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

Environmental Assessment for the Swiftwater Field Office

Galagher Commercial Thinning Harvest

EA No. OR - 104 - 01 - 03

The Swiftwater Field Office proposes to do a commercial thinning harvest on approximately 450 acres of second-growth forest in the Upper Umpqua Watershed located in Sections 9, 17, and 19; T24S, R6W, W.M. This project is within the Matrix and Riparian Reserve Land Use Allocations and is designed to help meet the Roseburg District's annual harvest commitment.

Acronyms Used:

ACS	-	Aquatic Conservation Strategy
BLM	-	Bureau of Land Management
CWD	-	Coarse Woody Debris
DBH	-	Diameter at Breast Height
EA	-	Environmental Assessment
ID Team (IDT)	-	Interdisciplinary Team
NEPA	-	National Environmental Protection Act
NFP or NWFP	-	Northwest Forest Plan
PDC	-	Project Design Criteria
RMP	-	Resources Management Plan
ROD	-	Record Of Decision
S&G	-	Standards & Guidelines
S&M	-	Survey and Manage
T&E	-	Threatened or Endangered

Definitions:

Basal Area - the cross sectional area of trees at DBH including the bark stated in square feet on a per acre basis.

Co-dominant Tree: Trees with crowns forming the general level of the crown canopy and receiving full light from above but comparatively little from the sides.

Dominant Tree: Trees with crowns extending above the general level of the crown canopy and receiving full light from above and partly from the side.

Effective Stream Shade: expressed as: $\frac{\text{Total solar radiation - Total solar radiation reaching the stream}}{\text{Total solar radiation}}$

(Sufficiency Analysis for Stream Temperature, USDA and DOI, 2003, pg. 9)

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INTRODUCTION

This Environmental Assessment (EA) has been prepared for the Swiftwater Field Office's proposed **Galagher Commercial Thinning**. An EA is a site specific analysis of potential environmental impacts that could occur as the result of the implementation of a federal action. 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. The issues that were identified as pertinent to this project are analyzed in Appendix D.

A. Need for Action

The *Roseburg District Record of Decision and Resources Management Plan* (RMP, June 1995) guides and directs management on BLM lands. It "responds to dual needs: the need for forest habitat and the need for forest products". "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" (RMP, pg. 15). 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 of the proposed project are currently overly dense with decreasing growth rates and would benefit from a thinning at this time to improve growth potential. The need for forest habitat can be met by "Design[ing] and implement[ing] watershed restoration projects in a manner that promotes long-term ecological integrity of ecosystems … and attains Aquatic Conservation Strategy objectives" (pg. 28). Much of the riparian areas consist 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).
This need is further described in the *Upper Umpqua Watershed Analysis* (April 2002) which identifies 30 to 60 year old managed stands as high priority for density management treatment within the fifth-field watershed (pg. 112) and the Galagher Ridge units specifically (pg. 113) in order "to meet commercial and wildlife objectives".

B. Purpose of Action

The purpose of the action described in this EA is to offer the **Galagher Commercial Thinning** Timber Sale for auction in fiscal year 2004 or later. This proposal would help meet the Roseburg District's annual harvest commitment or probable sale quantity. It is also the purpose of this project to accelerate the development of mature forest characteristics (large trees, down woody debris and snags) within the Riparian Reserve and owl Residual Habitat Area (core area) through density management.

The following objectives would be accomplished by the purposed action:

1. **Timber Management and Production:**
   - "Produce a sustainable supply of timber and other forest products" (RMP, pg. 60).
   - "Manage developing stands . . . to promote tree survival and growth and to achieve a balance between wood volume production, quality of wood, and timber value at harvest" (RMP, pg. 60).
   - 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. **Ecosystem Management:**
   - "Restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them . . ." (Aquatic Conservation Strategy) (RMP pg. 19).
   - 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 Species and Supplemental EIS Special Attention Species and their habitat (RMP pg. 41).
   - "Improve existing culverts, bridges, and other stream crossings determined to pose a substantial risk to riparian conditions." (RMP, pg. 73).

C. Description of the Proposal

The Swiftwater Field Office of the Bureau of Land Management (BLM) proposes to harvest second-growth timber in the Upper Umpqua Watershed located in Sections 9, 17, and 19; T24S, R6W, W.M. (see maps, Appendix A through C) and maintain a pump chance in Section 3. The proposed project area is approximately 10 road miles northwest of Sutherlin and approximately 15 air miles northwest of Roseburg, Oregon. Approximately 500 acres were analyzed for potential harvest activities. New road construction and renovation or improvement 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) and the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (S&M ROD). All treatment of noxious weeds would be in compliance with the *Roseburg District Noxious Weed EA.*

The Northwest Forest Plan (ROD, pg. 6) divides the federal landbase into seven land use allocations (LUA) or categories. This project is primarily within the "Matrix" land use allocation. "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 one of which is the "General Forest Management Area" which is lands available for timber harvest (RMP, pg. 33). This project is also within the "Riparian Reserve" land use allocation. 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).

II. ALTERNATIVES INCLUDING THE PROPOSED ALTERNATIVE

This section describes the No Action and Proposed Action alternative, 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 (pgs. 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 in the Riparian Reserve for the purpose of enhancing conditions of late-successional forest ecosystems and applying silvicultural practices to meet ACS objectives at this time. Road maintenance would be on a sporadic as needed basis for the primary purpose of keeping roads open to traffic. There would be no decommissioning or improvement of roads to reduce road related impacts.

B. The Proposed Action Alternative

Implementation of the Proposed Action Alternative would result in the harvest of approximately 8.9 MCF (thousand cubic feet) or 4.6 MMBF (million board feet) of the Roseburg District's FY 2004 harvest commitment of 3500 CCF (26 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 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 percent of the estimated sale quantity. Harvest activities would occur on four units for about 440 acres of thinning and ten acres of road right-of-way clearing. Other activities could include: temporary road construction, road renovation and improvement, subsoiling of previously compacted skid trails, road decommissioning, and maintenance of two pump chances (water sources). 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) and would be in compliance with the Settlement Agreement (January 31, 2003).

Roads - Approximately 2.4 miles (17 spurs) of **temporary road construction** (roads built, used and decommissioned after use) and 0.1 miles of **permanent road construction** would occur on government land. Approximately 0.3 miles of BLM roads would have **road renovation** (restoring the road back to its original design) and approximately 1.8 miles of BLM roads would have **road improvement** (improving the road beyond its original design). This would consist of installing, replacing or maintaining drainage structures (culverts and ditches), and some clearing, widening and reshaping the road surface. **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 0.05 miles of BLM road.

Timber Harvest - Timber harvest would consist of commercial thinning and density management harvest. **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). Approximately 300 acres would be thinned for this purpose. **Density Management harvest** (in the Riparian Reserve and owl core area) is designed to accelerate the attainment of old growth forest characteristics by encouraging the development of larger trees more quickly through reducing the stocking of the forest stand around selected trees in order accelerate the growth of the remaining trees. Other trees would be left quite dense to promote mortality for stand diversity (RMP, pg. 103). Approximately 150 acres would be thinned for this purpose. **Firewood cutting and salvaging** of logging debris (slash) could occur in landing cull decks and near roads.

The Proposed Action would require a mix of skyline cable logging (approximately 290 acres or 64 percent) and ground-based logging (approximately 160 acres or 36 percent) 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.

Other Actions - The **burning of cull decks and slash piles on landings** could occur as a means of reducing fire hazard. **Subsoiling** could occur on selected old existing skid trails used under this action as well as any new trails created (see pg. 8). Two **pump chance sites** would be **maintained** to enhance use for wildfire suppression.

C. Project Design Features and Management Practices 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 (PDC'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 ROD 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).

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, ponds, and reservoirs. The RMP (pg. 24) specifies Riparian Reserve widths equal to the height of two site potential trees on each side of fish bearing streams; one site-potential tree on each side of perennial or intermittent non-fish bearing streams, wetlands greater than an acre, and constructed ponds and reservoirs. Data has been analyzed from District inventory plots and the height of a site-potential tree for the Upper Umpqua Watershed has been determined to be the equivalent of 180 ft. Therefore the Riparian Reserve would be approximately 180 ft slope distance from the edge of non-fish bearing streams and 360 ft from fish bearing streams in the project area (Roseburg District Memo, Jan. 18, 1995). No fish-bearing streams were found in the project area adjacent to any Unit. Wetlands (less than one acre in size) are present in Units 9A and 17A and a constructed reservoir (pump chance) in Unit 9A and Section 3. Approximately 970 ft of road building would occur within the Riparian Reserve.

      1). Streambank stability and water temperature would be maintained by establishing a Riparian Management Zone (RMZ) along all streams. No density management would occur within the RMZ. However, two trees per acre would be girdled or felled for interim coarse woody debris (CWD). These trees would be selected to meet wildlife and hydrology objectives. Approximately 40 acres are contained within the RMZ. The extent of this zone is described in Table 1 below:

Table 1: Riparian Management Zone (RMZ) Widths

STREAM DESIGNATION	REACHES INCLUDED	RMZ WIDTHS	STREAM LENGTHS
Fish-bearing	Fish-bearing	100 ft.	0.0 miles
Summer flow, non-fish bearing	Perennial continuous streams flowing in mid-late summer	40-60 ft. (see Table 2)	1.4 miles
Intermittent flow, non-fish bearing	Intermittent Perennial interrupted with minimal summer flow North side of summer flow streams on E-W flowing reaches	40 ft.	2.0 miles
Minor, non-fish bearing	Intermittent – highly interrupted Short intermittent reach (only a few hundred ft. in length)	One tree width on each side of stream	0.1 miles

Table 2: Riparian Management Zone (RMZ) Width Determination for Summer Flow, Non-fish Bearing Streams

HEIGHT OF TREE	HILLSLOPE <30%	HILLSLOPE 30-60%	HILLSLOPE >60%
Trees <100 ft.	40 ft.	40 ft.	50 ft.
Trees >100 ft.	40 ft.	50 ft.	60 ft.

NOTE: RMZ widths are based on a minimum of 40 ft. for soil stability (FEMAT, pg. V-26) and up to 60 feet for maintaining optimum shade in the primary shade zone (USDA & DOI, 2003, pg. 18). The hillslope is the gradient of the side slopes of the stream. Each side is buffered individually based on aspect and tree height and may have differing buffer widths. On east-west flowing streams, the buffer on the north side would be 40 feet.

2). Density management would be applied within the Riparian Reserve "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 110 acres of the Riparian Reserve outside the RMZ would be thinned for this purpose. This would result in a change from approximately 190 to 250 dominant and co-dominant trees per acre before thinning to 45 to 75 trees per acre (90 ft^2 BA/ac) after thinning (except in areas of potential instability (pg. 9 and Appendix D, pg. 1) where heavier retention would be prescribed). The girdling and felling described above would also occur in the portion of the Riparian Reserve outside the RMZ.

3). Riparian habitat would be protected by maintaining a Riparian Management Zone. Harvest would not occur within this zone, however treatment to restore riparian habitat (snag creation, and falling trees to provide a source of interim down woody debris) would occur. Habitat would be protected from logging damage by directionally felling trees that are within 100 ft of the RMZ away from or parallel to the RMZ and yarding logs away from or parallel to the streams (i.e. logs would not be yarded across streams, streambanks, or the inner gorge unless fully suspended through the RMZ. NOTE: One intermittent reach in Unit 9A would have full suspension and a short intermittent reach in the northeast corner of Unit 19A would have partial suspension across it.

4). Two sites (Units 9A and 17B) totaling nearly one acre of unstable slopes met the Timber Production Capability Classification criterion for removal from the timber base and were removed from the project.

5). The riparian vegetation of wetlands would be protected by not permitting logging through the wetlands. Trees designated for harvest within 100 ft of the wetland would be felled and yarded away from the wetland to protect this habitat.

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 Upper Umpqua Watershed was used in this analysis and is 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.

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 be implemented:(1) Maintaining or improving the existing roads (Road No. 24-6-5.1, 9.0, 9.1 and 19.4) [see Appendix B]) to fix drainage and erosion problems. This would consist of maintaining existing culverts, installing additional culverts, and surfacing roads with crushed rock where deficient. (2) Accomplishing in-stream work (i.e. culvert replacement and fill removal) during periods of low flow (between July 1 and September 15). (3) Minimizing spur construction in the Riparian Reserve and locating spurs on ridge tops and stable (0 - 40 percent slope) locations. (4) Restricting road renovation and log hauling on unsurfaced roads to the dry season (normally May 15 to Oct. 15). If unacceptable resource damage could occur, operations during the dry season could be suspended during periods of heavy precipitation or not authorized if the wet season extends beyond May 15. This season could be adjusted if unseasonable conditions occur (e.g. an extended dry season or wet season). (5) Prior to any winter haul on surfaced roads, the stream crossings along the haul route would be evaluated for the need for turbidity reducing measures (ex., placement of straw bales and/or silt fences). If needed, these structures would be put in place prior to haul. (6) Not over-wintering bare erodible spur roads. This would be done by building, using and winterizing (installing necessary drainage features, blocking and seeding and mulching bare cut and fill surfaces with native species, or a sterile hybrid mix if native seed is unavailable) all temporary roads at the end of the operating season. (7) Decommissioning all new construction when logging is completed, i.e. the roadbed would be water barred, cut slopes and fills seeded with native species, or a sterile hybrid mix if native seed is unavailable, and access blocked.

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 at least 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). Intermediate supports would be used where necessary. 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) Dry season logging would be required in portions of all units. Ground-based logging would be limited to the dry season as described above. No blading would be permitted in skid trails.

c. **Measures to limit soil compaction** (RMP, pg. 37) would consist of: (1) limiting ground based logging and subsoiling to the dry season (May 15 to Oct. 15) when soils are least compactable; however, this season could be adjusted if unseasonable conditions occur (e.g., an extended dry season or wet season). Also, operations would be suspended during periods of heavy precipitation if resource damage would occur. (2) Limiting machines in size and track width to reduce compaction and trail width. (3) Using old trails to the greatest extent practical and limiting new trails to slopes less than 35 percent. Ground based tractor activities would be confined to designated skid trails as identified in an approved logging plan. Tractor skidtrails would be spaced at an average spacing of 150 feet apart where topography allows. This would result in about 7 percent of the ground surface in trails. If harvester/forwarder is used, the harvester would be required to delimb 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) Evaluating the need for amelioration by the Soil Scientist after completion of ground-based operations in accordance with RMP criteria. All main trails (trails that have 50 percent or greater exposed mineral soil) would be ameliorated after completion of current entry or would be documented with a plan for deferred amelioration at final harvest. Amelioration would only be deferred if unacceptable damage to residual trees would occur. Secondary trails (trails that have less than 50 percent exposed mineral soil) would be handled in the same manner as main trails if field evaluation shows that compaction is extensive. Amelioration would include subsoiling and returning organic debris to the subsoiled surface. **Subsoiling** is a practice that shatters soil compaction, thereby reducing the effects to soil productivity and improving 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 be able to pull organic debris back over the trails. Existing accessible skid trails and haul roads not considered as part of the current transportation would also be subsoiled when evaluation indicates excessive compaction and where practical (e.g., subsoiling saturated or very rocky soils or skid trails with advanced reproduction would not benefit soil productivity and therefore would not be practical). Any deferral of amelioration of old trails and roads would require documentation and a plan. Machines would be limited in size and track width to reduce compaction and trail width. (5) Subsoiling of decommissioned road segments (Unit 9A) with a winged subsoiler (or equivalent) provided that subsoiling would not contribute to additional sedimentation to streams.

d. **Measures to protect the duff and surface soil layer** (RMP, pg. 37) would consist of: reserving coarse woody debris (CWD) as well as tree tops and limbs as a source of organic material which can become incorporated into the soil structure (See para. 3b, below).

e. **Measures to protect slope stability** would consist of: (1) Locating new roads in stable locations and with proper drainage structures. (2) Removing from harvest consideration those areas that exhibit instability. (3) Extending the no-cut riparian management zone to include potential slope instability in certain very steep and extremely steep inner gorges (4) Maintaining higher residual densities inside Riparian Reserves that have potential instability and that could ultimately impact aquatic values such as fisheries (5) Requiring dry season cable yarding with at least one-end suspension for the headwall below the rocked 23-6-9.0 road (see Appendix D Issue #2). NOTE: The dry season yarding requirement for unsurfaced roads described previously would also reduce the risk of slope failure on areas having stability concerns.

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

a. Nesting and roosting habitat for cavity dwellers would be provided by reserving existing hard or soft snags at least 20 inches 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 coarse woody debris (CWD). Past experience has been that less than five percent of snags need to be felled for this reason. Remnant mature or old-growth trees remaining from the previous stand would be reserved where possible.

b. An interim source of snags would be provided by reserving snags that do not meet the size described above as well as girdling approximately one tree per acre within the Riparian Reserve. An interim source of down wood would be provided through felling approximately one tree per acre within the Riparian Reserve.

c. Most existing CWD (at least 16 inches in diameter and 16 ft in length) would be reserved (RMP, pg. 38). This has been created by 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 (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 (large branch clusters)) that could provide future snags and nesting habitat. Approximately four mature or old growth remnant trees 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 15 snags were found in the proposed units.

6. **To prevent and report accidental spills of petroleum products or other hazardous material and provide for work site cleanup:**
   During operations described in this proposal, the operator would comply with all applicable State and Federal laws and regulations concerning the storage, use and disposal of industrial chemicals and other hazardous materials. Hazardous materials (particularly petroleum products) would be stored in durable containers and located so that any accidental spill would be contained. 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. All equipment planned for instream work (culvert removal on Rd # 24-6-5.1) would be inspected beforehand for leaks. All landing trash and logging materials would be removed.

7. **To prevent and/or control 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 and/or herbicide application prior to the start of management activities in the proposed project area.

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 mostly suppressed trees and smaller trees that would result in less stand damage during felling. In the pruned areas, most of the pruned trees that are dominant and co-dominant would be retained.

   b. Felling and yarding would be done in a manner to protect the residual stand. No felling 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. Cable yarding of logs would be done under the canopy to avoid damage to tree crowns.

9. **To protect Special Status and SEIS Special Attention Plants and Animals:**
   a. If, during implementation of the proposed action, any Special Status (Threatened or Endangered, proposed Threatened or Endangered, Candidate, State listed, Bureau Sensitive, Bureau Assessment, or Special Provision) 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 is found to allow time to determine adequate protective measures before operations could resume.

b. Special Attention (Survey and Manage) plant and animal sites would be protected where required, according to established management recommendations (RMP, pg. 42).

c. Seasonal restrictions to prohibit logging during the nesting season (March 1 to June 30) would be applied to Unit 19A if surveys indicate that a Northern spotted owl is nesting in the adjacent Residual Habitat Area (owl 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 that were not found during project evaluation.

D. Alternatives Considered but Eliminated

There were no other alternatives considered during the formulation of this project.

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 substantially impacted. Appendix F (Analysis File) contains data and additional supporting information used by the interdisciplinary team (IDT) to describe the affected environment.

This project lies within the Oregon Coast Range Physiographic Province. The FSEIS describes the affected environment for this province on page 3&4-21. 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 Upper Umpqua Watershed Analysis.

A. General Setting

The stands to be thinned are young (approximately 40 year old) Douglas-fir plantations established after regeneration harvest. The old growth forest in this area is predominantly Douglas-fir in association with incense cedar, western hemlock, western red cedar, white fir, and Pacific yew. Salal, Oregon grape, sword fern, hazel and ocean spray are common understory plants. The plant association (Atzet 1996) that best describes this area is in the western hemlock/salal-dwarf Oregon grape. The timber cruise in the old growth stands cut under the Yellow Creek Mountain sale show species composition of 87 percent Douglas-fir, with minor amounts of white fir, western hemlock, incense-cedar, and western red cedar.

B. Affected Resources

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

Botany - No Special Status Plants, Survey and Manage, or State/Bureau listed species were found in the project area. 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 - There are three fish-bearing streams downstream of the proposed project area: Galagher Canyon Creek, Little Canyon Creek, and Yellow Creek. According to the Upper Umpqua Watershed Analysis (pg. 95 and p.107 table 7-4), Oregon Coast Coho (*Oncorhynchus kisutch*), Oregon Coast Steelhead trout (*O. mykiss*), Coastal Cutthroat trout (*O. clarki clarki*), Pacific Lamprey (*Lampetra tridentata*), Umpqua Chub (*Oregonichthys kalawatseti*) and Oregon Coast Chinook salmon (*Oncorhynchus tshawytscha*) are present in the watershed. The Oregon Coast Coho has been designated by the Endangered Species Act as a threatened species (Federal Register, Vol. 63, No.153, August 10, 1998, p.42587). Further detail on listed species status is contained in Table 6, Appendix F.

The Oregon Department of Fish and Wildlife (ODFW, 1994) has conducted aquatic habitat surveys in the Upper Umpqua fifth-field watershed. Data is available for Yellow Creek (Reach 1 and 2) and Little Canyon Creek (Reach 1 and 2) and was used in this analysis. These surveys generally show that streams within the watershed lack large wood, have a high percentage of fine sediment within the stream channels and substrate dominated by bedrock. The Riparian Reserve generally consists of overstory and understory components as described above. Streams consist of high gradient, non-fish bearing, intermittent and perennial streams of the first and second order. There are no known fish passage barriers within the proposed project area.

Hydrology – The proposed project is located within the Upper Umpqua fifth-field watershed which covers approximately 169,500 acres (see Table 3 below). Beneficial Uses of Water consists primarily of domestic water supply, irrigation and livestock watering, resident fish and aquatic life, and salmonid spawning and rearing. Average annual precipitation in the project area ranges from 44 to 47 inches occurring mainly between October and March. Elevation ranges from 800 to 2150 ft. Precipitation is primarily rain at the lower elevations (<2000 ft.). The Transient Snow Zone (TSZ) is defined as areas between 2,000 to 5,000 foot elevation that may alternately receive snow or rain.

Table 3: Hydrological Information Regarding Units in the Project Area.

UNIT	Sixth-Field Subwatershed	Seventh-Field Drainage	Acres	Acres in Transient Snow Zone
9A	Yellow Creek	Upper Yellow	44	0
9A	Yellow Creek	Lower Yellow	297	0
17A	Yellow Creek	Lower Yellow	29	0
17A	Lost Creek	Little Canyon	21	0
17B	Yellow Creek	Lower Yellow	2	2
17B	Lost Creek	Little Canyon	20	7
19A	Lost Creek	Little Canyon	34	0

There are no waterbodies in the project area on the Oregon Department of Environmental Quality's 2002 303(d) List of Water Quality Limited Waterbodies. The streams in Units 9A and 17A are tributaries to Yellow Creek which is listed from the mouth to River Mile 9.1 for: (1) excessive summer temperature which impairs the salmonid rearing; and (2) temperature from Sept 15 – May 31 which impairs the salmonid spawning, egg incubation, and fry emergence (ODEQ, 2003 (a) and (b)). Streams in Unit 19A are tributaries to Little Canyon Creek which flows into the Umpqua River. The Umpqua River is listed for summer temperature and fecal coliforms (ODEQ, 2003 (b)). The pump chance in Section 3 contains an outflow culvert approximately 8-10 feet above ground level, however it has no evidence of flow therefore any flow is subsurface. The outflow from the pump chance in Section 9 is bypassing the outflow riser culvert, flowing under the road, and into a wetland below.

The stands in the project area are greater than 35 years of age, therefore are expected to have hydrologic recovery from the last harvest (Harr, 1983, pg. 385). Since the project area includes small streams with their entire catchments, all of the catchment area would be in a state of full hydrologic recovery. Therefore, the existing water yield and base flow of the project area is expected to be within the range of natural variability.

Soils and Geology – The soils in the project area formed over the sandstones and siltstones of the Tyee Formation. The Tyee formation is noted for its relatively high density of debris avalanches and debris flows on slopes steeper than 65 percent, particularly those in headwalls. Except for small wet areas in some riparian zones, the soils in the project area are well drained. The soils on the steeper slopes generally have high rock fragment content (35 percent or greater by volume) making them a potential source of coarse fragment recruitment to streams.

Gentle to moderate (10 - 60 percent) stable slopes comprise about 90 percent of the project area. Nearly all of these slopes were heavily impacted by past ground-based (tractor) yarding. Trails cover about 15 percent of the surface area with present **compaction** ranging from light to heavy. These trail surfaces are in various stages of vegetative establishment and healing. The heaviest residual compaction is in mainline trails where subsoil was exposed. These heavily compacted segments typically are dominated by moss and only support scattered and stunted shrub and tree understory. Little erosion is currently occurring on these trail surfaces.

Of the steep to extremely steep slopes (60 to greater than 100 percent) about 35 acres or eight percent of the project area are potentially unstable (i.e., can become unstable with changing site conditions) and about one acre (Unit 9A and 17B) is unstable and actively failing. About 15 acres of these slopes, however, are considered stable due to high concentrations of very shallow soils (less than 10 inches to bedrock) and rock outcrop. **Potentially unstable conditions** closely correspond to the Timber Productivity Classification System (TPCC) of FGR (fragile soils due to slope gradient but suitable for timber production when protective mitigation is applied). Under past clearcut conditions a scattering of harvest-related landslides up to 0.2 acres in size occurred on the potentially unstable ground.

There are two unstable sites in Units 9A and 17B where two old road-related landslides occurred. **Unstable conditions** closely correspond to the TPCC of FGNW (fragile soils that can not be adequately protected and are withdrawn from the timber base). One of the unstable sites is at the

base of a headwall in the northeast portion of Unit 9A. A road sidecast failure has generated a debris flow at this point and scoured a first order channel down to bedrock. The other site in the southern part of Unit 17B is where a large road cut slope failure generated a debris flow that traveled one mile down Galagher Canyon. There is potential for future landslides remaining at these two sites. Three small bank failures recently occurred in the very steep inner gorge of a first order stream in Unit 19B. Stream reaches that intersect unstable and potentially unstable ground total about 0.8 mile.

Wildlife - Federally Threatened and Endangered (T&E) species known to occur in the Roseburg District include the Northern spotted owl (*Strix occidentalis caurina*), marbled murrelet (*Brachyramphus marmoratus*), bald eagle (*Haliaeetus leucocephalus*), Canada lynx (*Lynx canadensis*) and Fender's blue butterfly (*Icaricia icarioides fenderi*). Canada lynx are associated with high elevation localities primarily east of the Cascade crest. The project area is located within the Coast Range - outside of the range of the Canada lynx. Fender's blue butterfly is co-dependent on the Kincaid's Lupine. The Kincaid's lupine is not known to occur in the project area. Therefore, without the lupine's presence, the butterfly would likely not be present on the project area.

There are no known **Northern spotted owl** nest sites within a quarter mile (disturbance zone) of the proposed sale units in Sections 9 and 17. One known spotted owl nest site (Lower Little Canyon) and its established Residual Habitat Area (a known owl activity center as of January 1, 1994) is within a quarter mile of Unit 19A. There is approximately 450 acres of suitable dispersal habitat within the project area, of which eight acres are included within the Residual Habitat Area. This project is not within any Critical Habitat Units for the Northern spotted owl. Critical Habitat is 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 and Endangered species.

The proposed project falls within the 35-50 mile **marbled murrelet** Zone 2. There are no known occupied marbled murrelet sites within 0.25 miles of the project area. The closest known marbled murrelet occupied site occurs more than two miles from the proposed project area. All suitable habitat within 0.25 miles of the proposed units have been surveyed with two consecutive years of intensive surveys (PSG Protocol 2000), completed in 2000-2001 in Sections 9 and 19, and in 2001-2002 in Section 17. Marbled murrelets were not detected in Sections 9 and 17; however, there was an audio detection within the center of Section 19 on July 31, 2001. Subsequent follow up surveys in 2001 and 2003 did not detect the presence of marbled murrelets.

There are no known **bald eagle** nests or winter roosting areas within 0.25 miles of the project area. The closest known bald eagle nest site is over three miles away; therefore, there are no disturbance concerns.

E-4 Special Provision Species – Adult and subadult **golden eagles** (*Aquila chrysaetos*) have been regularly observed in T24S, R6W, Section 3, 9, and 17. A nest site was located in Section 9 in 2002. Follow-up surveys, completed July 2003, determined the nest site was unoccupied in 2003. The nest site is located more than 0.25 miles from the project area. Therefore, for all activities the quarter mile buffer would mitigate disturbance to future golden eagle nesting activities at this nest site.

Survey and Manage Species – Oregon **red tree vole** (*Phenacomys longicaudus*) surveys were completed in July 2001 within Units 9A and 19A, resulting in ten active red tree vole sites being identified. The *2003 Survey & Manage Annual Species Review* (IM#OR-2004-034) removed the red tree vole from Survey & Manage requirements within that portion of the species range that is within the Mesic Zone. This project area falls within the Mesic Zone therefore the red tree vole no longer has Survey & Manage status for this project.

IV. ENVIRONMENTAL CONSEQUENCES

This section provides the analytical basis for the comparisons of the alternatives. The reasonably foreseeable environmental consequences (impacts, effects) to the human environment that each alternative would have on selected resources are described. Impacts can be beneficial or detrimental. 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). Short-term generally refers to the time of the action up to the first year after the action but may be as long as ten years. Long-term may be a year or more but generally more than ten years.

The Roseburg RMP/EIS 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" are 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 densities and conditions would remain unchanged. Only normal programmed maintenance would be performed. There would be no entry into the Riparian Reserve 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 computer model (Hann, 1995) output indicates that trees are under varying degrees of competitive stress at this time. Stands of trees under competitive stress 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 (Oliver, 1990, pg. 40 and 125; Waring, 1985, pgs. 211-231, Chpt. 2 and 3; Smith, 1962, pgs. 96-97). Stands left in this condition are slow to respond to improved growing conditions and never attain potential growth rates (Oliver, 1990, pgs. 352-355; Smith, 1962, pg. 96 and pgs. 117-120). 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 (Oliver, 1990, pg. 100; Waring, 1985, pgs. 214-215; Graham, 1999, pgs. 1-22). The Silvicultural Prescription (Appendix F) provides a more detailed stand description.

Soil Productivity – Soil productivity loss associated with proposed action road construction and harvest would not occur. Soil productivity would not be restored to 0.07 miles of road that would be decommissioned under the action alternative. All compaction and soil displacement from past ground-based operations would continue to heal very slowly due to natural processes.

The probability of in-unit landslides would be low (less than 10 percent) on the potentially unstable (FGR) slopes (portions located in all units). This assessment is based on the very low level of landslide activity that has occurred within the units during the mid-seral period (based on aerial photo and field observations). The assessment is also based on the degree of the indicators of potential instability seen in the field and on the results of the Oregon Department of Forestry storm impacts and landslide study. The study indicated that failures were least likely in stands in the 31 to 100 year age class (Oregon Department of Forestry, 1999; pg. 64). The likely size of any landslide occurring would be small (less than 0.1 acre) based on the fact that only two in-unit-related landslides larger than 0.1 acre (the largest being 0.2 acre) were identified in the landslide inventory. Both of these occurred under clearcut conditions. The effects of widespread small landslides in time and space would be inconsequential to soil productivity.

Water Quality and Hydrologic Processes - There would be no direct impacts to water quality or hydrologic processes. Vegetation within the Riparian Reserve would continue to slowly develop over time to provide increased shade and bank stability. This slow development would provide for a smaller size of potential wood for long-term recruitment. Stand density would remain high with a greater risk of a high severity wildfire or bark beetle epidemic which could result in a stand replacing event. Such an event would result in an increase in water yield due to a reduction in evapotranspiration from the loss of vegetation. This effect is greatest in the headwater streams, such as those in the project area, which tend to burn more thoroughly than in larger streams (Minshall, *et al.*, 1989, pg. 707). In terms of stream temperature, the short-term benefit of increased summer flows by increased water yield would be offset by reduction in stream shade.

Sediment input, transport, storage - Road construction, renovation, harvest, and haul-related effects on sediment levels and mitigation of existing sedimentation sources would not occur. Eroding natural surface roads in Section 9 would result in continued sedimentation to streams. Some road stream crossings and drainage features are in poor condition and have an increasing likelihood of failure over time and the introduction of substantial levels of sediment into streams, especially in Unit 9A. Road-related short-term sedimentation into streams corresponding to winter haul and first season flush periods associated with the action alternative would not occur. About 0.8 mile of first and second order streams would be at risk from small natural landslides. The small streams in the

project area have low capacities for carrying sediment. Small landslides in low order streams would result in a short-term increase in sedimentation until the material is dispersed downstream and potential for a short and long-term increase in large wood. Effects of sediment in the stream bed from small landslides have a low probability of being detected more than a few hundred feet downstream from the landslide during normal flow conditions. Water would continue to bypass the culvert and infiltrate under the 24-6-19.3 road at the pump chance in Section 9, which may result in future road failure.

Stream temperature - Site-specific analysis using the SHADOW model (Park, 1993) predicts a baseline total temperature increase of 0.21 degrees Celsius as the streams flow through the project area. This potential increase would be spread over six stream reaches for an average modeled increase of 0.03 degrees Celsius per reach. Each stream would flow through private timber land and then into Yellow Creek. The streams contain approximately 10% of the flow of Yellow Creek. Due to mixing ratios (Brown, 1983, pg. 56), the increase would be a total of 0.02 degrees Celsius in Yellow Creek. Stream temperatures vary annually based on flow conditions and air temperature.

Water yield and peak flows – There will be no change to water yield or peak flows resulting from the no action alternative.

Fisheries Habitat - Current temperature, sediment inputs, woody debris and hydrologic processes would continue to function at existing rates and levels with the exception of occasional pulses of increased sediment due to landslides and road failures. Fish species and populations would remain relatively unchanged from current trends. The riparian habitat adjacent to the aquatic environment on both fish-bearing and non-fish bearing stream eco-tones, consists primarily of a dense mid-seral monotone of Douglas-fir. Although these stands would continue to mature and develop late successional characteristics over time, due to the dense forest monotone these stands would develop conditions described in the "stands section" above. The primary effect to the riparian resource would be a continuation of small size and structure of future large wood and coarse woody components and a long-term increase in the likelihood of stand mortality (See "Stands" discussion, previous page). Road maintenance activities would occur over time based on request by permittee or on an "as-needed" basis. Fish barrier culverts would be replaced according to District-wide priority.

Wildlife Habitat - The direct impacts would not occur under this alternative. There would be no disturbance effects within 0.25 miles of any known marbled murrelet occupied site or known Northern spotted owl sites. 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 natural development within a single layered, homogeneous Douglas Fir stand, that would likely result in a deficiency of old growth related structure, such as vertical and horizontal structure, large snags and down wood structures, and vegetative diversity. High canopy closure would be maintained due to competition of tree crowns at high densities. Canopy closure would eventually result in competitive tree mortality, thereby creating small snags and coarse woody debris (CWD) as habitat for some species. Competitive tree mortality would eventually create canopy gaps and open the space between trees within the stand, improving the functionality of the dispersal habitat (i.e. improving conditions for Northern spotted owls to move

through the stand). Existing structural features (i.e., snow breaks, forked tops, decay, etc.) would be maintained, fostering the creation of future nesting habitat. Predation risks to the Northern spotted owls would remain at current levels. Eight acres of dispersal habitat within the Northern spotted owl Residual Habitat Area would continue to function in its current capacity. Stands would progress naturally, delaying development of late-successional characteristics, thus delaying the expansion of interior habitat and suitable nesting habitat within the Residual Habitat Area. Riparian Reserve would remain in their current conditions. Reserves would continue to develop naturally and continue to lack large conifer trees along the stream corridors, until competitive tree mortality releases conifer growth on forest floor.

B. Proposed Action Alternative

Stands - Because the Proposed Action Alternative would 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 type forests on Federal lands within the Upper Umpqua Watershed. After the uplands are thinned, the stands would be composed of between about 60 to 95 (120 $ft.^2$ BA) dominant and co-dominant conifers per acre. Most of the retained trees have diameters greater than 14 inches. Density management would occur within the Riparian Reserve and owl core area. Retention would include dominant and co-dominant hardwoods and conifers. The spacing between trees would be 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. After thinning, the Riparian Reserve would contain approximately 50 to 70 dominant and co-dominant (90 $ft.^2$ BA) overstory trees per acre which includes about ten trees/acre retained to provide for future CWD of which about two trees per acre would be felled, or girdled at the time of this treatment or within two years. This is consistent with the recommendations of the *South Coast - Northern Klamath LSRA* (LSRA, 1998; pg. 90). ORGANON (Hann 1995) output indicates an increase in growth rates, diameters, and live crown ratio with the treatment as well as a reduction in the time required to attain large trees.

Botany - The potential of an increase in invasion of noxious weeds and invasive non-native plants into the proposed project area (indirect impact) could occur. Temporary road construction and logging operations would result in localized soil disturbance. Exposed soil is conducive to invasion by noxious weeds and invasive non-native 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 would reduce the potential for invasion.

Soil Productivity - Actions that could potentially impact the soils resource include: 1) losses to soil productivity due to compaction and road construction, and 2) within unit harvest related debris avalanches and flows.

Direct impacts would result from opening and using old trails, road building and logging activities. The three acres of travel surface of old trails and spurs not currently part of the transportation system would be opened for haul adding to the existing level of **compaction and erosion**. Spur construction would consist of widening existing trails or new construction where no trail previously existed. This construction would cover nearly two acres of undisturbed land. These new

disturbances (except for the road fill slopes) would be an irretrievable loss to soil productivity since these spurs would not be subsoiled and would be expected to be used in future entries. The total amount of yarding effects on soil productivity would vary depending upon the actual mix of skyline and ground-based operations. About 160 acres were identified as having potential for ground-based logging. Skyline logging would add small amounts of light, superficial compaction on less than one percent of the skyline yarded ground (Sampson Butte and Coon Creek monitoring). For ground-based yarding, harvester-forwarder operations would be more likely to occur than tractor operations based on current trends in the timber industry. Tractor trails cover less ground than harvester-forwarder trails but they have more concentrated compaction within them. Tractor yarding would use designated skid trails covering about five to seven percent of the ground. Ground-based harvester-forwarder trails would cover about 20 to 25 percent of the surface; however, the amount of area in main skid trails, log decks, and landings would not exceed the plan maintenance threshold of 10 percent (based on field observations of Coon Creek and Burma Shave commercial thinning timber sales). Some of the trail coverage would overlap old existing trails with residual compaction. Old plus new compaction (moderate to heavy) would cover about 10 percent of the ground-based area and would be substantial enough to reduce the growth of adjacent trees. Soil displacement and high levels of compaction created by the forwarder are more likely on slopes exceeding 30 percent. About 30 acres (20 percent) of the potential ground-based harvest ground is in the 30 to 35 percent range. Uphill cable-yarding (a much less impacting method) would be possible on much of this marginal forwarder ground (30-35 percent slopes) from roads that would be in place for this thinning.

When compacted trails are subsoiled, up to 80 percent of lost soil productivity can be recovered (Andrus et al, 1983; pg. 8). The amount of soil productivity loss that is recovered in the short or long-term would depend on how much amelioration of compaction is deferred until final harvest. Locating and then ameliorating compaction might be a considerably more difficult task at final harvest due to trails becoming more obscure and the location of compaction more difficult to determine. There would be some limited opportunities to subsoil old compacted skid trails and roads not needed for current operations where there are not impediments to equipment access such as steep slope breaks and residual trees. The use of a small excavator with a subsoiler attachment on the arm would minimize damage to the boles and roots of conifers and would allow organic debris to be pulled back over the tilled trails. Existing down woody debris would be left on site. This would benefit long-term soil productivity by leaving a nutrient reservoir and a medium for growth of organisms beneficial to the soil.

The proposed action would result in a slight short-term (ten years or less) increase in the probability of harvest-related **landslides and flows** on the potentially unstable slopes that would be thinned. This would be due to a temporary decrease in canopy interception of precipitation and a decrease in root strength. The increase in risk would be hard to quantify since there has been no scientific research on the subject. Although the probability of debris avalanches would increase, it very likely would still be in the low range (<10 percent) as under the no action alternative. The two main reasons are:

- The two high risk unstable slopes in Units 9A and 17B were removed from harvest consideration.
- The risk of landslides on the potentially unstable slopes under various thinning prescriptions would fall between the very low levels of the current unthinned stands and the moderate levels of their early seral stage. Adding the mitigating measures of the action alternative

including maintaining an RMZ along streams, higher levels of retention for areas of potential instability in Riparian Reserve (60 to 100 trees per acre, depending on the degree of potential instability), higher retention at sites most likely to fail that are outside of the Riparian Reserve, and dry season logging would keep the risk in the low range.

Based on the above discussion, the occurrence of any landslide under the action alternative would be expected to be within the range of natural variation for unthinned mid-seral stands temporally, spatially and in magnitude. The effect of landslides on soil productivity would likely be small since the landslides that might occur would likely be widely scattered and small in size (less than 0.1 acre).

Water Quality and Hydrologic Processes - Actions that could potentially impact the water quality include: 1) change in water chemistry from burning slash piles 2) increase in stream sedimentation and storage, 3) increase in water temperature, 4) increase in water yield, and 5) increase in peak flows and change in timing of peak flows. The proposal would have slash-pile burnings on two landings in the Riparian Reserve of intermittent streams. Given the filtering capacity of the forest floor and the distance to the streams, there would be no change in water chemistry from this action. There would also be no change to the fecal coliforms in the Umpqua River or Beneficial Uses of Water as a result of this alternative.

Sediment input, transport, and storage - In the absence of harvest-related landslides (indirect impact), virtually no sediment would reach streams from thinned stands due to the RMZ "no-harvest" buffer acting as a filter strip (Sampson Butte, Hello Folley, and Coon Creek monitoring observations). Some direct pathways for short-term soil displacement and potential sediment delivery may occur as a result of localized soil disturbance from cable yarding, and ground-based equipment operations (about 20 acres inside Riparian reserves). The few yarding trails that could pose sedimentation risks would be waterbarred and covered with slash. A 40 ft minimum stream-side buffer would be sufficient to maintain bank stability on streams since half a tree crown diameter is an estimate of the extent to which root systems affect soil stability (FEMAT, 1993, pg. V-26). Minor, non-fish bearing streams (as defined in Table 6) have a smaller buffer since they have minimal concerns for sedimentation risks given the project design criteria. One minor stream may have partial suspension across it resulting in minor sedimentation; however, this highly interrupted stream does not have the capacity to carry the sediment downstream. In the long-term, large wood contributed to the Riparian Reserve as a result of density management has the potential to create additional capacity for sediment storage due to sediment capture by larger wood in streams. If harvest-related landslides were to occur (low probability events), their size would tend to be small (less than 0.1 acre) and the risk of them reaching streams would be low and expected to be within the range of natural variation. This assessment is based on the following: 1) only two harvest-related landslides under clearcut conditions exceeded 0.1 acre, the largest being only 0.2 acre (Soil Scientist landslide analysis calculations). 2) Project Design Criteria (pg. 9) designed to lessen the risk, size and reach of landslides would be incorporated. Because of small landslides' limited reach (less than 200 feet), only about nine of the 35 acres of potentially unstable slopes could produce small landslides that would reach streams (all non fish-bearing). Any small harvest-related landslides that would originate inside the Riparian Reserve would be slowed down and possibly stopped by the high residual density of trees. The likely amount of material entering the stream floodplain and channel from a small landslide would range from negligible to 150 cubic yards (soil scientist estimate)

depending on the point of origin, size, reach, and the amount of scour of the landslide. These small landslides would typically consist of 35 to 60 percent rock fragments (depending upon the specific soil profile) and result in a short-term increase in sedimentation until the fine material is dispersed downstream. The effect of sediment from the landslides has a very low probability of being detectable in the stream beds more than a few hundred feet outside the project area and would not be detectable in the identified fish-bearing streams downstream.

Research has shown that the greatest potential for unmitigated stream sedimentation is from road construction (FEMAT, 1993; pg. V-16); however, in-stream sedimentation from road construction, maintenance of existing roads, and timber haul is not expected to be measurable in streams and would not be above existing background levels for the following reasons: 1) Spur construction would be on stable locations at and just below ridge tops on gentle to moderate slopes (10 to 40 percent) except for one segment (150 feet of Spur #2 in Unit 19A) on a 70 percent slope. 2) Spur locations would be outside of Riparian Reserve except for four segments totaling 0.2 miles (six percent of new road construction). None of these segments would cross streams and all are on stable slopes. 3) One existing natural surfaced road to be used for haul (24-6-9.0) would have drainage improvements including replacement of two failing log culverts across streams and the decommissioning of a segment that is a chronic sediment source. 4) All segments of naturally surfaced roads (both existing and newly constructed) would have dry season haul with seeding and mulching, waterbarring and blocking to traffic during the same dry season as logging. Any sediment from these segments (including the steep portion of Spur #2) would filter onto the forest floor and not reach streams. 5) Overall, rock quality is good and ditch lines adequately vegetated to filter sediment and prevent ditch erosion on the haul roads. Drainage would be improved and some segments deficient in the amount or quality of rock would receive an additional lift of rock to handle winter haul. One study (Burroughs, 1993) stated that ten inches of 1.5 inch minus gravel reduces the impacts of forest-road sedimentation by 99 percent. A study by Luce and Black (1999) in the Oregon Coast Range (soils similar to those of the affected environment) showed substantial reductions in sediment delivery (about 80 percent) where well-vegetated or armored (covered with rock fragments) ditch lines of rocked roads were left ungraded. 6) For the wet season haul portion, all culvert crossings would be inspected prior to haul for implementation of PDC's that would lessen sedimentation concerns (i.e., use of hay bales, sediment curtains, etc.). 7) Over 80 percent of the stream crossings along the haul routes are first order streams which generally have good sediment filtering capacity. 8) Dry season haul of about 65 percent of the project area would be required. Dry season haul on rocked roads generates considerably less sediment than wet season haul. 9) Burning of slash piles would be limited to landings, with low erosion potential. Any sediment resulting from the slash burning would filter into the forest floor before reaching the intermittent creeks. 10) The outflow culvert for the pump chance in Section 3 does not have overland hydrologic connectivity to a stream. Any sediment would be filtered through the forest floor. 11) The outflow culvert for the pump chance in Section 9 flows into a wetland that is discontinuous with the stream drainage network. Any sediment would be filtered through the forest floor or the wetland. There is potential for a small amount of sediment delivery to the streams when the culvert on the 24-6-5.1 road is replaced; however, the effects are minimal, short-term, and would not extend to the fish-bearing stream downstream.

In summary there would be a slight short-term increase in sediment input and transport, however in the long-term there would be a possible decrease. Sediment storage in the long-term would have a slight increase due to recruitment of large down wood.

Stream temperature - A 40-60 ft RMZ on summer flow, non-fish bearing streams would leave an intact primary shade zone (zone providing shade from 10 a.m. to 2 p.m) on perennial streams (USDA and DOI, 2003, pg. 18-19). Up to two trees per acre would be felled or girdled within the RMZ in a manner that would not reduce effective stream shade. Since full-suspension logging across streams would not occur in perennial or summer flow streams, there would not be an effect on stream shade from this action. In the secondary shade zone (zone providing shade from 6 a.m to 6 p.m.), of the tributaries to Yellow Creek, the stand density may be reduced to an average of 90 ft^2 basal area. Treating vegetation in the secondary shade zone without increasing temperature requires not more than a 50% reduction in canopy closure (USDA and DOI, 2003, pg. 19). ORGANON modeling predicts a greater than 50% reduction in canopy closure for the proposed action (See Silvicultural Prescription). However, canopy closure as defined in the ORGANON model is the sum percent largest crown areas (Hann, 1995) which means that hardwoods and other small crown areas are not included in the calculation. Therefore, ORGANON underestimates the canopy closures of the project area. For this reason, the canopy closure following the proposed action is highly unlikely to be less than 50% of the current condition and there would be a very low risk of additional temperature increase associated with the proposed action. Management in the secondary shade zone would result in an increase in shade in the long-term. Current shade would be maintained around the pump chance in Section 9 during the dredging process; the alder understory and conifer overstory providing shade would be left intact.

Water yield and peak flows - Indirect impacts of vegetation removal during density management could result in short-term increases in water yield and peak flows due to a decrease in evapotranspiration and interception. Removal of trees tends to increase soil moisture and base streamflow in summer when rates of evapotranspiration are high; these summertime effects only last a few years (Ziemer and Lisle, 1998). Slight increases in summer flow would benefit riparian areas, which are often moisture limited during the summer. With the onset of the rainy season in the fall, the soil becomes recharged with moisture. Several studies have shown that the first storms of the fall have the most increase in peak flow from pre-logging conditions (Rothacher, 1973, pg. 7; Harr, et al. 1975, pg. 441; Harr, et al. 1979, pg. 11; Ziemer, 1981, pg. 916). These fall storms are small and geomorphically inconsequential. Large peaks flows occur mid-winter after soil moisture deficits are satisfied in both logged and unlogged watersheds (Ziemer and Lisle, 1998, pg. 60).

Increases in peak or storm flows in winter and spring can alter channel morphology by flushing smaller substrate, causing the channel to downcut and increase stream bank failures. Studies on increased peak flows are varied in their findings on how much increase in flow would result from a given amount of timber harvest. Most studies agree that the effects of harvest treatment decreases as the flow event size increases (Rothacher, 1971, pg. 51; Rothacher 1973, pg. 10; Wright et al., 1990) and is not detectable for flows with a two year return interval or greater (Harr, et al., 1975, pg. 443; Ziemer, 1981, pg. 915; Thomas and Megahan, 1998, pg. 3402; Thomas and Megahan 2001, pg. 181). At the project level, there may be slight short and long-term increases in peak flows of smaller storm events; this effect would decrease over time. Increases in peak flows would not affect channel morphology since increases are only detectable on storm events with a less than two year return interval and two year events are channel forming events. Roads and landings may modify storm flow peaks by reducing infiltration on compacted surfaces, allowing rapid surface runoff, or by intercepting subsurface flow and surface runoff, and channeling it more directly into streams (Ziemer, 1981, pg. 915). However, effects from peak flows have been shown to increase

significantly only when roads occupy at least 12 percent of the watershed (Harr, et al. 1975, pg. 443), which is not the case in this watershed. This phenomenon is due to the increased speed of delivery of water from road surfaces, ditches, and culverts (Harr, et al., 1975, pg. 441). Road maintenance and improvements would decrease the effects of roads on changing the timing of the storm hydrograph.

A hydrologic effect known as the Transient Snow Zone (TSZ) effect is the effect from a warm rain-on-melting snow event that contributes to increased peak flows due in part to openings created within the TSZ. If a large portion of the harvest area is within the TSZ, there may be increased peak flows. Since two percent of the project is in TSZ, no measurable increase in peak flows as a result of rain-on-snow events is expected.

Fisheries Habitat - Actions potentially affecting the fisheries habitat include: 1) increased stream temperature due to density management within the Riparian Reserve and 2) stream sedimentation due to road construction and timber hauling and harvest related landslides (FEMAT, July 1993; pg.V-16).

Density management is specifically prescribed to enhance the Riparian Reserve and adjacent aquatic environment. No direct impacts or indirect impacts are anticipated from management activities outside the RMZ. Direct and/or indirect impacts from management activities within the RMZ (see previous discussion), through sedimentation and a reduction in shade from trees being felled adjacent to streams, are not anticipated to affect the stream channel; and no impacts are expected to be transmitted downstream to fish-bearing reaches. Impacts (site level) would be minimal due to: 1) at most, two trees per acre would be treated by girdling or felling and left in place and; 2) no trees would be felled into the streams. Density management would create and enhance the development of late-successional conditions (increase in course woody debris, litter fall, root strength, shading and associated microclimate conditions) within the Riparian Reserve. The short-term impacts within the RMZ would be inconsequential whereas the long-term impacts would enhance the riparian resources within the proposed project area.

Impacts of **sedimentation** from the haul road activity to the aquatic environment was considered, however is difficult to quantify or measure (Brown, 1985). No direct impacts to the aquatic environment are expected from haul road activities. Any sedimentation from wet season haul would not be measurable and is not expected to be above existing background levels within the stream channels; therefore, sedimentation resulting from the haul road activity would not have an affect on habitat for coho salmon, as well as habitat for cutthroat and steelhead trout. No direct or indirect impacts of any consequence are expected from the dry season haul road activities. No new permanent roads would be constructed. Road renovation and improvement activity would be conducted during the dry season. Ditchlines are well vegetated and would prevent sedimentation from entering the stream channel. Sediment delivery from culvert replacement activities would not have an impact on fisheries habitat downstream due to the distance (approximately a mile) of the culvert actions from fisheries habitat and the capacity of stream systems to store sediment.

The proposed haul route includes approximately 25 non-fish bearing culvert crossings (two on Little Canyon Creek, eleven on Galagher Canyon Creek, and twelve on Yellow Creek) and approximately 74 cross drains. Since nearly 65 percent of the proposed project area would involve dry season haul,

considerably less sediment would be generated than if hauled during the wet season. Approximately 21 out of the 25 wet season haul route stream crossings are on first order streams. The first order streams (all non-fish bearing), where crossings occur, have ditchline vegetation which can trap and filter out sediment. Two fish-bearing stream crossings on Little Canyon Creek were replaced in 2002. These fish-crossing culverts have been inspected and are properly functioning, and therefore are not a concern for sediment input and transport.

No direct impacts from harvest related landslides are expected to occur due to PDC's in place to protect slope stability (pg. 9). Indirect impacts from harvest related landslides are not reasonably certain to occur, due to: 1) the low probability of occurrence (less than 10 percent), 2) size of potential landslide would likely be less than 0.1 acre (see page 20) and; 3) harvest units located approximately one mile from fish-bearing waters. If any input to the system should occur it would include coarse debris such as fallen trees as well as coarse rock fragments that would add needed structure and complexity to the system.

Wildlife Habitat - The direct impacts to T& E species would include the modification of 450 acres of Northern spotted owl dispersal habitat. Approximately eight acres of dispersal habitat (Unit 19A) is located in a Northern spotted owl Residual Habitat Area. There would be no suitable marbled murrelet habitat removed within the project area. The stands proposed for treatment are less than 50 years of age; therefore, there would be no loss or modification of recruitment habitat. There is no marbled murrelet Critical Habitat within the proposed project area; therefore, there would be no loss or modification of Critical Habitat.

The indirect impacts to T & E species would include no disturbance effects within 0.25 miles of any known **marbled murrelet** site. The closest known marbled murrelet occupied site occurs more than two miles from the proposed project area.

The proposed project activities would occur within 0.25 miles of one known **spotted owl** Residual Habitat Area and could potentially affect nesting behavior through disturbance. Restrictions (March 1st to June 30th) would mitigate disturbance effects to the northern spotted owl if future surveys indicate nesting is occurring within 0.25 miles of the project area. Approximately, 450 acres of dispersal habitat would be modified. Modified dispersal habitat is expected to continue functioning as suitable dispersal habitat, but in a slightly degraded condition. At least an average of 60 percent canopy cover would be maintained. Modifying canopy cover would potentially increase risk of predation on dispersing and foraging spotted owls. The functionality of dispersal habitat is expected to recover within 10 - 15 years as canopy cover increases and understory vegetation layers develop. Modification of dispersal habitat, by reducing tree densities and tree competition, would increase growth rates of trees and existing structural features, therefore enhancing the development of larger trees and future nesting structures associated with them. Continued stand development and mortality of larger trees would create larger snags and down wood in the future. In addition, treatment within Riparian Reserve would enhance the development of large conifer trees along streams, thus providing additional suitable nesting habitat for Northern spotted owls and marbled murrelets within the Riparian Reserve. Treatment of eight acres of mid-seral habitat within the Northern spotted owl Residual Habitat Area, would accelerate and enhance the development of late-successional characteristics, thus expanding the amount of interior late-successional habitat and creating additional suitable nesting habitat for the northern spotted owl at this site.

Irreversible and Irretrievable Commitment of Resources - 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 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. The irretrievable loss of mature or old-growth forest would occur since portions of the project area would be subject to regeneration harvest and be managed on an 80 to 150 year rotation.

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 pg 3&4-4 and throughout the chapter based on the resource affected. The Upper Umpqua Watershed Analysis provides baseline information with which to assess potential future cumulative impacts. Unless otherwise noted, these effects 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 on their land. An estimated 35,000 acres of forests greater than 80 years of age on private lands are likely to be harvested within the next 20 years in the Upper Umpqua Watershed. Some of the mid-seral type forest stands on private lands are also expected to be clearcut within the next 20 years. BLM has approximately 400 acres of regeneration harvest and 1600 acres of commercial thin and density management proposed in the Upper Umpqua watershed in the next 5-10 years. This proposed action would commercially thin 0.3 percent of the Upper Umpqua watershed.

Botany (Special Status and Survey and Manage species (SSP/S&M)) – Following the initial disturbance, the Proposed Action 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.

Soil Productivity - The proposed action would add a small net increase in soil productivity loss. Ground-based harvest operations (both federal and private) were widespread in the Upper Umpqua Watershed in the 1950's through 1970's. "Loggers' choice" ground-based yarding had a considerable effect on long-term soil productivity (estimated to have been between 15 to 30 percent reduction where ground-based yarding occurred) through compaction, erosion and soil displacement. Other management practices such as road construction and broadcast burning along with landslides have added to the cumulative impacts. There might be a small incremental loss or gain in soil productivity in the short-term on BLM surface from in-unit yarding depending on how much ground-based yarding would be done under this action and how much compaction (both old and new) would be ameliorated now or deferred to final harvest. In the long-term, soil productivity would be at least maintained at the fifth field scale on BLM land considering natural healing (a very slow process) occurring throughout the watershed as well as amelioration efforts. The spur construction for these sales would add 2.9 miles of new road imprint to the extensive network of

timber haul roads in the Upper Umpqua Watershed (at least 1100 miles given in the watershed analysis). Harvest-related landslides are expected to be few, small, and inconsequential to cumulative effects on soil productivity. The SEIS stated that the Matrix lands would have the highest management induced disturbance and the lowest probability of all the land use allocations of maintaining long-term soil productivity. Even so, it concluded, "Implementation of the 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).

Water Quality and Hydrologic Processes - The long-term cumulative effects of Riparian Reserve treatments under this and other future federal projects would promote late-successional characteristics. As late-successional characteristics are attained, improvements in forest health, riparian vegetation, instream wood amounts, small channel capacity to store water and sediment, summer low flows, stream temperatures, and the delivery of upland nutrients to streams and hyporheic zones may occur.

Fine sediment delivery from BLM roads would decrease over time due to road improvements and renovations. Peak flows may be increased as a result of reduced stand densities on private and BLM administered lands. However, the limited size, spatial scattering, and low harvest intensity of treatment areas on BLM lands would help mitigate these effects. Any sediment added to the streams as a result of the action alternative would be indistinguishable from background levels at the watershed and subwatershed scales.

Though this project's contribution to landslide potential would be small, the cumulative effect of landslides occurring throughout the watershed over time would contribute to the ongoing process of storage of landslide materials in the streams and floodplains. During extremely high flow events (such as 100 year events), these materials would be carried downstream resulting in a short-term increase in sediment and turbidity, a short and long-term increase in large wood downstream, and a long-term increase in gravels due to the high gravel content of the soils in the area.

Since the proposed thinning encompasses such a small portion of the Yellow Creek (3.0 percent) and the Lost Canyon Creek (0.4 percent) subwatersheds, the effect on peak flows and water yield at the subwatershed level would be inconsequential. The Diamond Back Timber Sale is a BLM regeneration harvest in the Yellow Creek subwatershed that has been sold but not yet harvested. The combined acreages of the Diamond Back and this proposed action alternative is 3.8 percent of the total Yellow Creek subwatershed. Diamond Back Timber Sale will have no timber management or road construction in Riparian Reserve and will be limited to dry season haul. The combined effect of the Diamond Back Timber Sale and this proposed project should not result in increases in peak flows, water yield, or sedimentation at the subwatershed level.

Fisheries Habitat - The proposed project areas contain Riparian Management Zones (RMZ) designed to minimize adverse impacts to the aquatic environment. The proposed non-commercial aspects (pg. 6, para. 1a3) within the RMZ consist of enhancement measures that are designed to restore fisheries habitat over a period of decades. Other related management activities likely to occur within the Upper Umpqua Watershed include both BLM and private timber harvest and silvicultural treatments. Approximately 82 percent of the Upper Umpqua Watershed (139,000 acres) is managed for timber production (pg. 39, Upper Umpqua WA). The portion of the proposed timber

related activities within the Upper Umpqua Watershed represent less than one percent of the entire watershed. Timber related activities would comply with the Northwest Forest Plan (BLM activities) or Oregon Forest Practices Act (private timber management), governing timber related impacts to water quality and fisheries habitat. Therefore, current conditions should be maintained within the fisheries habitat and improve over time.

Wildlife Habitat - Loss of late-seral and mid-seral habitat on private land is expected to continue as the land is managed on a rotation of approximately 60-80 years. Dispersal habitat on this land is likely to be maintained, but at some lower level. As late-seral forests are lost through regeneration harvests, early seral conditions are created. This continued loss and decline in habitat would cause the land to function solely for early and mid-seral species. Species that require late-seral habitat conditions and closed canopies would continue to feel the impacts of habitat loss or modification. The effects of thinning mid-seral habitat are relatively short-term; as canopy closure increases and vegetative layers develop, micro-climate conditions and habitat quality will recover within the stand. Thinning accelerates stand development, creating and enhancing late-successional habitat characteristics more rapidly than would occur through natural stand development.

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 consultation for T&E wildlife species with the **US Fish and Wildlife Service** (FWS) is covered under the *Formal Consultation and Written Concurrence on FY 2003-2008 Management Activities (Ref. # 1-15-03-F-160)* (Feb. 21, 2003) and concluded that the project would ". . . not likely to jeopardize the continued existence of the spotted owl, murrelet and bald eagle, and are not likely to adversely modify spotted owl or murrelet critical habitat . . ." and an "Incidental Take Statement" was issued. Incidental Take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency. The FWS has stipulated terms and conditions for the Incidental Take having to do with seasonal restrictions for the northern spotted owl.

b. The Roseburg District's Biological Assessment (BA) for T&E fish species consultation was submitted to the **National Oceanic and Atmospheric Administration** (NOAA - fisheries) on November, 18 2003. 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. NOAA's concurrence is expected in mid-January 2004. In addition, the proposed activities were analyzed for, and determined to not adversely affect

Essential Fisheries Habitat (EFH). The above referenced activities would be in accordance with all PDC's, Terms and Conditions, and EFH Conservation Recommendations within the NMFS Programmatic Biological and Conference Opinion.

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 January 4, 1999 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. A letter was sent to one **adjacent landowner**. No comments were received (see Appendix G - Public Contact).

3. The **general public** was notified via the *Roseburg District Planning Update* (Summer 2003) which was sent approximately 150 addressees. These addressees consist of members of the public that have expressed interest in Roseburg District BLM projects. Comments were received from two individuals (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

Core Team

Mike Crawford	Fisheries
Dan Cressy	Soils
Denise Dammann	Hydrology
Elizabeth Gayner	Wildlife
Craig Holt	Layout Forester
Judy Hyde	Engineer
Al James	Silviculture
Jim Luse	EA Coordinator / EA Preparer
Ron Wickline	Botany

Expanded Team - Consulted

Isaac Barner	Cultural Resources
Kevin Cleary	Fuels Management
Fred Larew	Lands
Ron Murphy	Recreation / VRM

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

CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT

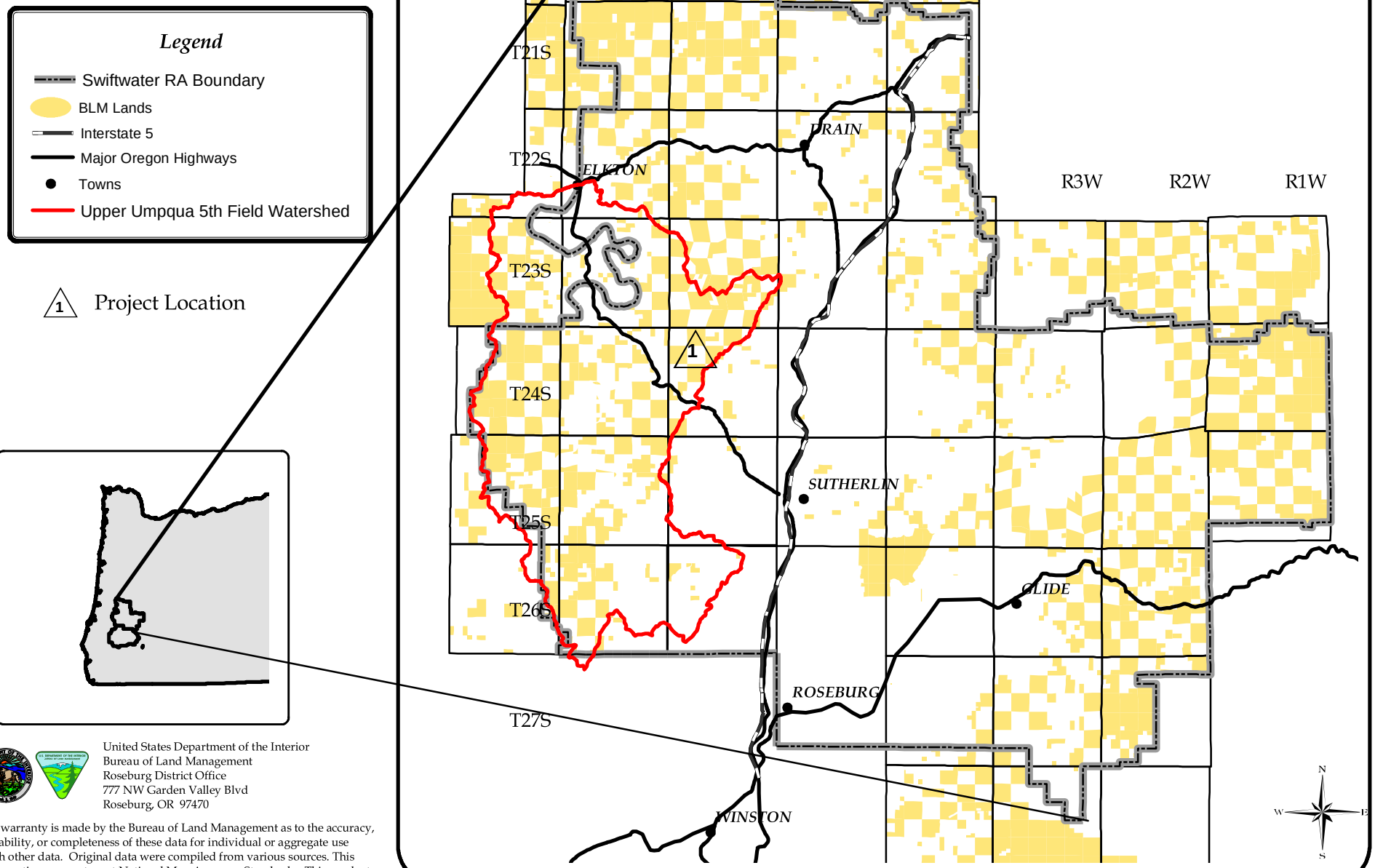
The following elements of the human environment are subject to requirements specified in statute, regulation, or executive order. These resources or values are either not present or would not be affected by the proposed actions or alternatives, unless otherwise described in this EA. This negative declaration 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			√		
Areas of Critical Environmental Concern	Environmental Specialist	√				
Cultural Resources	Archeologist	√				
Environmental Justice	Environmental Specialist		√			
Farm Lands (prime or unique)	Soil Scientist	√				
Flood Plains	Hydrologist		√			
Invasive, Nonnative Species	Botanist			√		
Native American Religious Concerns	Environmental Specialist		√			
Threatened or Endangered Species (fish)	Fisheries Biologist			√		
Threatened or Endangered Species (plants)	Botanist			√		
Threatened or Endangered Species (wildlife)	Wildlife Biologist			√		
Hazardous/Solid Wastes	Area Hazardous Materials Coordinator	√				
Water Quality Drinking/Ground Water	Hydrologist			√		
Wetlands/Riparian Zones	Hydrologist			√		
Wild and Scenic Rivers	Recreation Planner	√				
Wilderness	Recreation Planner	√				

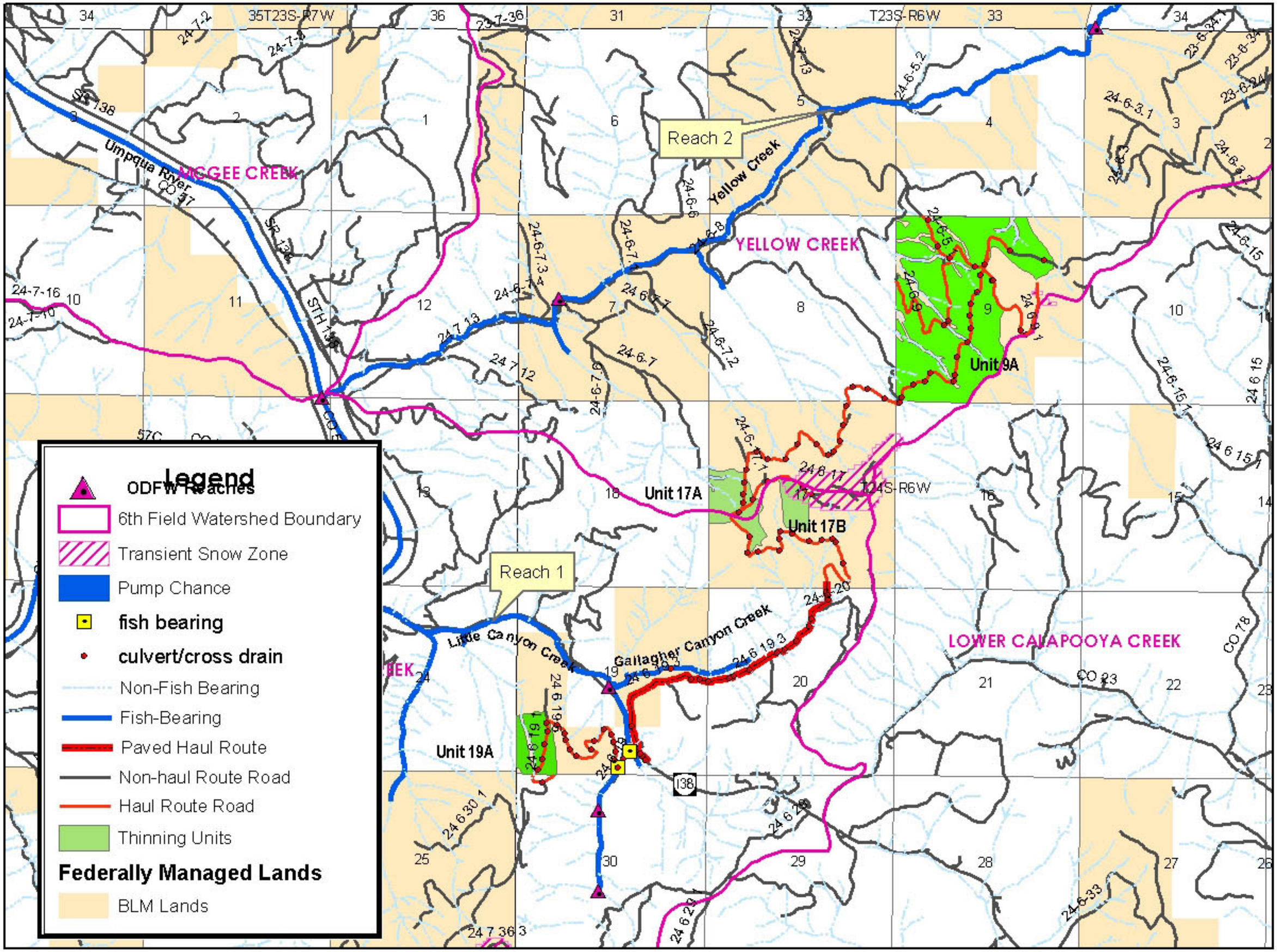
Appendix A

Location Map

Galagher ommercial Thinning



United States Department of the Interior
Bureau of Land Management
Roseburg District Office
777 NW Garden Valley Blvd
Roseburg, OR 97470



N W E S

Miles
0 0.25 0.5 1 1.5 2

Appendix B - Vicinity Map

APPENDIX C

INDIVIDUAL UNIT DESCRIPTION

Project Summary Table

EA Unit	Project Area	Acres	Yarding System (ac.)			Fuel Treat.	Remarks
			Aerial	Cable	Ground		
9A	1	341		OES (196)	ROW (8) H/F (137)	P&BL	Wet and Dry Season Logging
17A	2	50		OES (41)	H/F (9)	"	Wet and Dry Season Logging
17B	3	22		OES (17)	ROW (>1) H/F (4)	"	Dry Season Logging
19A	4	34		OES (34)	ROW (<1)	"	Dry Season Logging NSO Residual Habitat Area within unit
Total		447		288	159		

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

Fuel Treatment
P&BL = Pile and Burn Landings

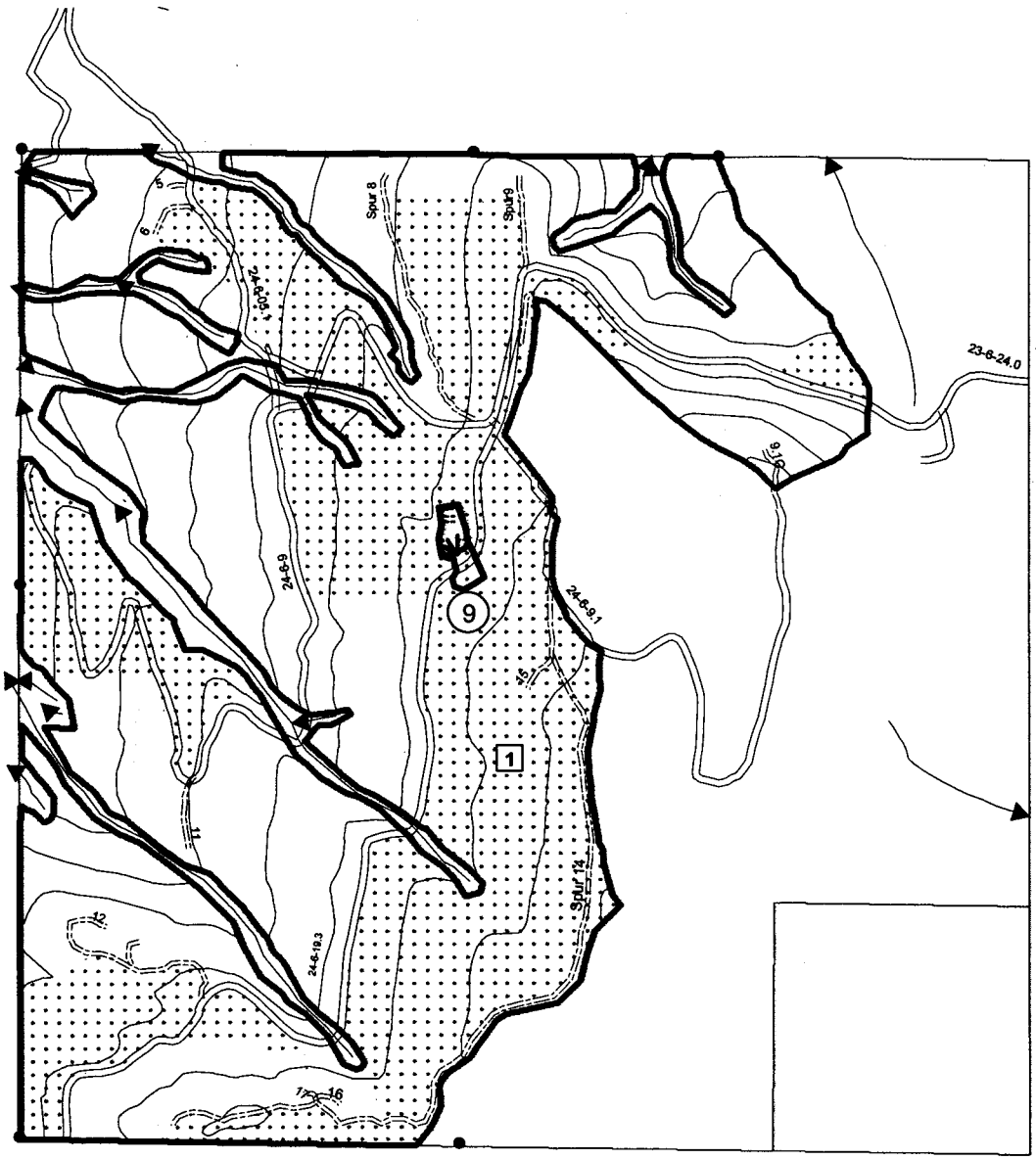
Directions to the Project Area

Follow Interstate 5 north from Roseburg to Exit 136 (Sutherlin). Proceed west on State Highway 138 approximately 8.5 miles to BLM Road # 24-6-19.3 (Galagher Canyon Rd.) for Units 9A, 17A and 17B; and BLM Road # 24-6-19.1 for Unit 19A. Follow the Appendix B (Vicinity Map) to the units.

NOTE: Unit 19A is behind a locked gate and will require the use of a master key to gain access.

Units are marked with boundary posters and blazed and painted trees. Road locations are flagged with orange ribbon and survey stakes with clearing limits delineated with orange diamond tags.

APPENDIX C



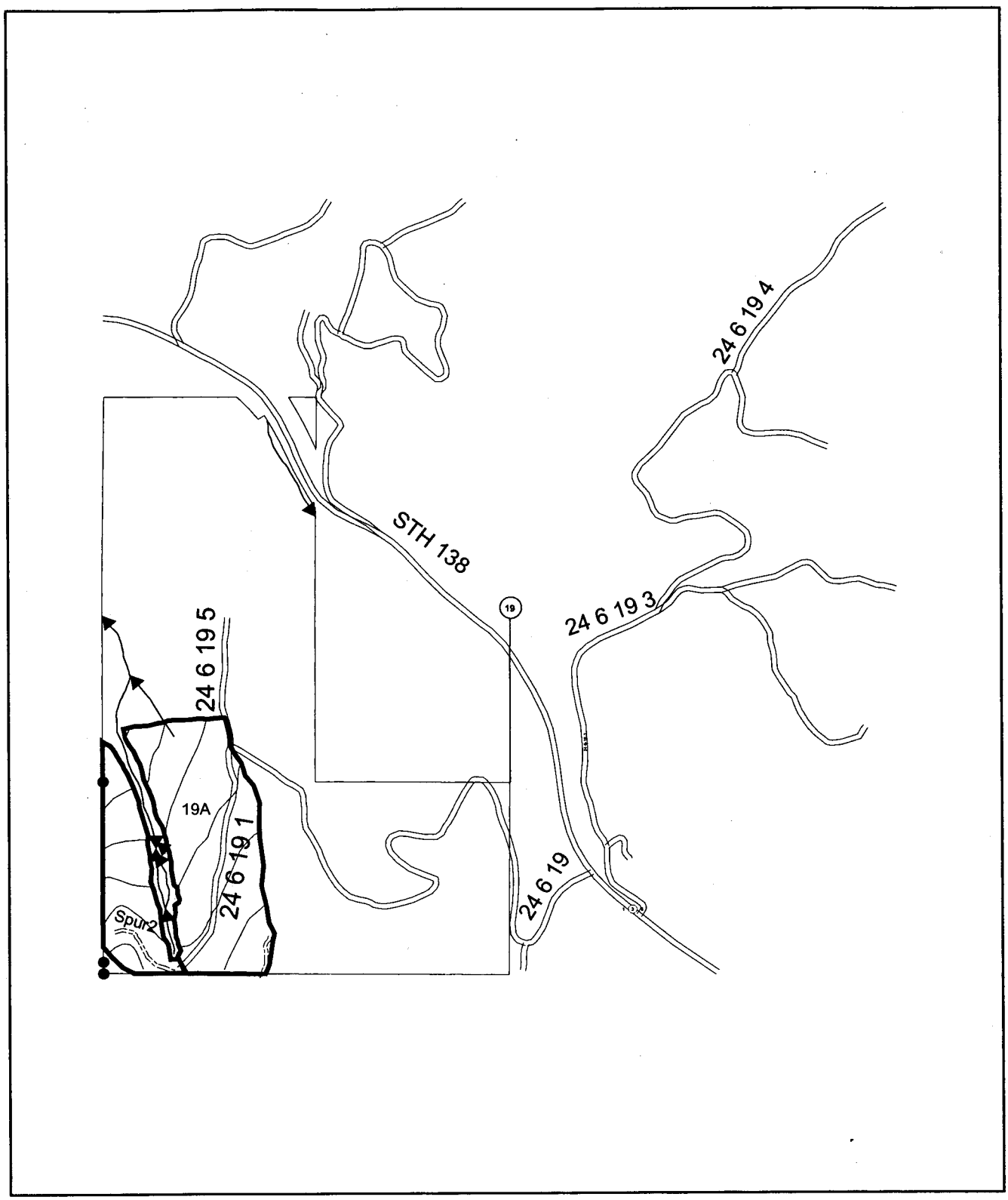
LEGEND

Scale: 1= 1000 Ft.

- Harvest Area - Cable Yarding
- Harvest Area - Ground Based
- Reserve Area
- Pond
- Wet Area

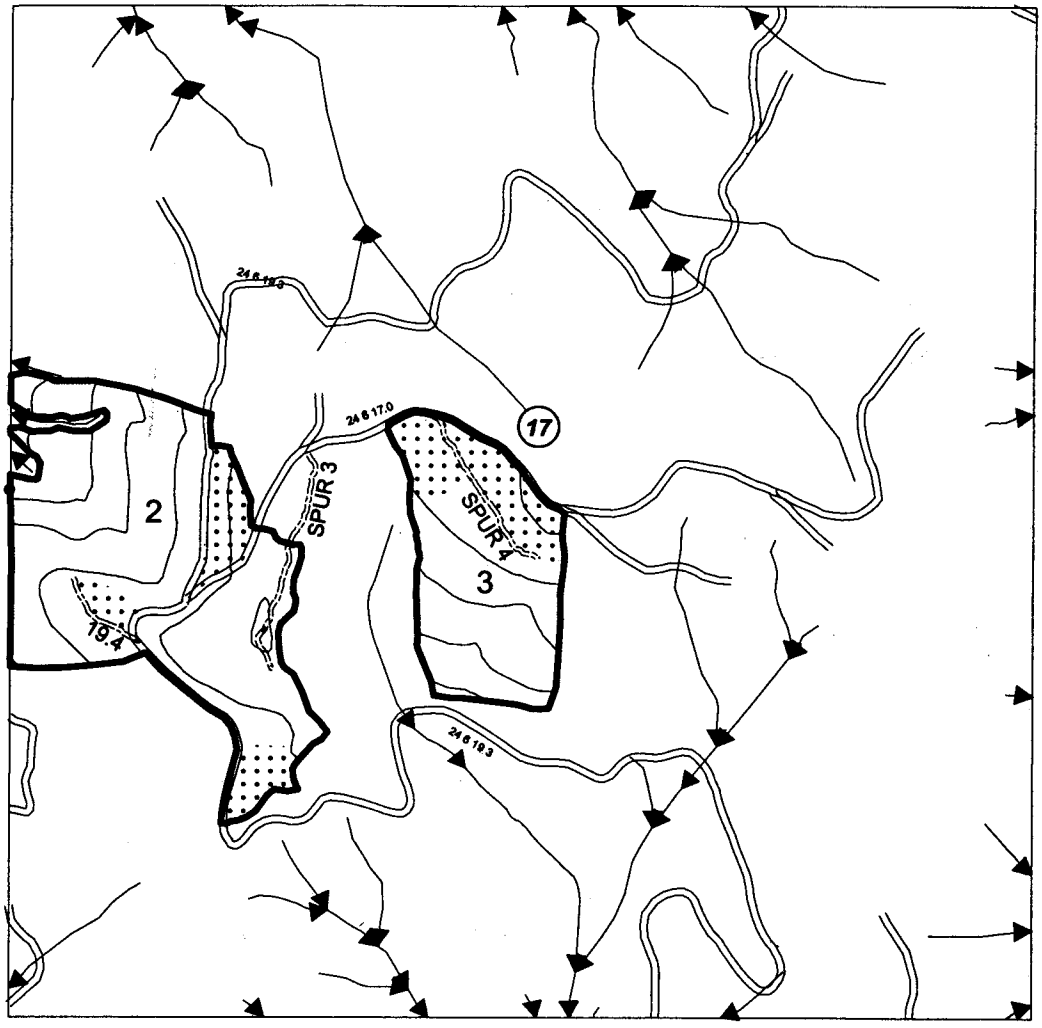
- Existing Road
- Road to be Constructed
- Temporary Spur To Be Constructed
- Boundary of Cutting Area
- Boundary of Contract Area
- Stream
- Found Corner

APPENDIX C



Scale: 1"= 1000 ft

APPENDIX C



Scale: 1" = 1000 ft

APPENDIX D

ISSUE IDENTIFICATION SUMMARY

This appendix summarizes the issues that were identified pertinent to this project. 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 Criteria (PDC) 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.

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. Section II, paragraph C (pg. 5) provides a list of specific PDC incorporated into the preferred alternative to deal with these issues. No further analysis was deemed necessary in that the mitigations specified below are considered adequate to remove the issue from needing to be analyzed in the main body of the EA.

Issue #1 (hydrology): Elevated Stream Temperature

Discussion: Yellow Creek has been listed by State DEQ for elevated summer and winter temperatures (ID Meeting - June 25, 2003).

PDC: The buffer on perennial nonfish-bearing streams located in 9A and 19A should provide adequate shade. The recommendations of the *Sufficiency Analysis for Stream Temperature* (USFS/BLM, May 19, 2003) were incorporated: 1) a 40-60 ft. hard buffer 2) girdling and felling within RMZ treat only if shade is not reduced.

Issue #2 (soils): Various Soil Stability Concerns

Discussion: The soil scientist identified several areas where he had some concerns for slope stability (ID Meeting - June 25, 2003).

PDC:
1. Areas of potential instability
   - Drop area from harvest consideration (Unit 17B).
   - Extend no cut RMZ to include headwall feature (Unit 9A).
   - Retain higher residual densities (Unit 9A and 17A).
2. Some failing cut slopes along 24.0 Rd.
   - Retain higher residual densities along top of cut bank.

Rationale: The BMP's specifies that adverse impacts to soil and water be avoided when designing harvest units. (BMP I A 5; RMP, pg. 129).

Issue #3 (soils): Compaction from old skid trails

Discussion: The general project area has an extensive network of skid trails result from past ground-based harvest. Much of this area still has considerable residual compaction.

PDC: Skid trails would be subsoiled after this entry or deferred to final harvest.

Rationale: The RMP requires that the long-term soil productivity be maintained (BMP IC2f ; RMP, pg. 37).

Issue #4 (wildlife): A Northern spotted owl site is within 1.2 miles of the project area.

Discussion: A 85 acre core area exists within Section 19 with the historical nest site located within a quarter mile of Unit 19A.

PDC: If future surveys determine that a nest site is located within a quarter mile of the unit, than restrictions to operations of March 1st to June 30th would be applied to mitigate for disturbance.

Rationale: The ROD requires that spotted owl activity centers known as of January 1, 1994 have 100 acres of habitat retained (ROD, pg. C-10).

Public Issues:

1. *One individual expressed a concern that BLM is thinning too lightly. Much public discussion has focused on the heavy fuel loading on federal lands and the increased fire hazard due to overstocked conditions. A heavier thinning would reduce this hazard.*

Response: Spacing the trees farther apart would under-utilize the productivity of the site. A more open stand would result in more brush, conifer regeneration, and unwanted vegetation rapidly occupying the site. This unwanted vegetation would continue to grow and need periodic treatment in order to reduce the hazard. Widely spaced trees are less prone to crown fire, but only if the slash and brush is treated and kept under control; otherwise, the brush and hardwood vegetation will create ladder fuels that could carry a ground fire into the crowns of the residual trees. The slash could be treated but many of the thin-barked residual trees could be damaged by prescribed fire.

All thinnings create a fuel hazard, but heavy thinning creates more fuel on the ground and represents a greater hazard. The thinning project is in an area of low fire occurrence and the Douglas Forest Protection Agency has historically kept fires in this vicinity from growing very large. The project calls for treating all the slash and debris at the landings. The rest of the slash in the units would pose a fuel hazard until the needles and limb wood start to decompose, generally within 3-5 years. Even after the needles decompose a fuel hazard would exist, but the hazard would be less than if the stand thinned itself naturally through tree mortality(Oliver, 1990, pg 100; Waring, 1985, pgs 214-215; Graham, 1999, pgs 1-22). This project would leave only limb wood and small tree tops on site, and their decomposition would aid in building nutrients and soil structure.

2. "*. . . the "existing" road (24-6-9.1B) to Diamondback unit 1 was not an existing road at all. . . . If it wasn't brushed, you would never find it. There are 18" DBH trees growing in the middle of it. To correctly consider the impacts of this project, this must be considered a new road to be built into the north east corner of Galagher unit 9A*."

Response: The road in question is an actual road and is in the BLM road records data base. Old aerial photos and type maps show this road to be part of an old jeep road system that was built in the 1940's for fire control access. This road is approximately 1900 feet long with the first 1000 feet currently driveable. The road is a minimum standard, unsurfaced road and has not been maintained for years. The last 700 feet has brushed in and trees have grown back. The EA (pg. 4) states that road renovation would consist of "some clearing, widening and reshaping the road surface". Very few trees would need to be removed, that being to establish full road width. The impact of road building is disclosed in the EA (pg. 18).

3. "***Please consider an alternative that does not build this road****. It goes through a significant old-growth forest -- one that you want to eventually log. The forest could be prematurely degraded by the new road, and more threatened with logging once a new road is put in.*"

Response: The only option to log this unit other than reconstructing this road is helicopter logging. This road is on stable ridge top or near ridge top location. The ID Team analysis did not show that any significant degradation would result in reconstructing this road that would need to be mitigated through a helicopter alternative. This section is in the Matrix land use allocation and therefore could be subject to future regeneration harvest.

4. "*Please **create snags** out of the largest trees that need to be thinned, instead of selling them... or, if they are close to stream, please fell them into streams instead of yarding them . . . In reserves, please create enough snags to provide habitat for 100% of natural populations of cavity dependent wildlife.*"

Response: The EA (pg. 9, para. 3b) states that "An interim source of snags would be provided through girdling approximately one tree per acre . . . within the Riparian Reserves". A second-growth stand does not normally have trees of sufficient size that would make snags that would provide for 100 percent of natural populations of cavity dependent wildlife. The RMP (pg. 46) basis for snags that would meet this criterion is based on a Neitro study (1985) that says that snags must be at least 15" DBH and in the soft decay stage to qualify. The selection of trees for girdling would consider size as well as other factors.

5. "*Please **protect existing snags** by buffering them with unthinned trees. . . . If some snags can not be buffered, the EA must disclose how many large snags will be protected vs. felled for safety under the preferred alternative.*"

Response: The Project Design Criteria of the EA (pg. 9) states "Snags would be protected from logging damage by clumping trees around them and directionally falling trees away from the snags." The EA can not project how many snags will need to be felled, however did disclose (pg. 9) an estimate: "Past experience has been that less than 5% of snags need to be felled . . .".

6. "*Please designate an **upper diameter limit** of trees to be sold . . . Please protect any residual **old-growth** trees . . .*"

Response: An upper diameter limit would serve no purpose since this stand could be regeneration harvested in the future and these trees removed. The Marking Guide states "All existing old growth trees, snags, and down logs are reserved". The EA (pg. 9) states "Mature and old growth (RMP, pg. 112) remnant trees in the thinning units would be retained to the greatest extent possible . . .".

7. *The Oregon Natural Resource Council provided comments that BLM should consider issues such as roadless areas, impacts to late-seral forests and associated species, special status fish, water quality, and a full range of alternatives.*

Response: This proposed timber sale is not in or near any roadless or wilderness areas. Impacts to threatened and endangered and special status species were considered in this analysis (EA, pg. 18 and 24). Impacts to water quality are discussed in EA (pg. 20 - 22). This project is within the Matrix land use allocation were timber harvest is the primary objective. A separate alternative for wildlife enhancement and habitat restoration was not considered; however, Project Design Criteria (EA, pg. 9) were included with the proposed action to provide for wildlife enhancement (creation of snags and down wood, and acceleration of mature forest character).

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, Nonnative 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 previously addressed in this EA and the Biological Assessment was prepared for consultation required by the Endangered Species Act (Appendix F).

The following items are not considered a Critical Element but have been cited by regulation or executive order as an item warranting consideration in NEPA documents:

Healthy Lands Initiative - This project would not violate the Healthy Lands Initiative. This project would be in compliance with the RMP which 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.

National Energy Policy - 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. Watershed Analysis

The following issues and recommendations in the Upper Umpqua Watershed Analysis (April 2002) are pertinent to this project:

Vegetation Management

"The young 30 to 60 year age managed stands in all Land Use Allocations including the Riparian Reserve are a high priority for density management treatments. Managing young mid-seral stands would meet silvicultural objectives by maintaining conditions for growth, allowing for the development of large diameter trees in the shortest period of time possible" (pg. 112).

"Riparian Reserves not only function to provide habitat for riparian-dependent species, but are also expected to function as connectivity and dispersal habitat for late-successional species. Riparian reserves lacking late-successional components would benefit from density management treatments. The Riparian Reserves would be thinned to allow greater amounts of light and growing space for large conifers and hardwoods, provide for snags and CWD now and in the future, and enhance understory development. Spacing would be variable to select trees of a particular species or growth form, and would be diameter based. Not all of the smaller diameter merchantable trees would be removed. Very few of the larger diameter trees would be removed. Retention trees would be clumped, and canopy gaps would be enlarged. On average about 100 square feet of basal area per acre would be retained.

"A riparian management zone [no harvest buffer] would vary in width along all streams. Density management would occur within this zone, but no trees would be removed. When a stand is deficient in CWD, trees could be girdled or felled to release selected trees and create CWD. These are also areas that could include over-dense patches by design to allow slower natural mortality through self-thinning to occur. The width of the riparian management zone [no harvest buffer] is variable and dependant on site conditions and resource objectives.

Noxious Weed Management Opportunities

"With much of the potential recreation and forest treatment potential listed above, integrating noxious weed management will be helpful for controlling current infestations. The following guidelines are meant to help for specific areas within Upper Umpqua: . . .

- Conduct pre-project inventories and risk assessments for noxious weeds prior to ground-disturbing or site-altering activities (BLM manual 9015). Implement appropriate prevention and control measures as outlined in the Roseburg District Integrated Weed Control Plan EA and Partners Against Weeds" (Pg. 116)."

D. Issues to be Analyzed

The Interdisciplinary Team did not identify any issues as having sufficient potential affect that would warrant detailed analysis as a key issue to be addressed in Section IV, "Environmental Consequences"

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 of 1966 (as amended)	**"No Effect"** - See SHPO Report 1/04/99
Environmental Justice	E.O. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 2/11/94.	**None** - 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 (*Oregonian*, Pg. A-12; March 15, 2001). It is estimated that approximately 15 percent of the county is below the poverty level (Frewing-Runyon, 1999).
Farm Lands (prime or unique)	Surface Mining Control and Reclamation Act of 1977 ***This act seeks to identify and restore prime farmlands and other unique federal land characteristics.***	**None** - "No discernable effects are anticipated" (PRMP pg. 1-7)
Floodplains	E.O. 11988, as amended, Floodplain Management, 5/24/77 ***This act requires agencies to determine if a proposed action will occur in a floodplain and that the action will avoid adverse impacts associated with occupancy and modification of floodplains and avoids floodplain development.***	**None** - Project is not within 100 yr. floodplain.

Element	Relevant Authority	Environmental Effect
Invasive and Nonnative Species	Lacey Act, as amended; Federal Noxious Weed Act of 1974 as amended; Endangered Species Act of 1973, as amended; and EO 13112 on Invasive Species dated February 3, 1999. ***This EO requires the prevention of introduction of invasive species and to provide for their control to minimize their economic, ecological, and human health impacts.***	Project Design Criteria would be included in the proposed action to prevent or control the spread of noxious weeds (EA, pg. 10).
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	Endangered Species Act of 1973 (as amended) The Pacific Coast Recovery Plan for the American Peregrine Falcon, 1982 Columbian White-tailed Deer Recovery Plan, 1983 Recovery Plan for the Pacific Bald Eagle, 1986 Recovery Plan for the Marbled Murrelet, 1997	**Botanical** - No T&E species noted (Specialist Report - 5/21/03) **Animals** - See Table 1, Wildlife Summary and Table 6, Fisheries Summary (Appendix F). T&E species not specifically mentioned do not exist in the analysis area.
Wastes, Hazardous or Solid	Resource Conservation and Recovery Act of 1976 Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended ***These laws regulate hazardous waste that endangers public health or the environment.***	**None** - Applicable HazMat policies would be in effect (see HAZMAT survey 7/09/01)
Water Quality, Drinking / Ground	Clean Water Act of 1987; Safe Drinking Water Act Amendments of 1996; EO 12088, Federal compliance with pollution control standards (October 13, 1978) EO 12589 on Superfund implementation (February 23, 1987); and EO 12372 Intergovernmental review of federal programs (July 14, 1982)	**None** - Project is not in a municipal watershed or near a domestic water source.

Element	Relevant Authority	Environmental Effect
Wetlands/Riparian Zones	E.O. 11990, Protection of Wetlands, 5/24/77 ***This EO requires federal agencies to avoid destruction or modifications of wetlands and to avoid undertaking or providing assistance for new construction located in wetlands.***	**None** - "The selected alternative [of the FEIS] complies with [E.O. 11990]..."(ROD p. 51, para.7). The action alternative does not destroy, modify, or undertake/assist new construction located in wetlands.
Wild and Scenic Rivers	Wild and Scenic Rivers Act of 1968 (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 6/18/03). Roads are encumbered under Right-of-Way Agreements # R-589 (Haines) and R-735 (Roseburg Resources).
Minerals	**None** - Project has no mining claims (Specialist's Report 6/18/03).
Recreation	**Minimal short-term impacts** - No ". . . long term impacts on the recreational use of these areas . . ." (Specialist's Report 10/23/03).
Visual	**None** - All units are within VRM IV (least restrictive category) (Specialist Report 10/23/03).
Other (Adjacent Landowners)	**None -** No small adjacent landowners are in the vicinity of this sale. No registered domestic water use.