for harvest purposes would occur within this zone, however treatment to restore riparian habitat (snag creation, falling trees to provide a source of interim down woody debris, and falling trees into streams) would occur. Habitat would be protected from logging damage by directionally felling trees that are within 100' of streams away from the streams and yarding logs away from or parallel to the streams (i.e. logs would not be yarded across streams).

NOTE: In Cat Tracks Unit 7C, logs would be yarded across streams, however logs would be fully suspended to avoid any ground disturbance within or immediately adjacent to stream channels. No road building would take place within the Riparian Reserves. Under Alternative B no logging would occur within the Riparian Reserve, however restoration as described above would occur.

b. **Key Watersheds (ACS Component #2)** were established “as refugia . . . for maintaining and recovering habitat for at-risk stocks of anadromous salmonids and resident fish species [RMP, pg. 20].” This project is not in a Key Watershed.

c. **Watershed Analysis (ACS Component #3)** for the East Elk Creek and Brush Creek-Hayhurst Valley-Yoncalla Subwatersheds were used in this analysis and are available for public review at the Roseburg District office.

d. **Watershed Restoration (ACS Component #4)** would be accomplished primarily through the treatment of Riparian Reserves as described in paragraph 1a above. Additional opportunities for this watershed includes **full road decommissioning** i.e., hydrologic obliteration on approximately 1.1 miles of BLM road (roads # 23-6-10.1 and one unnumbered spur). This would not occur under this proposed action but would be analyzed in a future EA. The proposed action would result in these roads being blocked to prevent access.

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

a. **Measures to limit soil erosion and sedimentation from roads** would consist of: (1) Maintaining existing roads (Road No. 22-4-6.0 Segments A, B and C; 22-4-6.4, Segment A; 22-4-8.0 Segments A, B, C and D; 22-4-7.2, Segment A; 23-6-1.0 Segments C, D and E; 23-6-1.3 Segments A and B; 23-6-2.2 Segment A; 23-6-2.3 Segment A; 23-6-3.1 Segment A; and one unnumbered spur) to fix drainage and erosion problems. This would consist of reestablishing ditchlines and clearing existing culverts. (2) Not over-wintering bare erodible subgrades. This would be done by building, using and decommissioning roads, i.e. installing necessary drainage features, blocking and seeding and mulching bare cut and fill surfaces with native species or a sterile hybrid mix depending on availability. (3) Restricting road renovation and log hauling on unsurfaced roads to the dry season (normally May 15 to Oct. 15), however, operations would be suspended during periods of heavy precipitation. This season could be adjusted if unseasonable conditions occur (e.g. an extended dry season or wet season).

b. **Measures to limit soil erosion and sedimentation from logging** would consist of: (1) requiring skyline yarding where cable logging is specified. This method limits ground disturbance by requiring partial suspension during yarding (i.e., the use of a logging system that "suspends" the front end of the log during in-haul to the landing, thereby lessening the "plowing" action that disturbs the soil). In some limited, isolated areas partial suspension may not be physically possible due to terrain or lateral yarding. Excessive soil furrowing would be hand waterbarred. (2) Due to unsurfaced access roads and spurs, dry season logging would occur on all units, therefore erosion would be minimized.

c. **Measures to limit soil compaction and loss of organic material** (RMP, pg. 37) would consist of: (1) limiting ground based logging to the dry season (May 15 to Oct. 15) when soils are least compactable. These dates are subject to adjustment based on localized seasonal weather variation. (2) Limiting ground based activities to slopes less than 35% and to existing trails wherever possible. All main trails and landings created or used by proposed operations would cumulatively affect less than approximately 10 percent of the ground-based portions of the units. A main trail is any trail in which displaced duff and slash exposes more than 50 percent of the trail surface area to bare mineral soil. (3) The harvester would be required to de-limb trees in front of the machine tracks or tires in order to reduce compaction. The forwarder would operate on the branch and limb covered areas traversed by the harvester. (4) After completion of ground-based operations, the need for amelioration would be evaluated in accordance with RMP criteria. All main trails would be ameliorated after completion of proposed entry or would be documented with a plan for deferred amelioration at final harvest. Amelioration could be deferred if unacceptable damage to residual trees would occur. Secondary trails (trails with less than 50 percent exposed mineral soil) would be handled in the same manner as main trails if evaluation shows compaction is extensive. Amelioration would include subsoiling and returning organic debris to the subsoiled surface. Subsoiling is a practice that ameliorates soil compaction and improves water infiltration. Any subsoiling of trails for this entry would be done with a winged subsoiler mounted to the arm of a small excavator. The excavator would pull organic debris back over the trails. Machines would be limited in size and track width to reduce compaction and trail width.

d. **Measures to protect slope stability** would consist of: (1) Removing from harvest consideration those areas that could prevent the attainment of ACS objectives from the project (see Appendix D). (2) Locating new roads in stable locations and with proper drainage structures. (3) Dry season yarding with one-end suspension as described previously.

3. To provide wildlife habitat components:

a. Future nesting and roosting habitat for cavity dwellers would be provided by reserving existing hard or soft snags at least 20" in diameter and 15 ft. in height (PRMP/EIS, Appendices 226) where possible. Any snag deemed as hazardous to worker safety could be felled at the discretion of the operator and the Sales Administrator. Such trees would be reserved and left in place as CWD. Past experience has been that less than 5% of snags need to be felled for this reason. Remnant old-growth trees remaining from the previous stand would be reserved where possible.

b. Most existing CWD (at least 16" in diameter and 16 ft. in length) would be reserved (RMP, pg. 38). Blowdown trees and logs remaining from previous logging have created this.

4. To protect air quality:

Any burning of landing piles would have an approved "Burn Plan" and be conducted under the requirements of the Oregon Smoke Management Plan and done in a manner consistent with the requirements of the Clean Air Act.

5. **To protect and enhance stand diversity:**
 - a. Mature and old growth (RMP, pg. 112) remnant trees in the thinning units would be retained to the greatest extent possible as well as occasional defective (diseased) and deformed trees (trees with broken or multiple tops, and trees with ramicorn branches (steeply angled branches) or large branch clusters) that could provide future snags and nesting habitat. Approximately 2.4 old growth remnant trees per acre (Cat Tracks) and 0.4 old growth remnant trees per acre (Hayhurst Tributaries) were found in the proposed units.
 - b. Snags and CWD would be reserved as described in paragraph three above. Snags would be protected from logging damage by clumping trees around them and directionally falling trees away from the snags. Approximately 0.4 snags per acre (Cat Tracks) and 0.1 snags per acre (Hayhurst Tributaries) were found in the proposed units.
6. **To prevent and report accidental spills of petroleum products or other hazardous materials:**

Hazardous materials (particularly petroleum products) would be stored in durable containers and located so that any accidental spill would be contained. All landing and work site trash and logging materials would be removed. All equipment planned for instream work would be inspected beforehand for leaks. Accidental spills or discovery of the dumping of any hazardous materials would be reported to the Sale Administrator and the procedures outlined in the “Roseburg District Hazardous Materials (HAZMAT) Emergency Response Contingency Plan” would be followed.
7. **To contain and/or reduce the spread of noxious weeds:**

Stipulations would be incorporated into the logging contract to prevent and/or control the spread of noxious weeds. This would include the cleaning of logging equipment prior to entry on BLM lands (BLM Manual 9015 - Integrated Weed Management). Roadside brushing of Scotch broom would be accomplished prior to seed set.
8. **To protect the residual stand and promote stand health:**
 - a. As much as possible, trees that would most likely survive logging and overall improve the stand condition and health would be selected for retention. The stand would be thinned from below (i.e. removal of the smallest diameter trees first) which would remove suppressed trees and smaller trees that would result in less stand damage during falling.
 - b. Felling and yarding would be done in a manner to protect the residual stand. No falling and yarding would be permitted from April 15 through July 15 when the sap is up in the trees and damage due to bark slippage could occur. This date could be adjusted based on local conditions (e.g. earlier or later than normal loose bark period).
 - c. Yarding systems would be designed to match yarder and cable size to the size of the timber in order to minimize damage from an overly large yarding system. Corridors for yarding would be pre-designated and approved by the Sale Administrator.

9. To protect Special Status and SEIS Special Attention Plants and Animals:

- a. Special Attention (Survey and Manage) plant and animal sites would be protected, where required, according to established management recommendations (RMP, pg. 42). Approximately 85 acres of red tree vole site buffers would be established according to management recommendations (IM-OR-2000-086).
- b. If, during implementation of the proposed action, any Special Status (threatened or endangered, proposed threatened or endangered, candidate, State listed, Bureau sensitive or Bureau assessment) species are found, evaluation for the appropriate type of mitigation needed for each species would be done. Stipulations would be placed in the contract to halt operations if any of these Special Status plants or animals are found to allow time to determine adequate protective measures before operations could resume.
- c. Seasonal restrictions to prohibit logging during the nesting season (March 1 to September 30) would be applied to Units 3B and 3C which are adjacent to a northern spotted owl (NSO) activity center. This restriction could be waived by the biologist if surveys indicate the activity center is not occupied, or if nesting has not been attempted or has failed.
- d. All suitable marbled murrelet habitat will be surveyed to protocol with two consecutive years of surveys completed prior to August 5th, 2002. At this time no murrelet detections have been observed. If marbled murrelets have not been observed upon the completion of surveys, seasonal or daily operating restrictions would not apply to any of the proposed project units. If marbled murrelets are observed appropriate restrictions would be applied.

10. To protect cultural resources:

Stipulations would be placed in the contract to halt operations and evaluate the appropriate type of mitigation needed to provide adequate protection; if any objects of cultural value (e.g. historical or prehistorical ruins, graves, fossils or artifacts) are found during the implementation of the proposed action.

E. Alternatives Considered but Eliminated

An alternative was considered to helicopter log portions of Unit 3A (Hayhurst Tributaries) to avoid use of steep spurs and the need to construct some additional temporary spurs. This alternative was rejected because the cost would diminish the economical viability of the sale and the problems that helicopter logging would solve could be mitigated through a modification of the cable logging design that would avoid hauling on the steep spurs (ID Meeting December 13, 2001).

III. AFFECTED ENVIRONMENT

This section describes the existing environment and forms a baseline for comparison of the effects created by the alternatives under consideration. This section does not attempt to describe in detail every resource within the proposed project area that could be impacted but only those resources that could be substantially impacted. Appendix F (Analysis File) contains data and supporting information that provides the basis for describing the affected environment.

This project lies within the Oregon Western Cascades and Oregon Coast Range Physiographic Provinces. The FSEIS describes the affected environment for this province on page 3&4- 19 and 21.

The Roseburg District Proposed Resource Management Plan/Environmental Impact Statement (PRMP/EIS, pp. 3-3 through 3-71) provides a detailed description of BLM administered lands on the Roseburg District. A further description can also be found in the East Elk Creek and Brush Creek-Hayhurst Valley-Yoncalla Watershed Analyses.

A. General Setting

Stand Description - The stands originated after logging (40-50 years ago) from natural regeneration and planted trees. The predominant conifer species is Douglas-fir. Other conifer species in association include incense cedar, western hemlock, western red cedar, and grand fir. Hardwoods including madrone, chinquapin, big leaf maple and red alder are also found in these stands. Salal, Oregon grape and sword ferns are common on the forest floor. The plant association best describing these areas is a western hemlock or white fir over salal and Oregon grape (Atzet, 1990). Occasional remnants of older trees from the original stand are scattered throughout the project area.

Site Description - This project occurs within three subwatersheds: Upper Pass Creek (17,375 acres), Upper Elk Creek (14,700 acres) and Hayhurst Valley (16,425 acres). These subwatersheds are within the Elk Creek Watershed that covers approximately 187,235 acres (292 square miles). Current landscape patterns include natural stands that are the result of fire, managed stands established following timber harvest, and non-forested agricultural and pasture lands. Three major highways and several small towns are located within the watershed. The topography varies from gentle to extremely steep, dissected terrain with headwalls. Large concentrations of the steeper slopes occur in Hayhurst Tributaries, particularly in Unit 3B.

B. Affected Resources

The affected area was surveyed for the resources listed below according to established protocols:

Botany (Special Status and Survey and Manage species (SSP/S&M)) - No Special Status or Survey and Manage Plants were observed in the project area. The current condition is a mid-seral conifer forest resulting from previous harvest. Plant diversity (generally measured as the number of species present) is on a slow upward trend as the stand slowly transitions from mid-seral to late-seral conditions. There are some localized infestations of Scotch broom, a noxious weed, in the project area.

Cultural Resources - No cultural resources were found in the project area.

Fisheries - Cat Tracks Units 7A and C are located within the Upper Pass Creek sixth-field subwatershed in the headwaters of Pass Creek Tributary #1, a fish bearing stream at the lower reach of the tributary. Hayhurst Units 3A, 3B and 3C are located within the Hayhurst Valley sixth-field subwatershed and are adjacent to two fish bearing creeks, Andrews Creek and Green Ridge Creek. According to the East Elk Creek Watershed Analysis (pg. 7-1), the Brush Creek/ Hayhurst Valley/Yoncalla Valley Watershed Analysis (pg. 29), and 1997 smolt trap data for Elk Creek; Coho salmon (*Oncorhynchus kisutch*), Coastal Cutthroat trout (*Oncorhynchus clarki*), Oregon Coast Steelhead trout (*Oncorhynchus mykiss*), Oregon Coast Chinook salmon (*Oncorhynchus tshawytscha*), Pacific Lamprey (*Lampetra tridentata*), Sculpin (*Cottus sp.*), reddsider shiner (*Richardsonius balteatus*), Dace (*Rhinichthys sp.*), Umpqua pikeminnow (*Ptychocheilus umpqua*), and largescale sucker (*Catostomus macrocheilus*) are present in the Elk Creek fifth-field watershed.

The Oregon Department of Fish and Wildlife (ODFW) has conducted Aquatic Habitat Stream Surveys for the Elk Creek fifth-field watershed. Data is available for Pass Creek Tributary #1 (ODFW survey, July 1995) and Andrews Creek (ODFW survey, October 1995) and was used in this analysis. These surveys generally show that streams within the watershed lack large wood, have elevated water temperatures, and altered sediment inputs. In accordance to the ODFW Habitat Benchmark Rating System, Andrews Creek is rated either Good or Fair, with large woody debris (LWD) rated at Poor. ODFW rating for Pass Creek Tributary #1 is primarily Good or Fair for the lower reach and Fair to Poor for the upper reach with LWD rating a Poor for both reaches of the stream.

Hydrology - The proposed project is located within the Elk Creek fifth-field watershed. Beneficial Uses of Water consists primarily of domestic water supply, irrigation and livestock watering, resident fish and aquatic life, and salmonid spawning and rearing. Elk Creek has been identified by the Oregon Department of Environmental Quality (DEQ) as water quality limited for temperature, dissolved oxygen, bacteria, and flow modification. Bear Creek and Pass Creek are both listed only for habitat modification (Oregon DEQ, 1998).

Soils and Geology - Soils were formed over the sandstones and siltstones of the Tye Formation in the Coast Range. The Tye Formation is notable for the tendency for **debris avalanches and debris flows** in the steeper terrain (Dunne, 1998). The table below provides an approximate breakdown of slope distribution for this project. The steep to very steep terrain generally has well drained, low cohesion soils over hard bedrock. These soils have a Timber Production Capability Classification (TPCC) of FGR; that is, fragile due to slope gradient but suitable for timber production with mitigation. There is higher potential for shallow, rapid landslides within the FGR classification. This is especially true where soils have built up in hollows, swale bottoms and headwalls. The FGR portion consists of approximately 70 acres or about 15 percent of the total project area. Field observations indicate that varying degrees of soil creep may be occurring on these FGR slopes. No tension cracks or actively failing ground were discovered except for one small slump on moderate slopes in Unit 3A. Seven other areas of concern for slope stability were also noted (see ID team notes, 12/6 and 12/13/02; and Appendix D). The few landslides that have occurred since the last tree removal have been small (less than 0.1 acres) based on aerial photo interpretation and field observations.

Table 2. Acres of Land by Slope Class

Sale	Slope Class/ Percent Slope		
	Gentle - Steep 0 to 65	Steep- Very Steep 65 to 90	Extremely Steep > 90
Hayhurst Tributaries	290	65	4
Cat Tracks	100	5	1
Total	390	70	5

The extremely steep terrain consists mostly of very shallow soils and rock outcrops and generally exhibits higher stability than the 65 to 90 percent slopes. The gentle to moderately sloped terrain generally has moderately deep to very deep (20 to greater than 60 inches), well drained soils over soft to somewhat hard bedrock. There are no TPCC slope stability concerns on these soils. It is in this area on slopes up to 35% that ground-based logging would occur.

Past ground-based harvesting has occurred in both sale areas but was extensive in Hayhurst Tributaries.

Hayhurst Tributaries= haul roads, landings and a high percentage of its skid trails were bladed with a tractor creating large cuts and removing most or all of the top soil from these surfaces. Many of the bladed skid trails were constructed directly down steep slopes to stream bottoms. A number of other skid trails and a few landings were composed of fill placed in first and second order stream bottoms. All bladed and fill disturbances comprise about ten percent of the surface area of Hayhurst Tributaries (measurements from 1964 aerial photo). Almost all trails, except for those in stream channel fills, are now stable to erosion. Residual **compaction** due to ground-based harvesting is variable (light to heavy) in both sale areas. Most of the heavy compaction persists where subsoil is exposed.

All existing haul roads inside of units are unsurfaced. Current **erosion** is low due to the degree of revegetation and lack of traffic.

Wildlife - Federally Threatened and Endangered (T&E) species known or suspected to occur in the Roseburg District include the northern spotted owl (*Strix occidentalis caurina*), marbled murrelet (*Brachyramphus marmoratus*), bald eagle (*Haliaeetus leucocephalus*), Columbian white-tailed deer (*Odocoileus virginianus*), Canada lynx (*Lynx canadensis*) and Fender=s blue butterfly (*Icaricia icarioides fenderi*). The sale area is within the 1.5 mile home range of four NSO sites: Salty Dog, Middle Ridge, Squaw Creek, and Snail Canyon; and is within the 0.25 mile disturbance zone of one NSO site, Middle Ridge. The Salty Dog owl site is protected with a Residual Habitat Area (a known owl activity center as of January 1, 1994). There are 460 acres of dispersal habitat within the project area. None of the project area lies within a Critical Habitat Unit. Critical Habitat is defined as a specific geographical area specified by the US Fish and Wildlife Service in Recovery Plans as containing habitat essential for the conservation of a Threatened or Endangered species. The proposed project

falls within the 35-50 mile marbled murrelet Zone 2. There is suitable marbled murrelet habitat adjacent to the sale. There are no known bald eagle nests that could be affected by disturbance above ambient noise levels within 0.25 miles of any of the project areas. The remaining T&E species do not occur in the project area (see Summary of Wildlife Concerns, Appendix F).

Survey and Manage Species: There are 460 acres of potential red tree vole habitat within the proposed sale units. Seven active red tree vole sites were found through protocol surveys, including fourteen active nest trees. Active sites would be protected by minimum ten acre buffers established according to management recommendations (IM-OR-2000-086). Eight inactive sites, including thirteen nest trees, were also found during surveys. A total of 85 acres of red tree vole habitat would be reserved out of which up to 36 acres could be removed from within the units.

IV. ENVIRONMENTAL CONSEQUENCES

This section provides the evidence and analytical basis for the comparisons of the alternatives. The probable environmental consequences (impacts, effects) to the human environment that each alternative would have on selected resources are described. Impacts can be positive or negative. This section is organized by the alternatives and the effects on any key issue identified in Appendix D, as well as the selected resources. Analysis considers the direct impacts (effects caused by the action and occurring at the same place and time), indirect impacts (effects caused by the action but occurring later in time and farther removed in distance but are reasonably foreseeable) and cumulative impacts (effects of the action when added to other past, present and reasonably foreseeable future actions).

The EIS and FSEIS analyze the environmental consequences in a broader context. This EA does not attempt to reanalyze impacts that have already been analyzed in these documents but rather to identify the particular site-specific impacts that could reasonably occur. Environmental effects to the “Critical Elements of the Human Environment” is analyzed in Appendix D and E.

When encountering a gap in information, the question implicit in the Council on Environmental Quality regulations on incomplete and unavailable information was posed: Is this information “essential to a reasoned choice among the alternatives” (40 CFR 1502.22(a))? While additional information would often add precision to estimates or better specify a relationship, the basic data and central relationships are sufficiently well established that any new information would not likely reverse or nullify understood relationships. Although new information would be welcome, no missing information was determined as essential for the decision maker to make a reasoned choice among the alternatives.

A. No Action Alternative

This alternative would not meet the Purpose and Need of the RMP (pg. 15) or this EA (pg. 1) objective of producing forest commodities that would contribute to the local economy. Restoration of past disturbance would not occur. Road conditions would remain unchanged. Only normal programmed maintenance would be performed. There would be no entry into the Riparian Reserves for the purpose of enhancing conditions of late-successional forest ecosystems and applying silvicultural practices to meet ACS objectives.

Stands would continue to differentiate in time through growth and mortality. The Organon model (Hann, 1995) indicates that trees are under competitive stress at this time. By age 80, crowns are averaging about 30% of tree height (crown ratio), mean diameters are around 16 inches, and heights of the tallest trees are over 170 feet. By age 120 the stands are extremely dense and composed of trees with crown ratios averaging less than 25%. Tall skinny trees are susceptible to wind throw and more likely to break under snow loads. Trees that have developed over long periods of competitive stress are more likely to be killed by insects and disease (Waring, 1985; Smith, 1962). Stands left in this condition are slow to respond to improved growing conditions and never attain potential growth rates (Oliver, 1990). When this process occurs in managed stands of Douglas-fir, down wood and snags are made up predominantly of the smaller trees. Accumulations of dead wood consisting of small trees increases fire intensity and rate of spread. The risk of stand damage from fire is increased (Waring, 1985; Graham, 1999). Appendix F contains the Silvicultural Prescription for this project.

Botany (Special Status and Survey and Manage species (SSP/S&M)) - Forest management activities would not occur. Development of overstory and understory trees, shrubs, and forbs would likely increase in a slow upward trend, as well as potential habitat for SSP/S&M species.

Fisheries - Current temperature, sediment inputs, woody debris and hydrologic processes would continue to function at existing rates and levels. Fish species and populations would remain relatively unchanged. There would be no direct impacts under this alternative because the environment would not be affected by activities. The riparian habitat adjacent to the aquatic environment on both fish bearing and non-fish bearing stream eco-tones, consists primarily of a dense monotone of Douglas-fir. As these stands continue to mature, growth rates would decline due to overstocked conditions. Natural mortality would occur resulting in down wood and snags made up predominantly of the smaller trees. The attainment of late successional conditions would be delayed resulting in adverse indirect impacts to the aquatic habitat through reduction in coarse woody debris, litter fall, root strength, shading and associated microclimate impacts.

Hydrology - Vegetation would continue developing over the long-term to provide increased shade, bank stability and small woody debris recruitment. Potential benefits from deferring harvest include no additional sediment delivery from road construction and harvest, and no increases in peak flows at this time from decreased canopy cover. Activities designed to reduce sediment delivery from existing roads, however, would not be completed. Without road renovation, additional sediment would continue to enter the streams during storm events. No change to stream temperature, large woody debris, water pH, dissolved oxygen, or other chemical parameters is likely to occur under this alternative.

Soils - Road construction, renovation, harvest, and haul-related impacts to the soil as described in the action alternatives below would not occur. All compaction and soil displacement from past ground-based operations would continue to heal very slowly due to natural processes.

The probability of landslides on the FGR slopes is considered to be low (< 10 percent chance of occurrence). This is based on the low level of landslide activity since past clearcutting (1964 to 1999 aerial photo review), indicators of potential instability seen in the field, and the protection afforded by unthinned second growth canopies. The Oregon Department of Forestry storm impacts and landslide study indicates that failures were least likely in stands in the 31 to 100 year age class (Oregon Department of Forestry, 1999). The likely size of any landslide occurring under the no action alternative would be small (less than 0.1 acre) based on the lack of evidence of larger landslides having occurred under a clearcut regime and subsequent second growth canopies. Only landslides on FGR slopes in close proximity (within 200 feet) of streams could potentially deposit material directly into streams. The retarding effect of trees on the path of these shallow landslides would mean that only a small percentage of debris avalanches initiating further than about 100 feet from streams would have the potential to reach these streams. Two very steep headwalls in Unit 3B and two in Unit 7C were identified as having debris flow potential but considered to be low probability based on the absence or near absence of debris flows since clearcut. Only a high intensity, long return interval storm would have the potential to generate a debris flow that could reach a stream.

Wildlife - The direct impacts of harvest activities would not occur under this alternative. Wildlife populations and diversity would be expected to remain static. The stand would progress naturally as a Douglas-fir dominated stand. The indirect impacts would include increased canopy closure that could cause a reduction in habitat for some species. The canopy closure would result in competitive mortality thereby creating snags and CWD as habitat for some species. Existing structural features (i.e., snow breaks, forked tops, decay, etc) would be maintained, fostering the creation of nesting habitat. Dispersal capabilities of the stand would continue to increase.

B. Action Alternatives

Unless otherwise noted, the analysis in this section applies to both action alternatives.

Some irreversible and irretrievable commitment of resources would result from the implementation of this project. An irreversible commitment is a commitment that cannot be reversed whereas an irretrievable commitment is a commitment that is lost for a period of time. An irreversible commitment of petroleum fuels for road building, logging and timber hauling would result from the proposed action. An irretrievable loss of soil productivity would occur due to the construction of two acres of road. Although these roads would be decommissioned following use they would effectively remain part of the transportation system until final harvest.

Stand - After the uplands are thinned the stand would be composed of between 60 and 80 dominant conifers per acre. Most of the trees have diameters of between 16 and 20 inches. Dominant conifers are about 110 feet tall with crown ratios over 50 percent. The stand is free to grow for at least 40 years. At age 80, mean diameters are projected to be over 28 inches and live crowns still over 40 percent. The tallest trees would be over 170 feet.

The Riparian Reserve would be thinned (Alternative C) to leave existing natural regeneration of shade tolerant conifers, large hardwoods, and large conifers. The spacing between trees is varied to create canopy openings and clumps of larger trees. Some of the larger conifers would have trees cut around them to maintain large live crowns and limbs. The stand is composed of about 60 large diameter conifers and hardwoods, and at least 20 trees that are less than 10 inches in diameter per acre. In 40 years the stand would still contain shade tolerant conifers and large hardwoods. The silvicultural prescription (Appendix F) provides the details for the implementation and marking to accomplish objectives.

Because the Proposed Action Alternative in this EA proposes to commercially thin timber stands that are 30 to 40 years of age there would be no change in the amount or percentage of late-successional forests on Federal lands within the Elk Creek Watershed.

Key Issue: How do we treat the Riparian Reserve?

The NFP and the Roseburg District RMP provides for entry into the Riparian Reserve for the purpose of meeting the objectives of the Aquatic Conservation Strategy, particularly to move the forest stands away from a homogeneous Douglas-fir monoculture resulting from past management (S&G's, B-31; RMP, pg. 25) towards forests that would have a greater diversity of vegetation. Density management has been conducted in past projects to accomplish these objectives while maintaining a 30 ft. no cut buffer to maintain stream bank stability. During the issue identification phase for this project, a comment was received from the public indicating a desire for, or consideration of, a restoration alternative that would permit limited entry into the Riparian Reserve to accomplish riparian (ACS) objectives but devoid of any commercial removal. This option was reviewed by the ID Team and a 40 ft. minimum (non-fish bearing) and 100 ft. minimum (fish bearing) streamside Riparian Management Zone was established based on site review by the Area hydrologist, soil scientist, and fisheries biologist and information taken from the FEMAT Report's evaluation of riparian processes as a function of distance from stream channels. Additional scientific literature indicates that buffer strips of 30 meters (98 feet) or greater on fish-bearing streams prevented adverse sedimentation impacts from logging on salmonid eggs and alevins development (Moring 1982); generally provide the same level of shading as that of an old-growth forest (Beschta *et al* 1987); and were adequate to maintain macroinvertebrate diversity at pre-harvest levels (Belt *et al*. 1992). Trees would be felled and girdled within the Riparian Management Zone but not removed under both alternatives. Alternative C would commercially remove trees from the remaining portions of the Riparian Reserve whereas Alternative B would not.

Botany (Special Status and Survey and Manage species (SSP/S&M)) - Direct impacts would consist of the cutting and felling of trees and associated ground disturbing activities (temporary road construction and ground-based yarding). These actions would likely have limited short-term negative impacts on the vegetation and associated substrate where the disturbance occurs (Miller 1997). Indirect impacts would consist of an increase in the potential to invasion of noxious weeds and invasive non-native plants into the proposed project area. Temporary road construction and logging operations would result in soil disturbance. Exposed soil is conducive to invasion by noxious weeds and invasive nonnative species. Noxious and invasive weed seeds are often introduced into the area by construction equipment. Equipment cleaning and seeding and mulching bare soil with weed-free seed that would reduce the potential for invasion.

Fisheries - Based on site-specific data and current scientific literature, the commercial thinning activity, as proposed, would have no impacts on the threatened coho salmon and/or its designated critical habitat. Non-commercial thinning activity would take place within the Riparian Management Zone. This activity is specifically prescribed to enhance the Riparian Reserve and adjacent aquatic environment and may have direct and indirect impacts on designated critical habitat for coho salmon, as well as habitat for cutthroat and steelhead trout.

No direct or indirect impacts are expected from the commercial thinning portion of the project based on the PDF's and proposed riparian management zone widths of 40 feet on non-fish bearing streams and 100 feet on fish bearing streams. Based on site specific data and current scientific literature, the commercial thinning activity, as proposed, would have no impacts on the threatened coho salmon and/or its designated critical habitat. This determination is based on a recent stand exam conducted on the proposed commercial thinning units that indicates an average tree (conifer) height of 110 feet and a 13.5-foot crown diameter.

Short-term impacts from density management activities within the riparian management zones (RMZ) could occur through sedimentation released from trees being felled adjacent to streams and reduction in shade from felling trees adjacent to streams. These impacts would be minimized by approximately two trees per acre being felled away from the stream and left in place. The 40-foot and 100-foot minimum Riparian Management Zone would be established based upon the above referenced stand exams and calculations derived from the FEMAT (pg. V-26) evaluation of riparian processes as a function of distance from stream channels and current literature on stream-side buffer impacts.

Long-term impacts from density management activities within the RMZ would be through development of late-successional conditions through increase in coarse woody debris, litter fall, root strength, shading and associated microclimate conditions. The short-term impacts within the RMZ would be inconsequential where as the long term impacts would enhance the fisheries resources within the project area.

No direct impacts to the aquatic environment are expected from haul road activities due to the current conditions of existing road bases, as well as the Best Management Practices and commencement/completion of the thinning activity during the dry season. The proposed haul roads are in good condition and consist of a pit-rock base with 12 inches of 1.5 inch minus gravel. Based on a Burroughs, 1990 study, ten inches of 1.5 inch minus gravel reduces the impacts of forest-road

sedimentation by 99%. Indirect impacts of sedimentation from the haul road activity to the aquatic environment was considered, however is difficult to quantify or measure (Brown 1985). It is expected that any sedimentation resulting from the haul road activity would not be measurable above existing background levels within the stream channel and therefore, would not have an affect on designated critical habitat for coho salmon, as well as habitat for cutthroat and steelhead trout. No new permanent roads would be constructed. Removal of understory trees through thinning would result in minor increases in runoff, but the effects to stream flow would be inconsequential.

Hydrology - No direct impacts would occur under either action alternative because changes to stream channel morphology and hydraulic geometry would not occur due to maintenance of a 40 ft. minimum buffer along all streambanks.

Indirect impacts of the action alternatives could result in a small but temporary increase in peak flows. The amount and duration cannot be quantified because hydrologic models and research for commercial thinnings is very limited. Any increase, however, is expected to be within the range of natural variability. No streamside vegetation that directly influences the stream temperature would be removed. No change in stream temperature, large woody debris, water pH, dissolved oxygen, or other chemical parameters are likely to occur under the action alternatives. The Transient Snow Zone effect (the increased peak flow resulting from warm rain-on-melting snow events) would not occur since this project is below 2,000 feet and not within the Transient Snow Zone. In order to mitigate the impacts from temporary road construction, all temporary roads would be constructed outside of Riparian Reserves and in stable locations. Measures to restore hydrologic function and minimize the risk of road-related sediment, including de-compacting road or skid trail surfaces or blocking roads to access would all be included in the timber sale contracts. Long-term effects from road renovation would result in restored natural hydrologic functions and reduced sedimentation, therefore the action alternatives are likely to result in a small but long-term decrease in sediment delivery to streams within the project area.

Soils - Road-related impacts of new spur construction would occur under both action alternatives. Construction would be on stable locations at or just below ridge tops on gentle to moderate cross slopes. Construction would consist of widening existing trails or new construction where no trail previously existed. Waterbarring, and blocking to traffic would keep erosion levels low. In the absence of any harvest-related landslides reaching streams (a low probability) there would be virtually no sediment originating from thinned stands reaching streams (Sampson Butte and Coon Creek monitoring observations). All **sedimentation** as a result of spur construction, use and closure would filter into the forest floor and not effect streams. The few yarding trails that could pose sedimentation risks would be hand waterbarred with slash pulled into them. A small amount of sediment could reach Andrews Creek as a result of timber haul from the Hayhurst sale (see analysis under fisheries, previous page). This would occur on the first one-third mile of private road located in T23S-R6W-Sec. 2 during the first fall runoff. A small portion of the 23-6-10.1 road along Green Ridge Creek is contributing sediment to the stream. This problem would not be corrected under this project but is planned for action under a future analysis.

Both action alternatives would result in a slight short-term increase in the probability of harvest-related **debris avalanches** on the very steep FGR slopes that would be thinned. This would be due to a temporary decrease in canopy interception of precipitation and a decrease in root strength. Although the probability of debris avalanches would increase, it would still be in the low range (<10 percent) as under the no action alternative and would be expected to be within the range of natural variation. This conclusion is based on the low level of landslide activity since past clearcutting and the ameliorating effects of dry season yarding with at least one-end suspension. Thinning would not increase the risk of harvest-related debris avalanches reaching a stream under Alternative B since the Riparian Reserve would be maintained intact. The most likely size of any debris avalanche would be small. The maximum reach of a small debris avalanche unimpacted by the retarding effect of trees in its path would be about 200 feet (aerial photo and field observations). The Riparian Reserve would, therefore, act as an effective barrier to all small debris avalanches initiated upslope. Under Alternative C, harvest-related debris avalanches could reach streams because thinning would occur within 200 of streams on about 20 acres of the FGR slopes. Variable no-cut buffers would help prevent small upslope debris avalanches from reaching streams. The protection would be greater for the fish bearing streams with the minimum 100 feet no-cut buffer. The no-cut buffer for the intermittent, non fish bearing streams would be a minimum of 40 feet. The possibility of harvest-related debris avalanches impacting streams would be considered unlikely given the low probability of landslide occurrence and the protection afforded by the no-cut buffer.

Two headwalls in Unit 3B and two in Unit 7C were identified as having potential for debris flow initiation. The low risk evaluated for the no action alternative would be the same for Alternative B given full Riparian Reserve protection. The risk would be slightly greater although still in the low range for Alternative C due to thinning within certain headwall areas. This would be considered a short-term effect because of the subsequent growth of the canopy and root system. These areas would have the mitigation of no-cut buffers for the first order streams below the headwalls and the retention of all trees in the incipient channels and drainage convergence zones of the headwalls and on an unstable headwall slope in Unit 7C.

The total amount of yarding effects on **soil productivity** would vary depending upon the actual mix of skyline and ground-based operations. Skyline logging would add small amounts of light, superficial compaction (less than one percent of the skyline yarded ground). Harvester-forwarder trails in Hayhurst Tributaries would overlap existing trails and cover about 25 percent of the ground (assuming 50 feet average spacing). About five to ten percent of the ground would receive new compaction in the moderate to heavy range, (i.e. generally an increase of 15 percent or more in soil bulk density to a depth of about eight inches). This analysis is based on a study by Allen (1997) and monitoring of the Sampson Butte, Coon Creek and Burma Shave commercial thinnings on the Roseburg District. Swing shovel yarding on three acres in Unit 31B would add very little compaction with good operator technique (Hutchison, personal conversation).

Wildlife - Impacts to **T&E species** by thinning activities would occur within 0.25 miles of one known spotted owl activity center (Middle Ridge) and could potentially affect nesting behavior through disturbance. Harvest activities would modify 460 acres of dispersal habitat for the NSO. The stand will return to functioning dispersal habitat as growth and crown closure occurs following thinning.

Residual trees with potential marbled murrelet nesting structure would not be removed by thinning. Impacts to **SEIS Special Attention Species** from harvest activities would modify 460 acres of red tree vole habitat potentially affecting dispersal. As the stand grows and crown closure re-occurs, the red tree vole dispersal habitat would be enhanced.

C. Cumulative Impacts Analysis

The following paragraphs discuss the cumulative impacts of the action. These impacts are described for federal lands in the FSEIS beginning on page 3&4-4 and throughout the chapter based on the resource affected. The Elk Creek Watershed Analysis and the Brush Creek, Hayhurst Valley, Yoncalla Watershed Analysis provides baseline information to assess potential future cumulative impacts. Unless otherwise noted, these impacts are described in the context of the fifth-field watershed scale. There has been a continued conversion of late seral and old-growth habitat on private, industrial forest lands to early seral stages. Current management strategies on most of this private land would preclude the development of older seral conditions in the future.

Botany (Special Status and Survey and Manage species (SSP/S&M)) - Following the initial disturbance, the Action Alternatives would likely accelerate the creation of mature late-successional forest characteristics at the site and watershed level over time. These characteristics would increase habitat conditions favorable to SSP/S&M species.

Fisheries - The proposed project contains a Riparian Management Zone designed to minimize any adverse impacts to the aquatic environment. The proposed non-commercial thinning of the Riparian Management Zone consists of enhancement measures that are designed to restore fisheries habitat over a period of decades. Other relevant management activities likely to occur within the Elk Creek fifth-field watershed include both Federal and Private timber harvest and silvicultural treatments. Approximately 64% of the watershed (119,240 acres) is managed for timber production. These activities would comply with federal and state laws governing water quality and fisheries habitat, therefore, additional adverse impacts are not anticipated. Due to the recent formation of the Elk Creek Watershed Council, funding and coordination for aquatic habitat enhancement activities on private industrial timberlands within the watershed will be a high priority. The overall cumulative impacts of combined federal and private aquatic and riparian enhancement activities would be beneficial to fisheries habitat.

Hydrology - Cumulative impacts to hydrology and water quality are measured as an increase in harvested acres and road miles within the watershed. This action may result in an unquantifiable but small and temporary increase in average annual peak stream flows due to the removal of part of the forest canopy. Hydrologic processes would recover and improve, as the thinned stands mature. No increase in the miles of permanent road would occur under the Preferred Alternative.

Soils - Ground-based harvest operations (both federal and private) were widespread in the Elk Creek watershed in the 1950's through 1970's. "Loggers' choice" ground-based logging had a considerable effect (estimated to be between 15 to 30 percent reduction where ground-based logging occurred) on long-term soil productivity through compaction, erosion and soil displacement. Other management

practices such as road construction and broadcast burns along with landslides have added to the cumulative impacts to soil productivity. This project would add three acres of new ground disturbance due to temporary spur construction and up to ten acres of additional compaction due to new trails. Tillage would reduce the amount of this new compaction. Soil productivity losses on harvested BLM lands are restored very slowly over time through natural processes. A limited amount of amelioration of past ground-based yarding impacts and road decommissioning would take place under this action as well as future timber sales or restoration projects. The net cumulative effect would be that of maintaining or improving long-term soil productivity in the Elk Creek watershed on BLM managed lands despite periodic short-term decreases at the project level scale. The SEIS stated that the Matrix lands would have the highest management induced disturbance and the lowest probability of the land use allocations of maintaining long-term soil productivity. Even so, it concluded, "Implementation of appropriate soil management prescriptions and best management practices should prevent unacceptable degradation of the soil resource and related long-term productivity" (SEIS 3&4-112). Any sediment added to the streams as a result of the action alternatives would not be measurable and therefore add very little to the cumulative impacts of sedimentation at the fifth-field scale and would be within the range of natural variation.

The 23-6-10.1 road along Green Ridge Creek as well as an unnumbered haul road, landing and interconnecting trails in Unit 3A have been identified as candidates for decommissioning. This would be analyzed under a future restoration EA and would help reduce some of the effects from past compaction.

Wildlife - The proposed project contains management of Riparian Reserves to enhance the development of old-growth characteristics in the reserve. These characteristics would continue into the next rotation of the stand to provide Northern spotted owl nesting, roosting and foraging habitat. The loss of mid- to late-seral habitat on private land is expected to continue as the land is managed on a rotation of approximately 60-80 years. Northern spotted owl and red tree vole dispersal habitat on this land is likely to be maintained, but at some lower level than exists at present.

V. CONTACTS, CONSULTATIONS, AND PREPARERS

A. Agencies, Organizations, and Persons Consulted

The Agency is required by law to consult with certain federal and state agencies (40 CFR 1502.25).

1. Threatened and Endangered (T&E) Species Section 7 Consultation - The Endangered Species Act of 1973 (ESA) requires consultation to ensure that any action that an Agency authorizes, funds or carries out is not likely to jeopardize the existence of any listed species or destroy or adversely modify critical habitat.

a. The Roseburg District's Biological Assessment (BA) for T&E wildlife species consultation was submitted to the **US Fish and Wildlife Service** on April 16, 2001. The BA made the determination that this project would result in a "may effect, not likely to adversely affect" for the spotted owl, marbled murrelet, or their critical habitat. The required ESA consultation for T&E wildlife species was accomplished with the **US Fish and Wildlife Service** and the Letter of Concurrence was received on May 31, 2001 (Ref. no. 1-15-00-I-270). The Letter of Concurrence concluded the proposed action is "not likely to adversely affect spotted owls, murrelets, and their critical habitat". Incidental take is not expected with the actions described for the consultation. Completion of protocol surveys of murrelet habitat within 0.25 miles of the project area is expected By August 2002. If murrelets are found within the project area during surveys, the project would be modified to protect the occupied habitat.

b. The Roseburg District's BA for T&E fish species consultation was submitted to the **National Marine Fisheries Service** (NMFS) on May, 3 2002. The BA made the determination that this project would result in a "may effect, not likely to adversely affect" for the Oregon Coast coho salmon and the Oregon Coast steelhead trout. A Letter of Concurrence is expected in late-July.

2. **Cultural Resources Section 106 Consultation** - National Historic Preservation Act (Section 106) responsibilities under the 1997 National Programmatic Agreement and the 1998 Oregon Protocol has been completed. No consultation with the **State Historical Preservation Office** was required.

B. Public Notification

1. Notification was provided to affected **Tribal Governments** (Confederated Tribes of the Coos, Lower Umpqua and Siuslaw; Grande Ronde; Siletz; and the Cow Creek Band of Umpqua Indians). No comments were received.

2. Letters were sent to nine **adjacent landowners**. Two comments were received (see Appendix G - Public Contact).

3. The **general public** was notified via the *Roseburg District Planning Update* (Winter 2001) going to approximately 150 addressees. These addressees consist of members of the public that have expressed interest in Roseburg District BLM projects. Three letters were sent to groups that have expressed past interest in BLM projects. Comments were received from Umpqua Watersheds, Inc. (see Appendix D - Issue Identification Summary).

4. Notification will also be provided to certain **State, County and local government** offices (see Appendix G - Public Contact).

5. A 30-day **public comment period** will be established for review of this EA. A Notice Of Availability will be published in the *News Review*. This EA and its associated documents will be sent to all parties who request them. If the decision is made to implement this project, a notice will be published in the *News Review*.

C. List of Preparers

Isaac Barner	Cultural Resources
Kevin Cleary	Fuels Management
A. C. Clough	Fisheries
Dan Cressy	Soils
Dick Greathouse	Layout Forester (Cat Tracks)
Craig Holt	Layout Forester (Hayhurst Tributaries)
Al James	Silviculture
Steve Kropp	Hydrology
Fred Larew	Lands
Jim Luse	EA Coordinator / EA Preparer
Ron Murphy	Recreation / VRM
Evan Olson	Botany (Hayhurst Tributaries)
Melanie Roan	Wildlife
Ron Wickline	Botany (Cat Tracks)

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



Element	Responsible Position	Not Present	Not Affected	In Text	Initials	Date
Air Quality	Fuels Management Specialist		X		KC	5/21/02
Areas of Critical Environmental Concern	Environmental Specialist	X			JSL	5/20/02
Cultural Resources	Archeologist	X			IRB	5/21/02
Environmental Justice	Environmental Specialist		X		JSL	5/20/02
Farm Lands (prime or unique)	Soil Scientist	X			DCC	5/20/02
Flood Plains	Hydrologist		X		SJK	5/20/02
Invasive, Nonnative Species	Botanist			X	RSW	5/21/02
Native American Religious Concerns	Environmental Specialist		X		JSL	5/20/02
Threatened or Endangered Species (fish)	Fisheries Biologist			X	ACC	5/20/02
Threatened or Endangered Species (plants)	Botanist	X			RSW	5/21/02
Threatened or Endangered Species (wildlife)	Wildlife Biologist			X	MRR	5/20/02
Hazardous/Solid Wastes	Area Hazardous Materials Coordinator	X			LB	5/20/02
Water Quality Drinking/Ground Water	Hydrologist			X	SJK	5/20/02
Wetlands/Riparian Zones	Hydrologist			X	SJK	5/20/02
Wild and Scenic Rivers	Recreation Planner		X		RM	5/20/02
Wilderness	Recreation Planner		X		RM	5/20/02

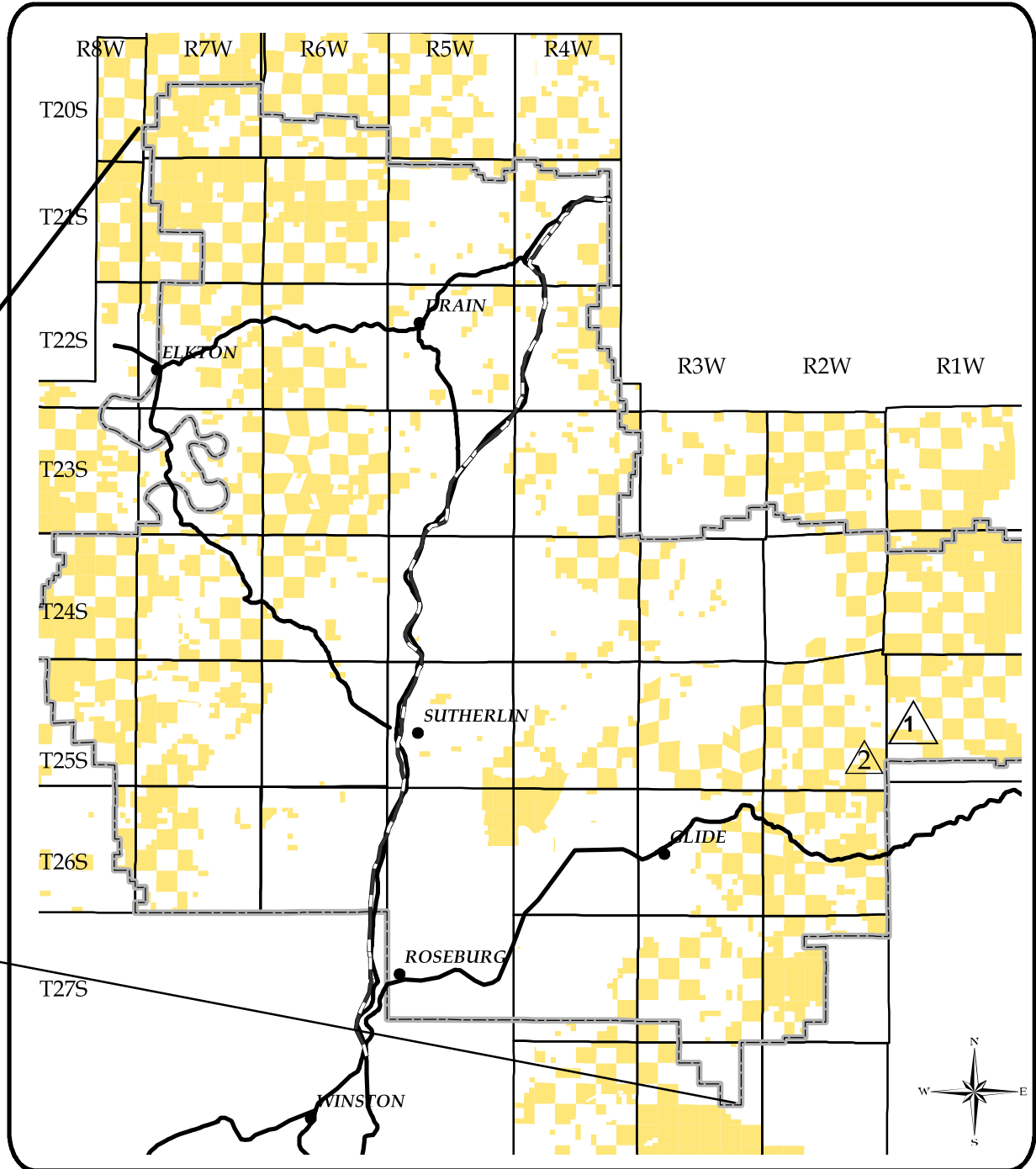
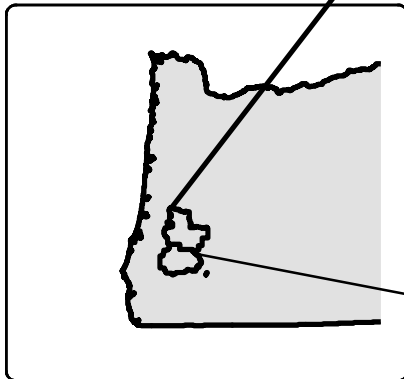
Appendix A Vicinity Map

F 2002 Commercial Thinnings

Legend

-  BLM Lands
-  Swiftwater Resource Area Boundary
-  Interstate 5
-  Major Oregon Highways
-  Towns

-  East Fork Commercial Thinning
-  Relativity Commercial Thinning



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Bureau of Land Management
Roseburg District Office
777 NW Garden Valley Blvd
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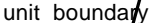


Appendix B

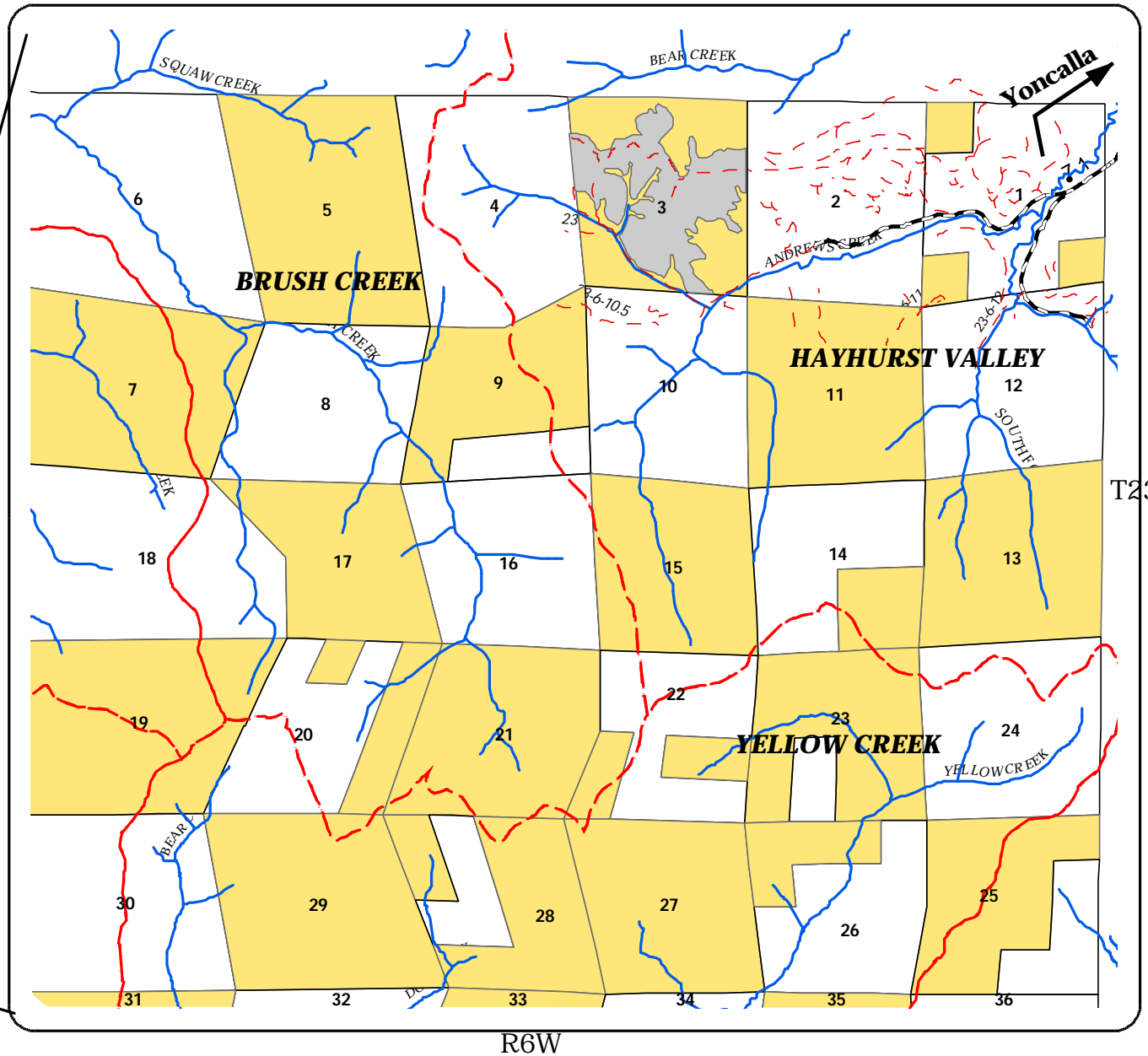
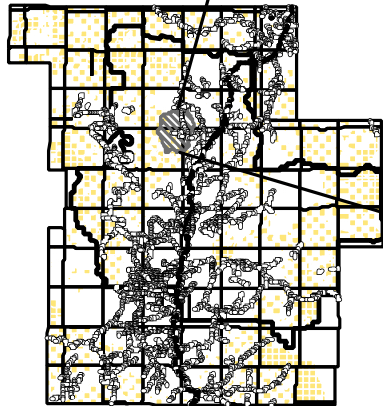
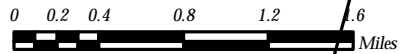
Tract Map

FY 2002 Thinnings - West Hayhurst Commercial Thinning

Legend

 BLM	 Major Streams
 Private	 County Roads
 Sale Area	 I-5
 Watershed Boundaries	 Roads
	 unit boundary

1 inch equals 1 miles



APPENDIX C

INDIVIDUAL UNIT DESCRIPTION

Project Summary Table (Alternative C)

EA Unit	Project Area	Acres	Yarding System (ac.)			Fuel Treat.	Remarks
			Aerial	Cable	Ground		
7A	3	28 (DM - 12)		OES (28)		P&BL	Cat Tracks
7C	4	35 (DM - 13)		OES (29) FS (3)	SY (3)	A	A
31A	1	24 (DM - 9)		OES (24)		A	A
31B	2	17 (DM - 3)		OES (17)	ROW (<1)	A	A
3A	1	356 (DM 90)		OES (250)	ROW (6) H/F (100)	A	Hayhurst Tributaries
3B							
3C							
Total		460	0	350	110	-	

Yarding System

OES = Cable Yard, One End Suspension Required
 FS = Cable Yard, Full Suspension Required
 SY = Ground Based, shovel
 H/F = Ground Based, Harvester/Forwarder
 ROW = Ground Based, Yarding of Road Right of Way Timber

Fuel Treatment

P&BL = Pile and Burn Landings

Directions to the Project Area

Cat Tracks (behind locked gate)

Interstate 5 north from Roseburg to Exit 159. Exit Interstate 5 to junction of County Road 25 and BLM Road 22-4-8.0. Locked gates are located at the beginning of Road No. 22-4-8.0. See Appendix B or BLM transportation map for directions to specific units.

Hayhurst Tributaries

Interstate 5 north from Roseburg to Exit 150 (Yoncalla). Proceed north on State Road 99 approximately two and 3/4 miles to Applegate St. / Hayhurst Road (County Road 24). Thence approximately 5 2 miles to Skelly Road. See Appendix B or BLM transportation map for directions to specific units.

Units are marked with boundary posters and blazed and painted trees.

APPENDIX D

ISSUE IDENTIFICATION SUMMARY

This appendix summarizes the issues that were identified pertinent to this project. No further analysis was deemed necessary in that the mitigation called for were considered adequate to remove the issue from needing to be analyzed in the main body of the EA.

A. Issues Identified During Project Design

The following issues were identified during project design. These issues arose from Specialist input as well as public comments that were received. A given issue can be eliminated from further analysis for one or more of the following reasons: (1) it is beyond the scope of this analysis, (2) the impacts were anticipated and analyzed in the FEIS, (3) Project Design Feature's (PDF's) included in the preferred alternative would be adopted to mitigate the anticipated environmental impacts of specific activities, and (4) the issue does not meet the objectives and purpose of the project. Section II, paragraph D (pg. 6-10) provides a list of specific PDF's incorporated into the preferred alternative to deal with these issues.

Hayhurst Tributaries

Issue	Project Design Feature
1. Steep spurs over 20 percent - OSHA requires that trucks have tractor assist in order to negotiate the steep roads. (Engineering)	None required. This is an OSHA requirement.
2. Ground above 10.1 Road washout along Green Ridge Creek shows signs of instability. (Soils)	Area falls within the 100 feet Riparian Management Area (no cut area).
3. Headwall areas and swales (three areas) (Soils)	Heavy retention in headwall area and swale bottoms for slope stability.
4. Slump area (Soils)	Site is included within no-cut Riparian Management Area.
5. 23-6-10.1 Road and unnumbered road and landing in Riparian Reserve in the SE/SE of Section 3. (Soils)	Defer restoration to future EA that would describe and analyzed effects and prescribe design features.
6. Control of noxious weeds (Botany)	pretreatment, equipment cleaning

Cat Tracks

Issue	Project Design Feature
1. Lack of wood in stream headwater areas. (Hydrology)	Maintain a 40 feet minimum (non-fish bearing) and 100 feet (fish bearing) variable streamside riparian management area.
2. Area of potential soil instability in Unit 7C (headwall and scarp). (Soils)	Reserve mark all trees within headwall area. Retain large maple on top of scarp overlooking incipient channel.
3. Stability of three headwall areas in 7C. (Soils)	Greater tree retention in headwall. Retain more trees in incipient draws in headwall areas up to 100 feet beyond zone of convergence.
4. Closing of old jeep road in 31A and temporary spurs. (Soils)	Install water bar or driveable drain dips on jeep road. Block and water bar temp. spurs because final entry expected in 20 years.
5. Turbidity to streams from logging. (Fisheries)	Maintain a 40 feet minimum (non-fish bearing) and 100 feet (fish bearing) variable streamside riparian management area.
6. Control of noxious weeds (Botany)	pretreatment, equipment cleaning

Public Issues:

Comments were received from three individuals. Most of the issues identified were also noted by the ID Team. Some of the issues were outside the scope of this analysis. The main focus of these Issues are summarized as follows:

1. **If any mature or old-growth (OG) trees have to be logged incidentally the EA should disclose this. Protect existing snags.**

OG remnants and snags would be preserved to the maximum extent possible. Snags would be protected by surrounding them with retention trees. Remnants and snags would be marked for reservation and tallied. Past experience has been that less than five percent of reserved snags need to be felled for safety.

2. **The EA should consider a restoration alternative for the Riparian Reserves.**

A restoration alternative was considered in this EA and considerable staff effort was invested in designing this alternative.

3. **The EA must fully consider protecting the municipal water supply of Drain as much as possible.**

The Hayhurst Tributaries sale mostly lies outside and to the south of the Drain municipal watershed. Portions straddle the main dividing ridge. The city of Drain was contacted but has not asked for any special considerations. Normal RMP guidelines should adequately protect the watershed.

4. **“I [adjacent landowners] hope that the access road [Unit 31A] is not closed or removed.”**

This road will not be blocked or decommissioned to preserve access to the adjacent landowners.

B. Issues Specified by Regulation

"Critical Elements of the Human Environment" is a list of elements specified in BLM Handbook H-1790-1 that must be considered in all EA's. These are elements of the human environment subject to requirements specified in statute, regulation, or Executive Order. These elements are as follows:

1. Air Quality
2. Areas of Critical Environmental Concern (ACEC)
3. Cultural Resources
4. Environmental Justice
5. Farm Lands (prime or unique)
6. Floodplains
7. Invasive, Non-native Species
8. Native American Religious Concerns
9. Threatened or Endangered Species
10. Wastes, Hazardous or Solid
11. Water Quality, Drinking / Ground
12. Wetlands / Riparian Zones
13. Wild and Scenic Rivers
14. Wilderness

These resources or values (except item #9) were not identified as issues to be analyzed in detail because: (1) the resource or value does not exist in the analysis area, or (2) no site specific impacts were identified, or (3) the impacts were considered sufficiently mitigated through adherence to the NFP S&G's and RMP Management Actions/Direction therefore eliminating the element as an issue of concern. These issues are also briefly discussed in Appendix E ("Critical Elements of the Human Environment"). Item #9 is addressed in the Specialist's Reports (Appendix F) and the Biological Assessment that is prepared for consultation required by the Endangered Species Act.

The RMP has been determined to be consistent with the standards and guidelines for healthy lands (43 CFR 4180.1) at the land use plan scale and associated time lines.

Executive Order 13212 provides that all decisions made by the Bureau of Land Management will take into consideration adverse impacts on the President's National Energy Policy. This project would not have a direct or indirect adverse impact on energy development, production, supply, and/or distribution and therefore would not adversely affect the President's National Energy Policy.

C. Issues to be Analyzed

How do we treat the Riparian Reserve?

This issue was identified as having sufficient potential affect to warrant more detailed analysis and is addressed as a key issue (pg. 18).

APPENDIX E

CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT

Element	Relevant Authority	Environmental Effect
Air Quality	The Clean Air Act (as amended)	Minimal -Dust particles may be released into airshed as a result of road construction /renovation and timber hauling.
Areas of Critical Environmental Concern	Federal Land Policy and Management Act of 1976 (FLPMA)	None - Project area is not within or near a designated or candidate ACEC.
Cultural Resources	National Historic Preservation Act (as amended)	"No Effect" - See Cultural Report 10/30/01.
Environmental Justice	E.O. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations	The proposed project areas are not known to be used by, or disproportionately used by, Native Americans, minorities or low-income populations for specific cultural activities, or at greater rates than the general population. According to 2000 Census data approximately six percent of the population of Douglas County was classified as minority status (<i>Oregonian</i> , Pg. A-12; March 15, 2001). It is estimated that approximately 15% of the county is below the poverty level (Frewing-Runyon, 1999).
Farm Lands (prime or unique)	Surface Mining Control and Reclamation Act of 1977	None - "No discernable effects are anticipated" (PRMP pg. 1-7)
Floodplains	E.O. 11988, as amended, Floodplain Management, 5/24/77	None - Project is not within 100 yr. floodplain.
Native American Religious Concerns	American Indian Religious Freedom Act of 1978	None - No concerns were noted as the result of public contact

Threatened or Endangered Species	<p>Endangered Species Act of 1973 (as amended)</p> <p>The Pacific Coast Recovery Plan for the American Peregrine Falcon, 1982</p> <p>Columbian White-tailed Deer Recovery Plan, 1983</p> <p>Recovery Plan for the Pacific Bald Eagle, 1986</p> <p>Recovery Plan for the Marbled Murrelet, 1997</p>	<p>(Botanical) - No T&E species noted (Specialist Report 11/29/01)</p> <p>(Terrestrial) – “may effect, not likely to adversely affect” for spotted owl, marbled murrelet and their critical habitat (Specialist Report 3/26/02)</p> <p>(Aquatic) – “may effect, not likely to adversely affect” for coho salmon and steelhead trout (BA 5/03/02).</p> <p>T&E species not specifically mentioned do not exist in the analysis area.</p>
Wastes, Hazardous or Solid	Resource Conservation and Recovery Act of 1976 Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended	None - Applicable HazMat policies would be in effect.
Water Quality, Drinking / Ground	Safe Drinking Water Act as amended Clean Water Act of 1977	None - See Valid Existing Rights Clearance Report (Appendix F).
Wetlands/Riparian Zones	E.O. 11990, Protection of Wetlands, 5/24/77	None - "The selected alternative [of the FEIS] complies with [E.O. 11990]..."(ROD p. 51, para.7)
Wild and Scenic Rivers	Wild and Scenic Rivers Act (as amended) The North Umpqua Wild and Scenic River Plan (July 1992)	None - Project is not within the North Umpqua Scenic River corridor.
Wilderness	Federal Land Policy and Management Act of 1976 Wilderness Act of 1964	None - "There are no lands in the Roseburg District which are eligible as Wilderness Study Areas." (RMP pg. 54)

OTHER RESOURCES CONSIDERED

Resource	Environmental Effect / Concerns
Land Use (Leases, Grazing etc.)	None - Project has no conflicting land uses (Specialist's Report 1/3/02). Roads are encumbered under Right-of-Way Agreement # R-645A (Seneca Jones) and #R763B (Steve Conn and Carol Wiggle) (Valid Existing Rights Clearance Report (Appendix F)).
Minerals	None - Project has no mining claims (Specialist's Report 1/04/02).
Recreation	Minimal short-term impacts - “. . . temporary road blockages during the felling and logging operations" (Specialist's Report 2/13/02).
Visual	None - All units are within VRM IV (no visual restraints). (Specialist Report 2/13/02)
Other (Adjacent Landowners)	None - Nine small adjacent landowners are in the vicinity of this sale. Four registered domestic water use including the City of Drain Municipal Reservoir (Bear Creek).