Environmental Assessment for the Swiftwater Field Office

FY 2000 Commercial Thinnings (Bear Buck and Off Little River)

EA No. OR - 104 - 00 - 07

The Swiftwater Field Office proposes to do a commercial thinning harvest on approximately 190 acres of second growth forest located in the Upper Coast Fork of the Williamette River, Elk Creek and Little River Watersheds located in Sections 23 and 27, T21S R4W; and Section 7, T27S R2W; W.M. This project is within the Matrix (Connectivity / Diversity Block) and the Little River Adaptive Management Area (AMA) Land Use Allocations and is designed to help meet the Roseburg District's annual harvest commitment.

Acronyms Used:

ACS	-	Aquatic Conservation Strategy
AMA	-	Adaptive Management Area
BA	-	Biological Assessment
BO	-	Biological Opinion
BLM	-	Bureau of Land Management
BMP	-	Best Management Practices
CWD	-	Coarse Woody Debris
EA	-	Environmental Assessment
FONSI	-	Finding Of No Significant Impact
FSEIS (SEIS)	-	Final Supplemental Environmental Impact Statement
FWS	-	U.S. Fish and Wildlife Service
LUA	-	Land Use Allocation
NEPA	-	National Environmental Protection Act
NFP	-	Northwest Forest Plan
NMFS	-	National Marine Fisheries Service
PDF	-	Project Design Features
RMP	-	Resources Management Plan
ROD	-	Record Of Decision (herein used to refer to the NFP ROD)
S&G	-	Standards & Guidelines
S&M	-	Survey and Manage
T&E	-	Threatened or Endangered
WAU	-	Watershed Analysis Unit
WA	-	Watershed Analysis

Project Lead: Chris Foster

Preparer: Jim Luse

Roseburg District, BLM
777 NW Garden Valley Blvd.
Roseburg, OR 97470
(541-440-4931 ext. 254)

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INTRODUCTION

This Environmental Assessment (EA) has been prepared for the proposed **FY 2000 Commercial Thinnings**. An EA is a site specific analysis of potential environmental impacts that could result with the implementation of a proposed action. The EA assists the Agency in project planning and insuring compliance with the National Environmental Protection 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 "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 *Final Environmental Impact Statement* (FEIS).

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.

A. Need for Action

The BLM has a need to implement the *Roseburg District Record of Decision and Resources Management Plan* (RMP). 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.

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. Implement ecosystem management as outlined in the ROD and RMP.
   - avoid damage to riparian ecosystems and meet the objectives of the "Aquatic Conservation Strategy" (S&G, pg. B-11; 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 special attention species habitat (RMP pg. 41)

B. Purpose of Action

The purpose of the action described in this EA is to offer the **Bear Buck** and **Off Little River** Timber Sales for auction in fiscal year 2001 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 Upper Coast Fork of the Williamette River, Elk Creek and Little River Watersheds located in Sections 23 and 27, T21S R4W; and Section 7, T27S R2W; W.M. (see maps, Appendix A through C). Approximately 650 acres were analyzed for potential harvest activities. New road construction and renovation of existing roads would also occur. Section II (pg. 3) of this EA provides a more detailed description of the Proposed Action Alternative.

D. Conformance with Existing Land Use Plans

The Proposed Action alternative was 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). The ROD establishes management direction consisting of ". . .. extensive standards and guidelines including land allocations, that comprise a comprehensive ecosystem management strategy" (ROD pg. 1).

The 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. The Bear Buck Timber Sale is entirely within Connectivity / Diversity Blocks. The Off Little River Timber Sale is within the “Little River Adaptive Management Area (AMA)” LUA. The AMA is designed to "Develop and test new management approaches to integrate and achieve ecological and economic health and other social objectives" (RMP, pg. 32).

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

The No Action Alternative is required by NEPA to provide 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.

B. The Proposed Action Alternative

Implementation of the Proposed Action Alternative would result in the harvest of approximately 5.2 MCF (thousand cubic feet) or 3.50 MMBF (million board feet) of the Roseburg District's FY 2001 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, trees around helicopter landings, or trees within the road construction prism). Harvest activities would occur on seven units for 182 acres of commercial thinning and seven acres of road right-of-way clearcut. Other activities would include: temporary road construction, road renovation, and road decommissioning.

Approximately 1.6 miles (seven spurs) of **temporary road construction** (roads built, used and decommissioned the same season or overwintered with sediment reducing measures) would occur on government land and 0.1 miles of private land for a total of 1.7 miles. Approximately 2.4 miles of BLM and private road would have **road renovation** (restoring the road back to its original design). This would consist of installing or maintaining drainage structures (culverts and ditches), reshaping the road surface and surfacing with crushed rock. **Road decommissioning** ". . . road segment . . . closed to vehicles on a long-term basis, but may be used again in the future. " (Western Oregon Transportation Management Plan [TMO], pg. 15) would occur on approximately 200 feet of BLM road.

Timber harvest would consist of commercial thinning. **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).

The Proposed Action would require a mix of skyline cable logging (approximately 151 acres or 80% of the project area), helicopter logging (approximately 31 acres or 16%) and ground based (tractor) logging (approximately seven acres or 4%) of temporary road right-of-way. 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. Helicopter landing locations are expected to be a one-half to one acre in size. Trees that are determined to be a hazard to flight operations could be cut under approval of the Authorized Officer. All helicopter landings are located on private lands.

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.

C. Mitigating Measures and Project Design Features as part of the Action Alternative

This section describes mitigating measures (measures designed to avoid, minimize or rectify impacts on resources [40 CFR 1508.20]) that would be incorporated with the implementation of the action alternatives. Project design features (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. Additionally, the RMP (Appendix D, pg. 129) lists "Best Management Practices" (BMP's) and the NFP lists "Standards and Guidelines" (S&G's). BMP's are measures designed to protect water quality and soil productivity. S&G's are ". . . the rules and limits governing actions, and the principles specifying the environmental conditions or levels to be achieved and maintained." (S&G, pg. A-6). The proposed action alternative includes the following measures that would be included as part of the proposed alternative:

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 lands incorporating permanently flowing (perennial) and seasonally flowing (intermittent) streams, the extent of unstable and potentially unstable areas that may directly impact streams, and 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 nonfish bearing streams. Data has been analyzed from District inventory plots and the height of a site potential tree for the Little River watershed has been determined to be the equivalent of 180 ft. and the Elk Creek watershed has been determined to be the equivalent of 200 ft., therefore, Riparian Reserve boundaries would be approximately 180 or 200 ft. slope distance respectively from the edge of non-fish bearing streams and 360 or 400 ft. from fish bearing streams in the project area (East Elk WA, pg. 1-4). There are two fish bearing streams adjacent to or within the vicinity of Units 23A, 23B and 27A of the Bear Buck portion of the project area. A wetland of one acre or less was found adjacent to Unit 1 of the Off Little River portion of the project area.

1). Streambank stability and water temperature would be protected by maintaining the RMP prescribed Riparian Reserve along all streams. Approximately 70 acres were removed from the proposed units and placed in the Riparian Reserve LUA due to unmapped streams.

2). Riparian habitat would be protected from logging damage by directionally felling trees that are within 100' of the Riparian Reserve away from the Riparian Reserve and yarding logs away from or parallel to the streams (i.e. logs would not be yarded across streams). No logging or road building would take place within the Riparian Reserves.

3). Two acres of unstable or potentially unstable ground met the criterion to be included in the Riparian Reserve.

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 Analyses (ACS Component #3)** for the Little River and East Elk Creek Watersheds were used in this analysis and is available for public review at the Roseburg District office. Additionally, the Cottage Grove Lake / Big River Watershed Analysis developed by the Eugene BLM District was also used.

d. **Watershed Restoration (ACS Component #4)** for this project would include a small amount (200 ft.) of road decommissioning to reduce road related impacts.

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. 21-4-27.0 and 28.0) to fix drainage and erosion problems. This would consist of maintaining existing culverts, installing additional culverts, and spot surfacing roads with crushed rock where deficient. (2) Building, using and decommissioning temporary roads in the same operating season (i.e. no over-wintering of bare erodible subgrade). If spurs are overwintered measures (blocking, waterbarring and outsloping) would be included to minimize sedimentation. When logging is completed, the roadbed would be subsoiled, water barred, blocked and seeded 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 conditions are such that no environmental damage would occur (i.e. the dry season extending beyond Oct. 15).

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. Dry season logging would be required on all units except Unit 23B and 23C (helicopter). (2) Ground based logging would be limited to the dry season as described above.

c. **Measures to limit soil compaction** (RMP, pg. 37) would consist of: (1) limiting ground based logging and road right-of-way clearing (Units 23A, 27A, 7A and 7C) to the dry season (May 15 to Oct.15) when soils are least compactable, however, operations would be suspended during periods of heavy precipitation if resource damage would occur. This season could be adjusted if conditions are such that no resource damage would occur (i.e., the dry season extending beyond Oct. 15). (2) Confining ground based activities to designated skid trails as identified in an approved logging plan. New trails would be limited to slopes less than 35% and with skidtrail spacings averaging at least 150 feet apart. Machines would be limited in size and track width to reduce compaction and trail width. Existing skid trails would be used wherever possible. 3) Subsoiling of temporary spur roads with a winged subsoiler (or equivalent) provided that subsoiling would not contribute to additional sedimentation to streams. Subsoiling is a practice that ameliorates soil compaction and improves water infiltration by pulling a device known as a winged subsoiler with a crawler tractor.

d. **Measures to protect slope stability** would consist of: (1) Areas that could impact the meeting of ACS objectives were dropped from the project (see pg. 5, para. 1a3). (2) New roads would be located in stable locations and with proper drainage structures. (3) Dry season yarding with one-end suspension as described previously would also reduce the risk of slope failure.

3. **To provide wildlife habitat components:**

   a. Future nesting and roosting habitat for cavity dwellers would be provided by reserving most pre-existing hard or soft snags (at least 20" in diameter and 20 ft. in height) and old growth cohorts that still remain from previous logging. Note: 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 course woody debris (CWD).

   b. Most existing CWD (at least 16" in diameter and 16 ft. in length) would be reserved (RMP, pg. 38). This is in the form of blowdown trees and logs remaining from previous logging.

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 remnant trees in the thinning units would be retained to the greatest extent possible as well as occasional defective and deformed trees that could provide future snags and nesting habitat.

   b. Snags and CWD would be reserved as described in paragraph three above.

   c. A hardwood component would be retained (RMP, pg. 151-152).

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 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) as well as roadside brushing 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 in the cable areas 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 or Protection Buffer) plant and animal sites would be protected according to established management recommendations (RMP, pg. 42).

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 (March 1 to September 30 for falling and March 1 to June 30 for yarding) during the northern spotted owl (NSO) nesting season would be applied to Unit 27A (Bear Buck) unless surveys indicate that a NSO is not occupying or nesting in the adjacent NSO core area.

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.

D. Alternatives Considered but not Analyzed in Detail

The proposal to include an additional 295 acres as a separate sale (Upper Eastside) was considered during the formulation of this project but was dropped due to Survey and Manage considerations. Three units from the Bear Buck sale totaling 120 acres were also dropped from the proposal due to Survey and Manage considerations. One unit totaling eight acres was dropped from the Off Little River sale proposal for silvicultural reasons.

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 which could be significantly impacted. Appendix F (Analysis File) contains Specialist's Reports with supporting information and greater detail for this analysis.

This project lies within the Oregon Western Cascades Physiographic Province. The FSEIS describes the affected environment for this province on page 3&4-19. 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 and Little River WA.

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 1990 Census data, less than four percent of the population of Douglas County was classified as minority status. It is estimated that approximately 15% of the county is below the poverty level (USDI/BLM, March 1999).

A. General Setting

Stand Description - The plant association best describing these areas is a western hemlock or white fir with salal and Oregon grape (Atzet, et al, 1990). The Bear Buck thinning is in a 55 year old cohort stand consisting of Douglas-fir, western hemlock, white fir, incense-cedar, western red cedar, chinquapin, madrone, big leaf maple, and red alder. This stand was established after logging. A few large old trees from the original stand scattered throughout may have been left as seed trees. The Off Little River thinning was originally logged beginning in 1942 and ending in 1955. All of the areas are now established with planted Douglas-fir and ponderosa pine. Salal, Oregon grape and sword ferns are common on the forest floor.

Site Description - Large ancient slump-bench features are prominent in both sales. A potential for shallow debris avalanches exists on seven acres in Bear Buck on slopes 60 to100 percent, however, given the current canopy and understory cover, the potential for landslides is considered low. There is no evidence that any landslides larger than small slipouts have occurred within the life of the current stands. In-unit erosion is currently very low. The existing haul roads overall have good rock surfacing. All units have old skid trails and deck areas present with varying degrees of vegetative cover and residual compaction. Most moderate to heavy residual compaction exist as small scattered patches (see Soil's Report, Appendix F).

B. Affected Resources

Botany - Surveys were conducted during the winter of 1999 and throughout 2000. No special status plants were observed in the project area. Numerous Survey and Manage and Protection Buffer non-vascular species (bryophytes and fungi) have been observed. There is a considerable problem with noxious weeds along the roads within the proposed project area.

Cultural Resources - No cultural resources were found in the project area as the result of surveys.

Fisheries - There are two fish-bearing streams in the proposed project: Bear Creek (Elk Creek fifth-field watershed) and Martin Creek (Upper Coast Fork Willamette fifth-field watershed). According to the East Elk WA, steelhead trout, coho salmon, cutthroat trout, sculpin, and redside shiners are present in the watershed. The Upper Coast Fork Willamette watershed also contains cutthroat trout, sculpin, and anadromous species, but the numbers of anadromous fish are significantly less in this watershed. The Off Little River timber sale is located entirely in the Little River fifth-field watershed. The Little River watershed supports five species of anadromous salmonids, including fall and spring chinook salmon, coho salmon, steelhead, and searun cutthroat trout. The watershed also contains rainbow trout, resident cutthroat trout, brook trout, kokanee salmon, and a large group of non-game and non-native warm water game-fish (Little River Watershed analysis, 1995). The Oregon Coast Coho has been designated as a threatened species under the Endangered Species Act.

Hydrology - There are two third-order tributaries (Martin Creek and Bear Creek) that flow within the Bear Buck project area. Martin Creek is located in the Upper Coast Fork Willamette/Big River WAU, while Bear Creek is located within the East Elk WAU. These streams are characterized as being moderate to high gradient and moderately constrained headwater channels. There are also two second-order streams within the project area. There is one unnamed second-order tributary that flows within the Off Little River project area. This stream is characterized as being a high gradient and moderately constrained headwater channel. The tributary drains directly into Little River, approximately two miles above the Cavitt Creek confluence.

Wildlife - T&E Species -There are two spotted owl sites within 1.2 miles of both sale areas (MSNO 2083A and 4017). Bear Buck contains 149 acres of critical habitat (a specific geographical area specified by the US Fish and Wildlife Service (FWS) as containing habitat critical for the conservation of a Threatened and Endangered species) for the spotted owl. This sale project occurs more than 50 miles from the Coast and therefore is not considered to contain suitable marbled murrelet habitat. There are no known bald eagle nests or winter roosting areas within 0.25 miles of the sale area. One hundred and eighty-nine (189) acres of suitable habitat for SEIS Special Attention species (red tree voles and mollusks) are contained within the sale units. Bear Buck contains one red tree vole site (status unknown-presumed active) outside of sale units and 14 mollusk sites inside of sale units. The Off Little River sale contains one red tree vole site (status active) and four mollusk sites inside sale 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. This section is organized by the alternatives and the effects on the key issue(s) 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 and occurring later in time or farther removed in distance) and cumulative impacts (effects of the action when added to other past, present and reasonably foreseeable future actions) on the resource values. Appendix F (Analysis File) contains additional supporting information for this analysis. The EIS and FSEIS analyzes 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 E.

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 logging and timber hauling as well as the loss of rock from quarries for crushed rock used in the renovation of the road system would result from the proposed action.

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) of producing forest commodities that would contribute to the local economy. Stands would continue to differentiate in time through growth and mortality due to competition between trees for growing space. The process of self thinning occurs only after most of the dominant trees are under competitive stress. In twenty years the stand is still overly dense and composed of trees with small live crowns. Tall skinny trees are less likely to stand up in high winds and more likely to break under snow loads. Trees that have developed over long periods of competitive stress are slow to respond to improved growing conditions and may never attain potential growth rates. The Silvicultural Prescription (Appendix F) provides a more detailed stand description.

Botany - Direct effects are those actions that cause direct mortality of Special Status and SEIS Special Attention Plants such as ground disturbance or alteration of microclimatic conditions favorable to the sustained viability of plants. Indirect effects include possible spread of noxious weeds. Microclimatic conditions favorable to the sustained viability of mid-seral vascular and non-vascular plants would not be greatly modified under this alternative because forest management activities would not occur in the project area. Current plant diversity, composition and viability would not be modified.

Fisheries - Direct impacts are those actions that cause direct mortality, such as accidental chemical spills and direct disturbance of redds. Generally, direct impacts occur from work within or adjacent to fish bearing streams. Indirect impacts include increased sediment and water temperature, altered stream flows and large woody inputs. There would be no direct or indirect impacts under this alternative because the environment would not be affected by activities. Current temperature, sediment inputs, woody debris and hydrologic processes would continue to function at existing rates and levels. Fish species and populations would remain unchanged.

Hydrology - Direct impacts are those actions that cause direct changes to the stream channel morphology, hydraulic geometry, or water quality. Indirect impacts are actions that indirectly affect hydrology and water quality, including changes in road densities, runoff and sediment transport, streamside shading, and large woody debris recruitment. Vegetation would continue developing over the long-term to provide increased shade, bank stability and large 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 improvements 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 either alternative.

Soils - Direct impacts to the soils resource consists of those actions that cause a reduction in soil productivity such as compaction due to road construction or ground-based logging, soil loss through erosion, displacement of soil through mechanical means (logging and road building) and alteration of the soil's nutrient, physical and biological properties through slash burning. The primary indirect impacts is any harvest-related landslides that might occur as a result of the action alternatives. Harvest related impacts would not occur under this alternative.

Wildlife - Direct impacts to wildlife consists of direct mortality to species. Indirect impacts include the alteration of habitat that would affect species. Harvest related impacts would not occur under this alternative. Current wildlife populations and diversity would be expected to be maintained.

B. Proposed Action Alternative

Because the Proposed Action Alternative in this EA proposes to commercially thin timber stands that are 30 to 55 years of age there would be no change in the amount or percentage of late-successional type forests on Federal lands within the Watersheds.

Botany - Direct impacts consists of changes to microclimatic conditions within the forest stands, but the

change would not be quantifiable. Likely changes in microclimate would include: increased solar radiation, wind speed, ambient air temperature; decreased relative humidity and antecedent soil moisture (Chen 1995, Brosofske *et al*. 1997). Temporary road construction and incidental ground-based yarding would likely reduce the diversity, composition, and viability of vascular and non-vascular plants along the length of their disturbance (Miller 1997). Temporary road construction and logging would result in an indirect impact through the potential to spread noxious weed infestation into the proposed project area. Cutting noxious weeds along the roadways along with equipment cleaning prior to the implementation would help in reducing the further spread of noxious weeds. Post-disturbance recovery of the understory vegetation would likely result in an overall increase in the composition, diversity, and viability of vascular and non-vascular plants (Thysell 2000), largely because of the increase in sunlight reaching the forest floor. Retained large diameter remnant overstory conifers would likely function as legacy attributes (Lesica *et al*. 1991). Retention of the majority of understory hardwoods would likely contribute to the diversity of non-vascular plants within the proposed project area (Neitlich 1996).

Fisheries - No direct or indirect impacts are expected because no harvest or vegetation manipulation would occur within Riparian Reserves, however, timber hauling would occur within Riparian Reserves. New roads would be temporary, and restricted to stable areas, outside Riparian Reserves. Removal of the understory trees, outside Riparian Reserves, through thinning would result in minor increases in runoff, but the effects to stream flow would be inconsequential.

Hydrology - No direct impacts are anticipated. No change in stream temperature, large woody debris, water pH, dissolved oxygen, or other chemical parameters are likely to occur because no vegetation that directly influences the stream would be removed. Measures to restore hydrologic function and minimize the risk of road related sediment, (subsoiling the subgrade and revegetation of temporary spurs, and adding drainage features and surfacing to existing roads) would be included in the timber sale contracts. Any increased sediment would be short-term and minimized by only allowing work during low flows and adhering to BMP's. Overall, Indirect impacts are likely to result in a small but long-term decrease in sediment delivery to streams within the project area, and a small but temporary increase in peak flows. Long-term effects from road renovation would result in restored natural hydrologic functions and reduced sedimentation.

Soils - Direct impacts resulting from in-unit erosion would continue to be very low. Temporary roads would be located on stable locations away from streams with virtually no sediment reaching streams from roads. Old compaction and exposed subsoil from past ground-based operations would continue to slowly heal. Vegetation would eventually move from moss dominance to shrub dominance in the heavier compacted segments. There would be little change in soil productivity over baseline conditions. The indirect impact of potential landslides on the steep slopes would continue to be low. Any landslides that might occur would likely be small and would have low consequence to soil productivity to the overall project area.

Wildlife - This action would result in the following direct and indirect impacts: T&E species - Harvest activities would occur within 0.25 miles of one known spotted owl activity center (IDNO 2083A [Bear Buck]) and could potentially affect nesting behavior. Potential loss of 150 acres (Bear Buck) and 39 acres (Off Little River) of nesting, foraging, and dispersal habitat for the NSO. SEIS Special Attention Species - The potential loss of habitat would also apply to the red tree vole and SEIS mollusks.

C. Cumulative Impacts Analysis

The following paragraph discusses the cumulative impacts. 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. 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 - Following initial disturbance, the restoration of the composition, diversity and viability of vascular and non-vascular plants associated with mature/late-successional forest stands would slowly increase at the site-specific and watershed level.

Fisheries - The effects of commercial thinning is hard to quantify, but it is assumed that factors that influence fisheries habitat, including the Matrix and Pathway indicators (NMFS March 18, 1997 Biological Opinion), would be maintained or restored at the site and watershed scale. Timber harvest in the past ten years has occurred on 1690 acres in the Elk Creek watershed and 390 acres in the Upper Coast Fork Willamette Watershed. Bear Buck would increase these harvest acres by 26 and 124 respectively. Within the Little River watershed 915 acres of timber have been harvested in the past 10 years. The Off Little River thinning would increase these harvest acres by 40. These acres do not represent final harvest, therefore most of the canopy would be maintained. No new permanent road miles would be added under either sale.

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 Proposed Action Alternative.

Soils - The cumulative impacts would be inconsequential at the fifth-field watershed scale. Soil productivity loss, nearly all of which would be confined to the new spurs, would be minor especially when considering that an estimated 80 percent of the spur disturbance would heal satisfactorily after subsoiling (Cressy, personal observations). The losses in soil productivity associated with these two sales would be offset by gains from the slow healing processes occurring over the much larger surface area that was harvested in the past in these watersheds. Most notable would be the healing of compaction and soil displacement in old ground-based harvest units. The amount of erosion and sedimentation both reaching and not reaching streams in the short and long-term as a result of the action alternative would be very small at any scale.

Wildlife - The downward trend in amount of late-seral and NSO dispersal habitat would continue. Decreases in NSO dispersal habitat should rebound somewhat 10-15 years after the thinning treatment as canopy closure occurs. Species that require late-seral habitat components and closed canopies would continue to feel the impacts of habitat loss/modifications. Thinning is less impacting than regeneration harvest because canopy closure and stable micro-climatic conditions should recover sooner. The short-term loss in dispersal habitat would be off set by a long-term gain in habitat quality as accelerated tree growth provides mature forest attributes in a shorter time frame.

V. CONTACTS, CONSULTATIONS, AND PREPARERS

A. Agencies, Organizations, and Persons Consulted

The Agency is required by law to consult with the following federal and state agencies (40 CFR 1502.25):

1. **Threatened and Endangered Species Section 7 Consultation -** The Endangered Species Act of 1973 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** (FWS) on Sept. 18, 2000. The BA addressed commercial thinnings as an entire program rather than an individual action. The BA found that, with mitigation (identified in the BA), commercial thinnings resulted in a "May Affect, Not Likely to Adversely Affect" determination for the northern spotted owl, marbled murrelet, and their critical habitats; and a "No Effect" determination for bald eagles. A Biological Opinion (BO) concurring with this determination is expected from the FWS in March 2001

b. The Roseburg District's BA for T&E fish species consultation was submitted to the **National Marine Fisheries Service** (NMFS) on February 8, 2001. 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 mid-March.

2. **Cultural Resources Section 106 Consultation -** Consultation as required under section 106 of the National Historic Preservation Act with the **State Historical Preservation Office** (SHPO) was completed on October 23 (Off Little River), and October 25, 2000 (Bear Buck) with a "No Effect" determination.

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 fourteen **adjacent landowners**. No comments were received (see Appendix G - Public Contact).

3. The **general public** was notified via the *Roseburg District Planning Update* (Winter 1997-1998) going to approximately 150 addressees. These addressees consist of members of the public that have expressed an interest in Roseburg District BLM projects. No comments were received.

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
Bruce Baumann	Layout Forester
Karel Broda	Geotechnical Specialist
Tom Doss	Engineer (Off Little River)
Kevin Cleary	Fuels Management / Air Quality
Dan Cressy	Soils
Dave Erickson	Recreation / VRM
Chris Foster	Wildlife / Team Lead
Al James	Silviculture
Steve Kropp	Hydrology
Fred Larew	Lands
Randy Lopez	Engineer (Bear Buck)
Jim Luse	EA Coordinator / EA Preparer
Evan Olson	Botany (Bear Buck)
Garth Ross	Fisheries
Ron Wickline	Botany (Off Little River)

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Other references as cited in the individual Specialist's Reports (Appendix F - Analysis File)

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		U		KC	2/21/01
Areas of Critical Environmental Concern	Environmental Specialist	U			JSL	2/13/01
Cultural Resources	Archeologist		U		INB	2/13/01
Environmental Justice	Environmental Specialist		U	U	JSL	2/13/01
Farm Lands (prime or unique)	Soil Scientist	U			DCC	2/13/01
Flood Plains	Hydrologist	U			SJK	2/13/01
Invasive, Nonnative Species	Botanist			U	EO	2/13/01
Native American Religious Concerns	Environmental Specialist	U			JSL	2/13/01
Threatened or Endangered Species (fish)	Fisheries Biologist			U	GRR	2/13/01
Threatened or Endangered Species (plants)	Botanist			U	EO	2/13/01
Threatened or Endangered Species (wildlife)	Wildlife Biologist			U	CCF	2/13/01
Hazardous/Solid Wastes	District Hazardous Materials Coordinator	U			GDC	2/14/01
Water Quality Drinking/Ground Water	Hydrologist			U	SJK	2/21/01
Wetlands/Riparian Zones	Hydrologist		U		SJK	2/13/01
Wild and Scenic Rivers	Recreation Planner	U			DE	2/13/01
Wilderness	Recreation Planner	U			DE	2/13/01