

ENVIRONMENTAL ASSESSMENT and FINDING OF NO SIGNIFICANT IMPACT

Butte Creek Thinning

Environmental Assessment Number OR080-04-09
Tract # 05-504

December 1, 2004

United States Department of the Interior
Bureau of Land Management, Oregon State Office
Salem District, Cascades Resource Area
Clackamas County, Oregon

Responsible Agency:

USDI - Bureau of Land Management
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Abstract: This environmental assessment discloses the predicted environmental effects of a proposal to thin approximately 700 acres on BLM land located in Township 6 South, Range 2 East, Sections 19, 25, 27, 29 and 35, and in Township 7 South, Range 2 East, Sections 1 and 25, Willamette Meridian within Clackamas County. The proposed project lies within the Butte Creek/Pudding River and Molalla Watersheds.

FINDING OF NO SIGNIFICANT IMPACT

Introduction

The Bureau of Land Management (BLM) has conducted an environmental analysis (Environmental Assessment Number OR080-04-09) for a proposal to conduct commercial thinning on 40 to 85-year-old stands which include approximately 20 acres of Riparian Reserve land use allocation (EA p. 4). The project area is located on BLM lands Township 6 South, Range 2 East, Sections 19, 25, 27, 29 and 35, and in Township 7 South, Range 2 East, Sections 1 and 25, Willamette Meridian.

The Butte Creek Thinning Environmental Assessment (EA) documents the environmental analysis of the proposed project. The EA is attached to and incorporated by reference in this Finding of No Significant Impact (FONSI) determination. The following documents direct and provide the legal framework for management of BLM lands within the Salem District: **1/ Salem District Record of Decision and Resource Management Plan**, May 1995 (RMP), as amended; **2/ Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old Growth Forest Related Species Within the Range of the Northern Spotted Owl**, April 1994 (NWFP); **3/ Molalla River Watershed Analysis**, May 1999 (MRWA); **4/ Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl**, March 2004. The proposed action is designed to comply with the management goals, objectives, and direction (e.g. standards and guidelines) of the above documents (EA p. 4).

The EA and FONSI will be made available for public review from December 1, 2004 to December 31, 2004. The notice for public comment will be published in a legal notice by the *Molalla Pioneer* newspaper; and posted on the Internet at <http://www.or.blm.gov/salem/html/planning/index.htm> under Environmental Assessments. Comments received by the Cascades Resource Area of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before December 31, 2004 will be considered in making the final decisions for this project.

Finding of No Significant Impact

Based upon review of the EA and supporting documents, I have determined that the Proposed Action is not a major federal action and would not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. Therefore, an environmental impact statement is not needed. This finding is based on the following discussion:

Context: Potential effects resulting from the implementation of the proposed action have been analyzed within the context of the Upper Molalla River and Butte Creek 5th-field Watersheds and the project area boundaries. The proposed action would occur on approximately 700 acres of BLM land, encompassing approximately 0.7 percent of the Butte Creek Watershed and less than 0.2 percent of the Molalla River Watershed [40 CFR 1508.27(a)].

Intensity:

1. This project is unlikely to have any significant impacts on the affected elements of the environment. The affected elements for this project are Hydrology, Soils, Wildlife, Air Quality/Fire Hazard/Risk, Botany, Fisheries and Aquatic Habitat, and Recreation and Rural Interface (EA Tables 3 and 4, pp. 17-19).

The following is a summary of the design features (EA pp. 6 - 12) that would reduce the risk of affecting the above resources:

- Retaining all old growth, coarse woody debris and snags, to the greatest extent possible, for wildlife habitat (EA p. 8, 7, 8);
- Operational restrictions for wildlife (EA p. 8, 10)
- Restricting ground-based yarding, road construction, and all hauling operations during wet conditions to avoid runoff and sedimentation (EA p. 9);
- The proposed action and associated connected actions would utilize the Best Management Practices (RMP Appendix C, pp. C-1 to C-9) (EA p. 8);
- Ground-based logging (skidder, harvester/forwarder, shovel, etc.):
 - Where possible, multiple pass trails (skid trails) would follow existing skid trails, otherwise skid trails would be designated and spaced approximately 150 feet apart (RMP p. C-2) (EA p. 5).
 - If mechanized harvesting equipment is used, felling trails would be spaced 75 ft. apart, with on-site limbing slash used on the trail to create a slash mat for travel (EA p. 7) to reduce soil compaction;
 - Equipment with lateral yarding capabilities would be used for skyline yarding.
- In order to prevent road sediment from entering stream channels as a result of hauling, sediment trapping vegetation in roadside ditches would be left intact. Hauling would be suspended when there is an elevated risk from water and sediment flowing in roadside ditches. (EA p. 8-9);
- A “No Treatment” buffer would be established on all streams to avoid direct impacts to biotic riparian zones (EA p. 11) and to maintain canopy cover, water quality, and channel morphology.

As a result of implementing the project design features (EA pp. 8-12), any potential effects to the affected resources are anticipated to be site-specific and/or not measurable (i.e. undetectable over the watershed, downstream, and/or outside of the project area) [40 CFR 1508.27(b) (1)], (EA pp. 17-31, EA Appendix 1 and 2).

2. This project would not affect:
 - a. Public health or safety [40 CFR 1508.27(b)(2)];
 - b. Unique characteristics of the geographic area [40 CFR 1508.27(b) (3)] because there are no historic or cultural resources, parklands, prime farmlands, wild and scenic rivers, wilderness, or ecologically critical areas located within the project area (EA p. 17);
 - c. Districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places, nor would the proposed action cause loss or destruction of significant scientific, cultural, or historical resources [40 CFR 1508.27(b) (8)] (EA p. 17).
3. This project is not unique or unusual. The BLM has experience implementing similar actions in similar areas without highly controversial [40 CFR 1508.27(b) (4)], highly uncertain, or unique or unknown risks [40 CFR 1508.27(b) (5)].
4. This project does not set a precedent for future actions that may have significant effects, nor does it represent a decision in principle about a future consideration [40 CFR 1508.27(b) (6)].

5. The interdisciplinary team evaluated the project in context of past, present and reasonably foreseeable actions [40 CFR 1508.27(b)(7)]. Potential cumulative effects are described in the attached EA. These effects are not likely to be significant because of the project's scope (effects are likely to be too small to be measurable) and scale (project area is less than 1% of the total 5th-field watershed).
6. This project is not expected to adversely affect endangered or threatened species or habitat under the Endangered Species Act (ESA) of 1973 [40 CFR 1508.27(b) (9)].
 - a. **Wildlife:** There is no northern spotted owl critical habitat in or near the project area. This project was included in the programmatic consultation process on FY 2005 and 2006 habitat modification projects in the Willamette Province. The final *Biological Assessment on Fiscal Year 2005-2006 projects within the Willamette Province which would modify the habitats of the bald eagle and the northern spotted owl* (BA) was submitted to the Fish & Wildlife Service in early September 2004. The Biological Opinion associated with these projects is expected in December 2004. According to the effect determination guidelines in the BA, this project "may affect, but are not likely to adversely affect" the spotted owl due to the modification of dispersal habitat.
Fish: A determination has been made that this project would have "no effect" on Upper Willamette River steelhead trout or Upper Willamette River chinook salmon because of dry conditions hauling on non-paved roads, limited harvest activity within the Riparian Reserve LUA (up to 20 acres), slopes of less than 35% throughout most of the project area. In addition, the project is also expected to have 'no effect' on Essential Fish Habitat as defined in the Magnuson-Stevens Act (EA Appendix 2).
7. This project does not violate any known Federal, State, or local law or requirement imposed for the protection of the environment [40 CFR 1508.27(b) (10)] (EA p.1-2).

Prepared by: Randy Herrin
 Randy Herrin, Team Lead

November 24, 2004
 Date

Reviewed by: Carolyn Sands
 Carolyn Sands, NEPA

11/29/04
 Date

Approved by: Rudy Hefter
 Rudy Hefter, Acting Field Manager
 Cascades Resource Area

11/29/04
 Date

1.0 INTRODUCTION/PURPOSE AND NEED

1.1 Project Area Location

The project is located approximately 8 to 15 miles south of Molalla, Oregon, in Clackamas County, Sections 19, 25, 27, 29 and 35, Township 6 South, Range 2 East, and Sections 1 and 25 Township 7 South, Range 2 East Willamette Meridian (WM). This environmental assessment discloses the predicted environmental effects of a proposal to thin approximately 700 acres of forested land managed by the Cascades Resource Area, Salem District, Bureau of Land Management (**BLM**). The project area lies primarily along the north side of Butte Creek and along the ridge dividing Butte Creek and Molalla River Watersheds with one treatment area (sec. 25, T. 7 S., R. 2 E.) located near the headwaters of Butte Creek.

1.2 Conformance with Land Use Plan, Statutes, Regulations, and other Plans

This project is subject to the following documents, which direct and provide the legal framework for management of BLM lands within Cascades Resource Area:

1. *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP)
This plan has been reviewed and it has been determined that the proposed action conforms with the land use plan terms and conditions (e.g. complies with management goals, objectives, direction, standards and guidelines) as required by 43 CFR 1610.5 (BLM Handbook H1790-1, Illustration 3). Implementing the RMP is the reason for doing this project. The proposed project is located within the General Forest Management Area (**GFMA**) portion of the Matrix land use allocation (**LUA**) and in the Riparian Reserve (**RR**) LUA, as identified on page 8 of the RMP. RMP references for this Environmental Assessment (**EA**) are described in section 6.1 – Major Sources and Table 8: Summary of RMP References.

The project is not within the following land use allocations - Late Successional Reserves, Adaptive Management Areas, Congressionally Reserved Areas, or Administratively Withdrawn Areas, so management direction specific to these allocations do not apply.

In addition, Pages 1-5 of the RMP describe the purpose and need of the RMP, the relationship of the RMP to BLM policies, programs, and other plans; and the vision and strategy of the RMP. All of this information was incorporated into the design of this project.

2. *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old Growth Forest Related Species Within the Range of the Northern Spotted Owl*, April 1994 (**NWFP**); The relationship between the NWFP and the RMP is described on page 1 of the RMP and RMP Appendix A-2 p. A-2-1.
3. *Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl*, March 2004 (**SSSP**). This document amends that portion of the RMP addressing Survey and Manage species (p. 30-32).

This EA incorporates the analyses and tiers, where applicable, to the following documents: 1/ *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (**RMP/FEIS**), 2/ *Supplemental Environmental Impact Statement on Management of Habitat of Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl (NWFP/SEIS)*, February 1994; and 3/ *Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines*, January 2004 (**SSSP/SEIS**). The discussion in this EA is site-specific and supplements analyses found in these documents.

In addition, the *Molalla River Watershed Analysis*, May 1999 (**MRWA**) provided additional guidance in the design of this project. Thinning in the Riparian Reserve Land Use Allocation was selected for the following reasons: the MRWA (p. 7) recommends that management activities in Riparian Reserves throughout the watershed would be most effective in early to mid-seral age classes. The purpose would be attainment and maintenance of the Aquatic Conservation Strategy Objectives by promoting, maintaining, or accelerating older forest characteristics.

These documents are available for review in the Salem District Office. Additional information about the proposed Butte Creek project is available in the Butte Creek Timber Sale NEPA/EA Analysis File (**BCAF**), also available at the Salem District Office.

1.3 Purpose of and Need for Action

The following describe the purpose of and the need for action:

- **Matrix Land Use Allocation (LUA) (RMP pp. 20-22):** To manage developing timber stands in the Matrix LUA so that:
 - A marketable timber sale can be offered that would contribute to a sustainable supply of timber for local, regional, and national economies and contribute to community stability (RMP pp. 20), as reflected in the Salem District allowable sale quantity (ASQ) (RMP, pp. 1, 46, 47).
 - A desirable balance can be achieved between wood volume production, quality of wood, and timber value at harvest (RMP p. D-3);
 - A healthy forest ecosystem can be maintained with habitat to support plant and animal populations and protect riparian areas and water resources (RMP p. 1, 20).

- **Riparian Reserve LUA (RMP pp. 9-15):** To manage some dense sites within the stands of the Riparian Reserve LUA so that:
 - Growth of trees can be accelerated to restore large conifers to Riparian Reserves (RMP p. 7);
 - Habitat (e.g. coarse woody debris, snag habitat, in-stream large wood) for populations of native riparian-dependent plants, invertebrates, and vertebrate species can be enhanced or restored (RMP p. 7);
 - Structural and spatial stand diversity can be improved on a site-specific and landscape level in the long term (RMP p. 11, 26, D-6).

- **Roads:** To maintain and develop a safe, efficient and environmentally sound road system (RMP p. 62) that provides appropriate access for timber harvest and silvicultural treatments used to meet the objectives above.

1.4 Decision to be Made

The Cascades Resource Area Field Manager is the official responsible for deciding whether or not to prepare an environmental impact statement, and whether to approve variable thinning on 700 acres as proposed, not at all, or to some other extent.

2.0 ALTERNATIVES

2.1 Alternative Development

Pursuant to Section 102 (2) (E) of NEPA (National Environmental Policy Act of 1969, as amended), Federal agencies shall “Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.” No unresolved conflicts concerning alternative uses of available resources (section 102(2) (E) of NEPA) were identified. No alternatives were identified that would meet the purpose and need of the project and have meaningful differences in environmental effects from the proposed action. Therefore, this EA will analyze the effects of the “proposed action” and the “no action alternative”.

2.2 Proposed Action

The proposed action is to thin approximately 700 acres of mixed-conifer stands (40 to 85 years old) to variable tree densities within each stand. Most of the 700 acres are within the General Forest Management (GFMA) LUA. Approximately 20 acres are within the Riparian Reserve LUA. After thinning, the timber stands would retain approximately 72 trees per acre (current range is from 55 to 90). The target canopy closure is forty percent.



Unit O, Current Condition



Expected Post Thinning Condition

Timber harvest would be done by utilizing a ground-based logging system on approximately 90 percent of the area and a skyline yarding system on the remaining 10 percent. Areas with rock outcrops; small wet spots designated as withdrawn or that are located during final field verification; and any areas where logging would be infeasible using the design features described below would be excluded.

2.2.1 Connected Actions

1. Road Work:

- Road Renovation and Improvement:
 - 6.0 miles of existing BLM road would be renovated to bring it back to original design standards.
 - 0.8 miles of existing road would be improved by rocking the surface. This road would be blocked after use.
- Road Reconstruction:
 - 1.4 miles of existing BLM roads would be reconstructed to access thinning areas.
- Road Construction:
 - 1.2 miles of new rock surfaced road would be constructed to access the thinning areas. These roads would be left in place after use, but would be blocked.
 - 0.35 miles of new temporary natural surface spur roads would be constructed to access thinning areas. These roads would be ripped, seeded and blocked after use.

2. Rock Pit Development:

- An existing rock pit (ABC Pit) in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 27, T. 7 S., R. 2 E., W. M. would be opened and approximately 9,000 cubic yards of rock would be quarried, crushed and removed.
- The rock pit would be enlarged by removing vegetation and over burden from less than one acre.

3. Fuels Treatments:

- Slash would be piled and burned on landings. Woody debris created by the thinning operations within 200 feet of some property lines would be piled, covered and burned. The property lines that would be treated are those where adjoining private lands with residences and where adjoining lands have a significant fuel loading. A total of approximately 120 acres would be piled and burned.

4. Skid Trail Construction:

- Existing skid trails would be re-used to access the stands for ground-based equipment where possible (RMP p. C-2). Additional skid trails may be required. New skid trails would be spaced approximately 150 feet apart and would not be constructed on ground steeper than 35 %.
- Mechanical harvesters would be allowed to make a single pass over the ground between designated skid trails. Harvesters would not be allowed to operate on ground in excess of 40 %.

5. Snag Creation:

- Up to two snags per acre would be created within the harvest units by top and/or bottom-girdling (RMP p. 21).

6. Special Forest Products

- Prior to any road construction activities, wild seedlings growing within the road clearing limits would be made available to the public for transplanting. After harvest woody material in excess of that needed for coarse woody debris would be offered for firewood.

2.2.2 Project Design Features

The following is a summary of the design features that reduce the risk of effects to the affected elements of the environment described in EA section 3.2. The proposed activities would follow the standards and guidelines described in the RMP from the pages specified in Table 8 of this document. Design features are organized by actions.

1. General

Thinning treatments would be variable within each stand. Trees would be left to protect large existing snags, remnant old growth (trees older than 200 years of age), and special habitats as defined in EA section 3.2. Stands would be thinned from below to remove suppressed, intermediate, and some co-dominant trees to differing densities. These stands would be thinned down to a range of 55 to 90 leave trees per acre. The best formed trees with well-developed crowns would be left standing.

- The proposed action and associated connected actions would utilize the Best Management Practices (BMPs) (RMP Appendix C, pp. C-1 to C-9) required by the Federal Clean Water Act (as amended by the Water Quality Act of 1987).

Operational Periods

- Operations would be restricted during:
 - The spring growing season, when bark is easily damaged (typically May 01-June 30). No falling or yarding operations that could damage residual trees would be allowed during this period.
 - Wet conditions: Ground based operations (i.e. skidding, road construction, road improvements), would not be allowed when soil moisture is high (generally November through May) since these operations could cause compaction and potentially increase erosion and sedimentation (RMP pp. 23, 24, C-2). Hauling would not be allowed on non-paved roads during wet conditions when road related runoff is present.

In addition, operations may be shut down or restricted at any time

- if plant or animal populations, or cultural resources that need protection (RMP pp.29, 36) are found; or
- in response to new legal requirements that are implemented or enacted (Standard, required BLM timber sale contract provisions).

Table 1: Typical seasonal restrictions calendar

Restriction	Reason	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Falling and yarding	Bark slippage												
Fire precautions	Fire danger												
Tractor operations	Soil damage												

Key	Operations generally allowed.	Operations typically dependent on conditions.	Operations generally not allowed.

2. Roads, Landings, and Hauling (RMP pp. 62-64)

- New roads would be constructed to access the stands in units B, C, D, M and Q. These roads would be left in place after use. Construction would include: shaping the road surface for proper drainage to forested slopes; rocking the road surface, seeding disturbed areas with native species; and blocking the road to other-than-administrative use. Blocking would be accomplished through use of a ditch and berm, a semi-permanent barrier or a gate.
- Temporary natural surface spurs would be used in Units A, G, K, and L. Some of these spur roads already exist and would be renovated for hauling and others would be new construction (Table 2). Construction would include: shaping the road surface for proper drainage to forested slopes; seeding disturbed areas with native species; ripping and blocking the road after use.
- New and reopened skid trails would be restored upon completion of the project. Restoration would include blocking, re-vegetation with native species, and monitoring and treatments for invasive plants.

- In order to prevent road sediment from entering stream channels as a result of hauling, sediment trapping vegetation in roadside ditches would be left intact where possible, and hauling would be suspended when there is an elevated risk of water and sediment flowing in roadside ditches.

3. **Falling, Skidding and Yarding (RMP pp. 23, 24, C-2).**

- Ground-based logging (skidder, harvester/forwarder, shovel, etc.): All multiple pass trails (skid trails) would follow designated skid trails (RMP p. C-2). If mechanized harvesting equipment is used, felling trails would be spaced 75 ft. apart, with on-site limbing slash used on the trail to create a slash mat for travel.
- Equipment with lateral yarding capabilities would be used for skyline yarding. One end suspension of logs being yarded would be required.
- Landing and skyline corridor locations would be designed to avoid destruction of any snags larger than 20" diameter at breast height (DBH) or remnant old growth found in the project area.
- Skid trails would be left covered with logging slash and debris after the sale and any exposed soil would be seeded with native species.
- Designated genetically superior seed trees would be protected from damage.

4. **Fuel Treatment**

- Debris from road construction and yarding would be machine-piled, covered with plastic, and burned. (RMP pp. 23, 24).
- There would be a no cut buffer within fifty feet of the Maple Grove and Sawtell Roads. Trees marked for cutting would be directionally felled so that tops and limbs would not enter these "no cut" areas.
- Areas, where harvest units abut property boundaries where there are residences or a high concentration of hazardous fuels, would have logging residue less than three inches in diameter and within 200 feet of the property line piled, covered and burned.
- All burning would occur under favorable smoke dispersal conditions in the fall, in compliance with the state Smoke Management Plan (RMP pp. 22, 65).
- Following thinning operations, the roads accessing treated units would be gated and/or blocked to reduce vehicle access.

5. **Vegetation**

- Spotted owl dispersal habitat (an average of 40 percent canopy closure) would be maintained after timber harvest.
- **Old Growth:** Retain scattered old growth trees (older than 200 years of age).

- **Existing Snags:** Snags larger than 20 inches in diameter of all decay classes would be left standing to the greatest extent possible under standard contractual logging procedures, BMP, and OSHA requirements (RMP p.D-2). If a snag is determined to be a safety hazard, after inspection by the contract administrative officer, and it is determined that it needs to be felled, the snag would remain on site for coarse woody debris.
- **Snag Recruitment:** Up to two snags per acre would be created by girdling (top and/or bottom).
- **CWD:** CWD already on the ground would be retained and protected to the greatest extent possible from disturbance during treatment (NWFP S&G p. C-40, RMP 21, p.D-2). If CWD needs to be moved, a section of the log would be cut to allow access through, instead of moving the entire log.
- **Invasive Species** (e.g. Noxious weeds) (RMP p. 64). All harvesting and road-building equipment would be cleaned to remove off-site soil, invasive plant parts and seed, prior to entering the project area.

6. Riparian Reserve Treatments

- For units located in the Molalla River watershed, some thinning would occur within the designated Riparian Reserves (up to 20 acres).
- A minimum fifty foot no cut/no yarding buffer would be maintained on all streams.

7. Recreation, Visual, Rural Interface and Cultural

- A fifty foot no cut buffer would be maintained along Sawtell Road and Maple Grove Road.
- The eastern boundary of Unit J would be located west of designated trails in the Molalla Shared-Use Trail System.
- Hauling would be restricted to Mondays through Fridays and would also be restricted on Federal holidays that fall on weekdays.
- Conduct follow-up cultural resource surveys in thinning units within Sections 19 & 29 of T. 6 S., R. 2 E. after operations have been completed.

Table 2 : Butte Creek Thinning Summary by Unit

Unit No.	Land Use Allocation	Acres	Age	Road Work (Distances in Feet)					Logging Systems (acres)	
				Renovate	Improve	Reconst	New Construct.		Ground-based	Skyline
							Rock	Temp		
A	GFMA	12	75	0	0	0	0	100	12	0
B	GFMA	130	75	2325	4225	0	1600	0	100	30
C	GFMA	84	65	4540	0	0	4180	0	64	20
D	GFMA	8	65	0	0	0	300	0	2	6
E	GFMA	15	65	0	0	0	0	0	15	0
F	GFMA	21	65	0	0	0	0	0	21	0
G	GFMA	19	90	5055	0	0	0	1100	19	0
H	GFMA <i>Riparian</i>	73 3	65	3225	0	3650	0	0	73 3	0
I	GFMA <i>Riparian</i>	17 4	45	7180	0	0	0	0	17 4	0
J	GFMA <i>Riparian</i>	4 2	45	0	0	0	0	0	4 2	0
K	GFMA	42	55	0	0	0	0	500	42	0
L	GFMA <i>Riparian</i>	21 3	55	0	0	0	0	150	21 3	0
M	GFMA GFMA <i>Riparian</i>	23 20 8	80 45	3700	0	3750	100	0	36	15
O	GFMA	180	70	5650	0	0	0	0	180	0
Q	GFMA	11	55	0	0	0	375	0	0	11
Totals	GFMA Acres	680	63	31,675	4,225	7,400	6,555	1850	618	82
	<i>Riparian</i> Acres	20								
	Total Acres	700								

Renovate - Renovation consists of work necessary to bring a road back up to original standards and may include brushing, grading, spot rocking and the possibility of additional culverts installed, ditches and culverts cleaned.

Improve - Improvement is work to elevate the road condition over its original standard. In this case it consists of adding rock surfacing.

Reconst. - Road Reconstruction is work necessary to restore a damaged or badly deteriorated road to a usable condition and possibly a new design standard. It may include realignment and fill failure repair and/or structural upgrades. Reconstruction generally involves a higher degree of engineering than basic road improvement or renovation work.

New Construct. - Rock – New road construction that would be rocked and left in place.

New Construct. - Temp – New road construction that would be decommissioned after the completion of the project.

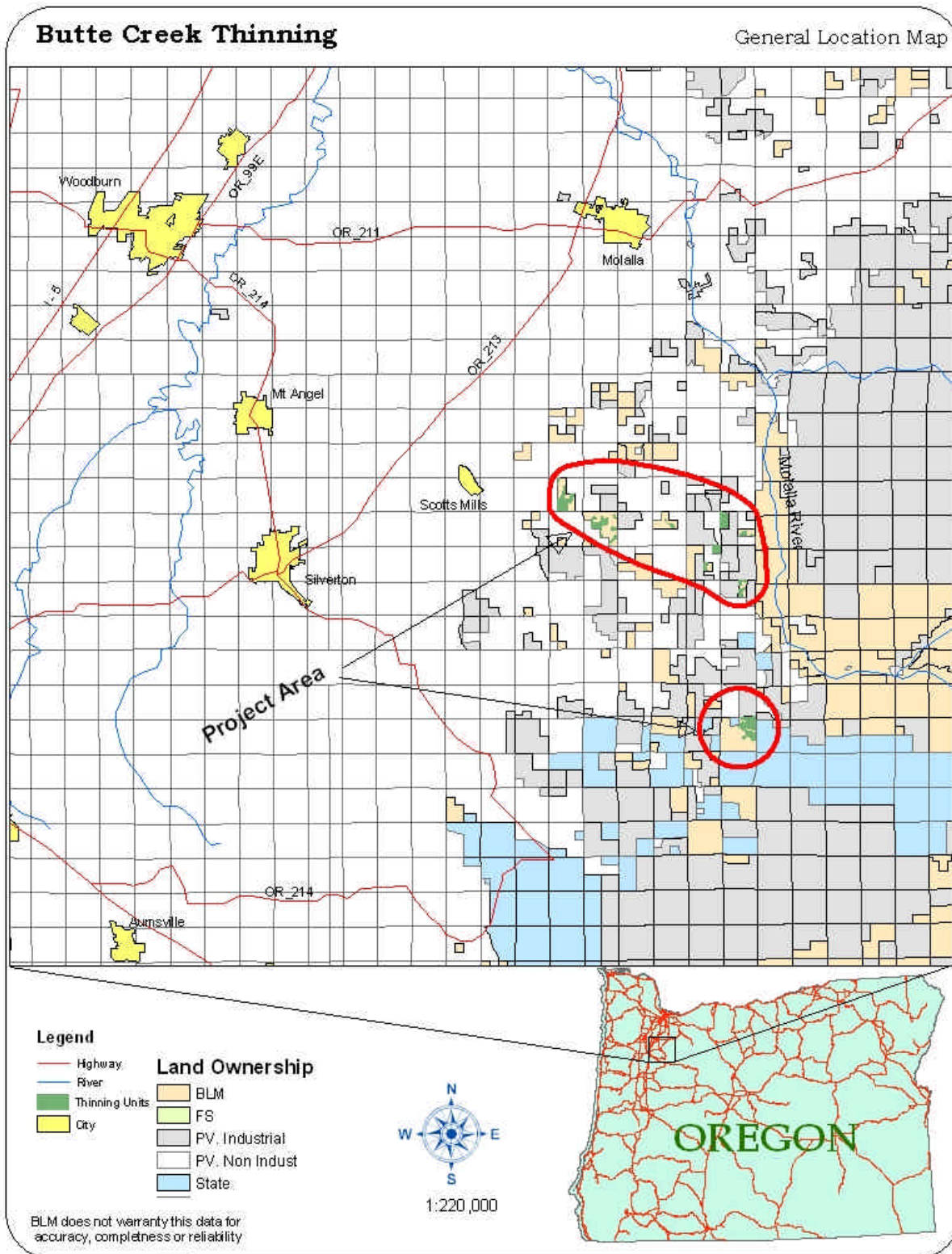
An additional 8.4 miles of road renovation is planned along the haul routes on roads not on BLM lands.

2.3 No Action Alternative

The BLM would not implement any of the actions described in the action alternatives at this time.

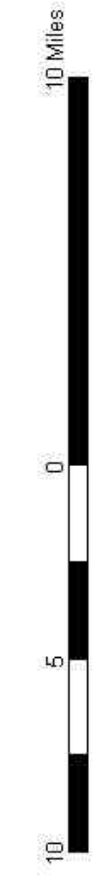
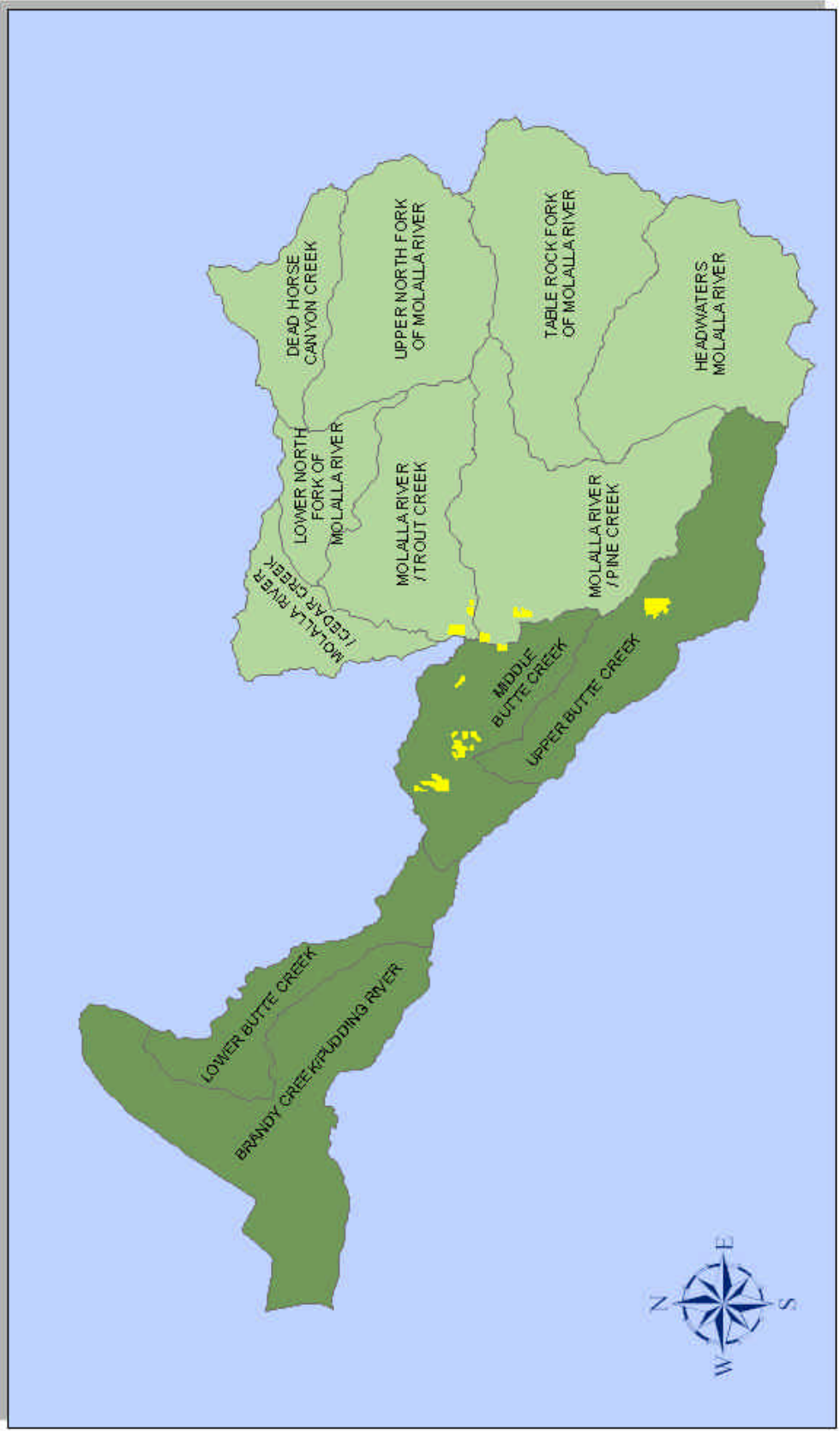
This alternative serves to set the environmental baseline for comparing effects to the proposed action.

2.4 Maps







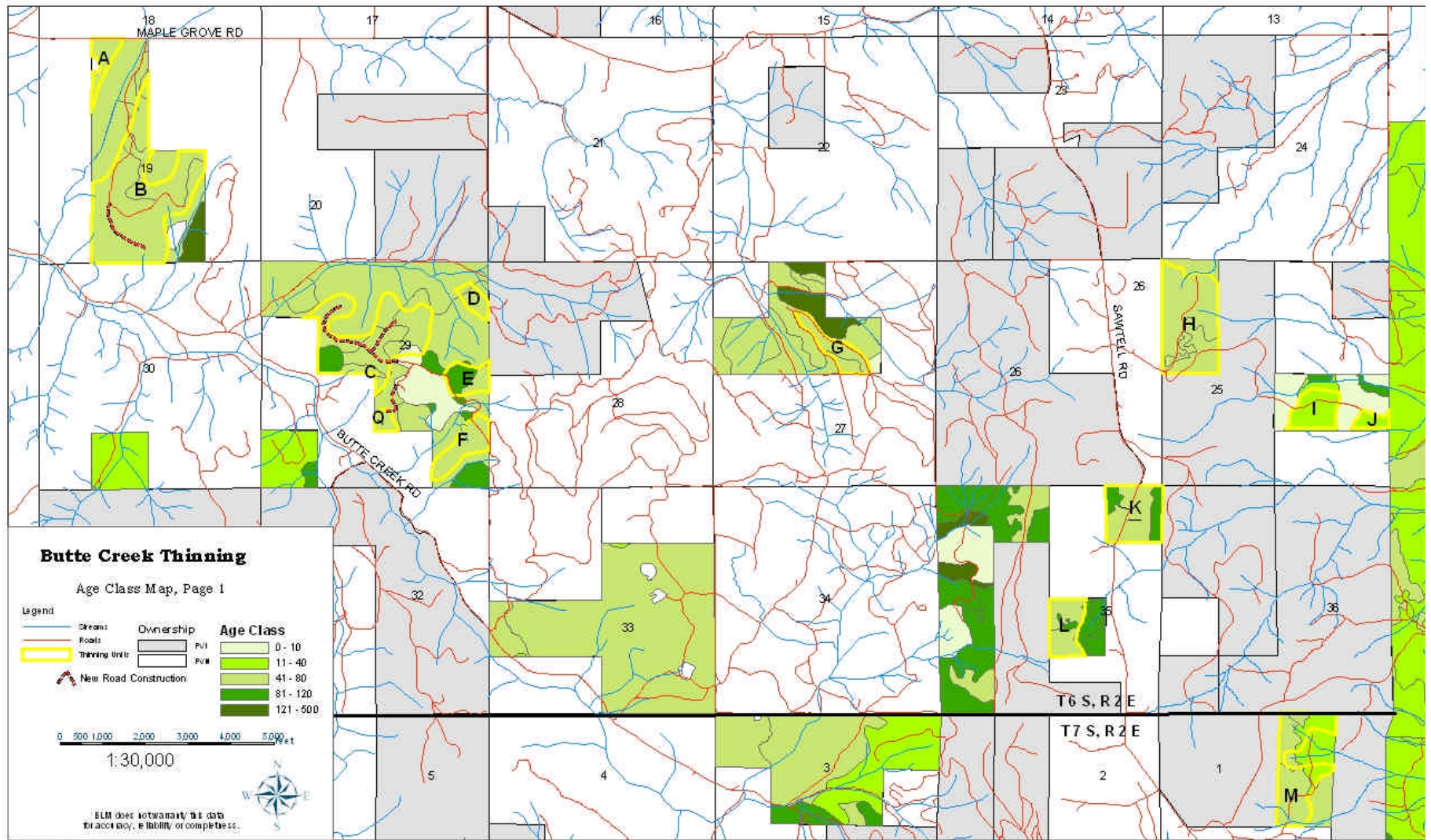
Butte Creek Thinning

Watershed Map



Legend

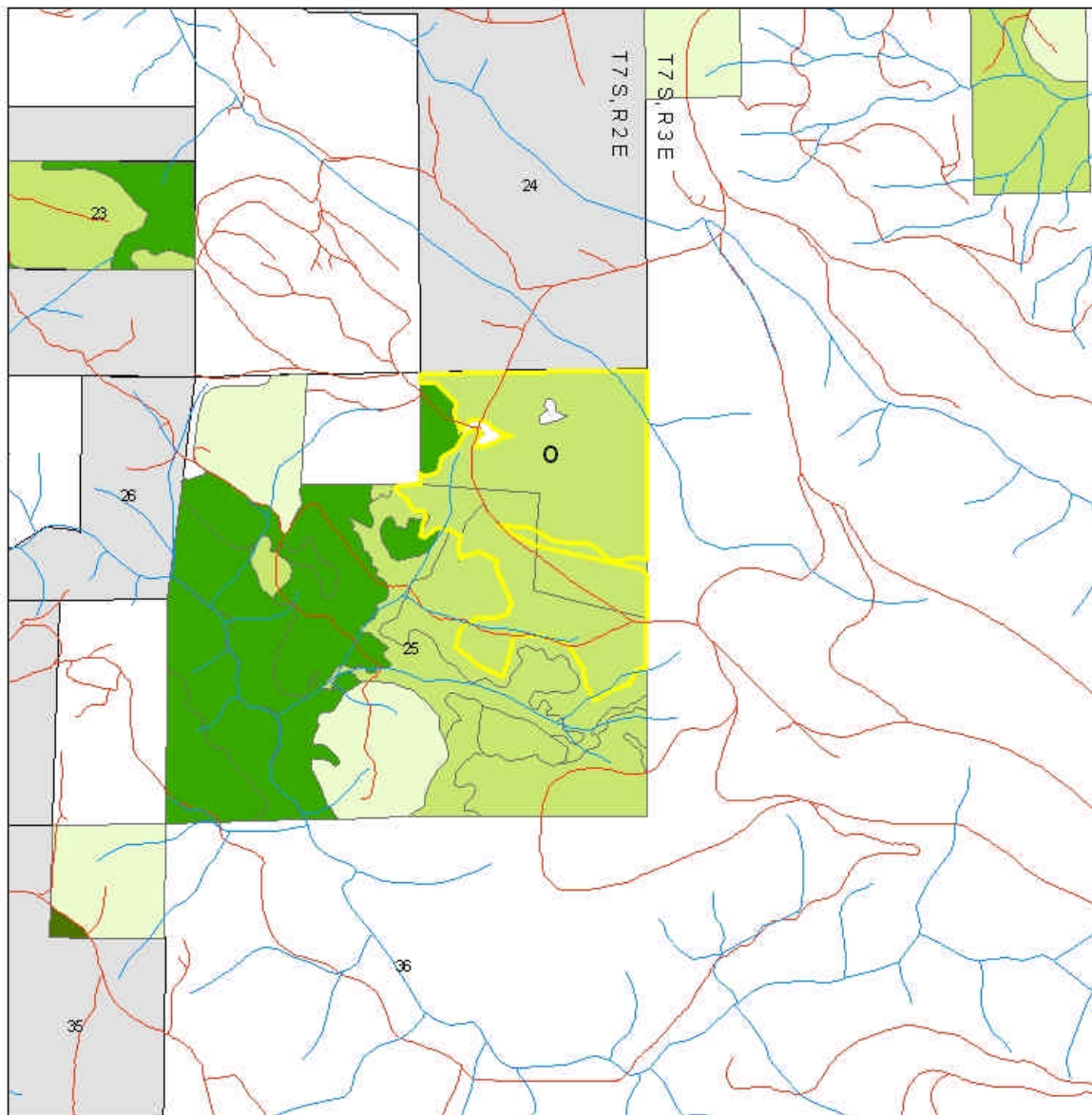
	Butte Creek Units	
	REO 5th Field Watershed	
	UPPER MOLALLA RIVER	129,310 Ac.
	BUTTE CREEK/PUDDING RIVER	70,459 Ac.



Spur roads 100 feet or less not shown

Butte Creek Thinning

Age Class Map, Page 2



Legend

- Streams
- Roads
- Thinning Units
- New Road Construction

Ownership

- PM
- PWN

Age Class

- 0 - 10
- 11 - 40
- 41 - 80
- 81 - 120
- 121 - 500

0 500 1,000 2,000 3,000 4,000 5,000 feet

1:20,000

BLM does not warranty this data for accuracy, reliability or completeness.



REVISED 1-22-2004

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

3.1 Identification of Affected Elements of the Environment

The interdisciplinary team reviewed the elements of the environment, required by law, regulation, Executive Order and policy, to determine if they would be affected by the proposed action. Table 3 (Critical Elements of the Environment from BLM H-1790-1, Appendix 5) and Table 4 (Other Elements of the Environment) summarize the results of that review. **Affected elements are bold.** All entries apply to the proposed action, unless otherwise noted.

Table 3: Critical Elements of the Environment

<i>Critical Elements Of The Environment</i>	<i>Status: (i.e., Not Present, Not Affected, or Affected)</i>	<i>Does this project contribute to cumulative effects? Y/N</i>	<i>Remarks If not affected, why?</i>	
Adverse Impacts on the National Energy Policy	Not Affected	No	There are no known energy resources located in the project area. The proposed action would have no effect on energy development, production, supply and/or distribution.	
Air Quality	Affected		Addressed in text, Sec.3.2.5 (EA p.27)	
Areas of Critical Environmental Concern	Not Present	No	There are no ACECs within the project area.	
Cultural Resources	Not Affected	No	Cultural surveys have been completed within the project area. In addition, post operations surveys are planned to be conducted in areas where sites are suspected to exist.	
Environmental Justice (Executive Order 12898)	Not Affected	No	The proposed action is not anticipated to have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.	
Prime or Unique Farm Lands	Not Present	No		
Flood Plains	Not Affected	No	The proposed action does not involve occupancy and modification of floodplains, and would not increase the risk of flood loss.	
Hazardous or Solid Wastes	Not Present	No		
Invasive, Nonnative Species (plants) (Executive Order 13112)	Affected	No	Addressed in text, Sec. 3.2.6 (EA p. 28)	
Native American Religious Concerns	Not Affected	No	No Native American religious concerns were identified during the public scoping period.	
Threatened or Endangered (T/E) Species or Habitat	Fish	Habitat: Affected	No	Addressed in text, Sec. 3.2.7 (EA p. 29)
	Plant	Not Present	No	
	Wildlife	Affected	No	Addressed in text, Section 3.2.4 (EA p. 24)
Water Quality (Surface and Ground)	Affected	No	Addressed in text, Sec. 3.2.2 (EA p. 20)	
Wetlands/Riparian Zones	Affected	No	Addressed in text, Sec. 3.2.2 (EA p.20)	
Wild and Scenic Rivers	Not Present	No		
Wilderness	Not Present	No		

Table 4: Other Elements of the Environment

<i>Other Elements Of The Environment</i>	<i>Status: (i.e., Not Present, Not Affected, or Affected)</i>	<i>Does this project contribute to cumulative effects? Y/N</i>	<i>Remarks If not affected, why?</i>	
Coastal zone	Not Present	No		
Fire Hazard/Risk	Affected	No	Addressed in text, Sec. 3.2.5 (EA p.27)	
Other Fish Species with Bureau Status and Essential Fish Habitat	Not Affected	No	No non-ESA listed special status species are found within or near the Project areas. The project would have “no effect” on Essential Fish Habitat as designated under the Magnuson-Stevens Act.	
Land Uses (right-of-ways, permits, etc)	Not Affected	No	Agreements are in place and would not be changed by the proposed project.	
Late Successional and Old Growth Habitat	Not Affected	No	No Late Successional or Old Growth stands are included in the proposed action. Remnant old growth trees would be retained (EA p. 7)	
Mineral Resources	Not Present	No		
Recreation	Affected		Addressed in text, Sec. 3.2.8 (EA p.30)	
Rural Interface Areas	Affected	No	Addressed in text, Sec. 3.2.8 (EA p.30)	
Soils	Affected	No	Addressed in text, Sec. 3.2.3 (EA p.21)	
Special Areas outside ACECs (Within or Adjacent) (RMP pp. 33-35)	Not Present	No		
Other Special Status Species / Habitat	Plants	Affected	No	Addressed in text, Sec. 3.2.6 (EA p.28)
	Wildlife	Affected	No	Other Wildlife - Addressed in text, Sec. 3.2.4 (EA. p. 24)
Visual Resources	Not Affected	No	<i>(Butte Creek Thinning Timber Sale Visual Resources Report pp. 1-2)</i> The proposed action would comply with VRM Class II, III and IV guidelines. No cumulative impacts were identified.	
Water Resources – Other (303d listed streams, DEQ 319 assessment, Downstream Beneficial Uses; water quantity, Key watershed, Municipal and Domestic)	Affected	No	Addressed in text, Sec. 3.2.2 (EA p. 20)	
Wildlife Structural or Habitat Components - Other (Snags/CWD/ Special Habitats, road densities)	Affected	No	Special Habitats: There would be no anticipated effect to identified special habitats. They are to be posted outside of the proposed thinnings and would be adequately buffered. Addressed in text, Sec. 3.2.4 (EA p. 24)	

3.2 Affected Environment and Environmental Effects

Those elements of the human environment that were determined to be affected are hydrology (water quality, wetland/riparian zones, and other water resources), soils, wildlife (T/E, special status species, structural/habitat components), air quality and fire hazard/risk, botany (special status species, invasive/nonnative species), fisheries and aquatic habitat (T/E, special status species), and recreation and rural interface. This section describes the current condition and trend of those affected elements, and the environmental effects of the alternatives on those elements.

3.2.1 General Setting

The proposed sale area consists of fourteen parcels in seven sections (EA section 1.1). The stands are primarily Douglas-fir types with some minor species. Minor conifer species are western hemlock and western red cedar. Minor hardwood species are bigleaf maple and red alder. One stand is primarily a western hemlock type with a minor component of Douglas-fir.

The stands range in age from as young as 40 years old to stands as old as 85 years of age. The average stand diameters range from 11 inches DBH to 20 inches DBH. Four of the stands have a few widely scattered remnant old growth trees present.

All of the stands, except for one, regenerated naturally after they were either logged off or burned in the early 1900's. Earlier logging is evident by large stumps found throughout most of the units. Some residual snags (20" DBH +) are present, but are widely scattered and in advanced decay classes. The stands are generally snag deficient. There are small amounts of large down woody debris present on the forest floor and most of it is in the advanced decay classes.

3.2.2 Hydrology

(Butte Creek Thinning Timber Sale Hydro Report pp. 1-26)

Affected Environment

The project area contains several small headwater streams tributary to the Molalla and Butte Creek watersheds in the Willamette basin. These streams are in proper functioning condition: well shaded, stable beds and banks, adequate quantities of wood, sediment and a diversity of riparian species. Stream side shading from riparian vegetation is adequate to buffer streams from temperature increases. None of the project area streams are listed on the state's 303d list or in the 319 Report for water quality issues (see Hydrology report pg.12-13).

Recognized beneficial uses of in-stream flows include anadromous fish, resident fish, recreation, and esthetic value. Both the Molalla River and Butte Creek serve as water sources for municipalities.

Environmental Effects

3.2.2.1 Proposed Action

Long-term, measurable effects to watershed hydrology, channel morphology, and water quality as a result of the proposed action are unlikely. This action is unlikely to alter the current condition of the aquatic systems either by affecting its physical integrity, water quality, sediment regime or in-stream flows. [Hawe, BCAF Hydrology Report pp12-22]

Short-term, localized increases in stream sediment may occur as a result of harvest and road construction and use (see Hydrology report pgs.20-24). However, these are unlikely to be measurable and would likely be not worth considering relative to overall sediment yields in the watershed for the following reasons:

Tree removal and road renovation and construction would not occur on steep, unstable slopes where the potential for mass wasting adjacent to stream reaches is high. Therefore, increases in sediment delivery to streams due to mass wasting are unlikely to result from this action. In addition, potential impacts resulting from tree harvest and road construction/renovation would be mitigated to reduce the potential for measurable sediment delivery to streams, by implementing Best Management Practices (BMPs), such as stream side buffers, minimum road widths, minimal excavation, ensuring appropriate drainage from road sites, etc. Because the proposed project would remove less than half the existing forest cover, it is unlikely to produce any measurable effect on stream flows (see Hydrology report pgs.15-17).

Within riparian zones, substantial portions of the riparian canopy would be retained, thereby maintaining riparian microclimate conditions and protecting streams from increases in temperature.

This proposal is unlikely to impede and/or prevent attainment of the stream flow and basin hydrology, channel function, or water quality objectives of the Aquatic Conservation Strategy (ACS) (EA Appendix 7.1). Over the long term, this proposal should aid in meeting ACS objectives by speeding the development of older forest characteristics in portions of the riparian zone.

Cumulative Effects Analysis

The proposed project is unlikely to contribute to watershed cumulative effects because it is unlikely to produce any measurable effects to the watershed's sediment supply, turbidity levels, channel morphology, stream temperature regime, water quality or stream flows (see Hydrology report pgs. 14,15, 22).

3.2.2.2 No Action Alternative

The “no action” alternative would result in the continuation of current conditions and trends at this site as described in the *Description of the Affected Resource* section of this report. (see Hydrology report pg. 12).

3.2.3 Soils

(Butte Creek Soils Report pp.1-15)

Affected Environment

The project area soils are predominantly gravelly loams with some finer textured soils on rolling uplands. These soils series are suited for timber production. There are minor inclusions where these soils have moderate to severe erosion hazards where steep. Impacts can be mitigated by harvest technique and seasonal restrictions. Timber production is limited in some minor areas (usually wet deep seated slumps, see soils report, page 2) by excessive drainage, mass movement potential, and a high water table.

Environmental Effects

3.2.3.1 Proposed Action

Timber Harvest

The proposed action would leave the majority of the surface vegetation, root systems, and litter intact. Slash from thinned trees would also remain on site. Expected amounts of surface soil displacement, surface erosion, and dry ravel resulting from thinning would be minimal. The area of soil compacted from harvest would be less than 70 acres (< 10% of the project area) – within the accepted District guidelines (RMP p. C-1-2). This amount includes some previously compacted landings and skid roads from historic logging.

While repeatedly turning equipment around causes compaction and soil displacement, landings would utilize a portion of existing haul road or harvest road. The existing roads are currently compacted and have minimal topsoil. Adjacent ground would mostly be used to sort and deck logs until transport; soil effects would be low in these places.

Impacts from ground based yarding depend on how dry soils are when heavy equipment operates and how deep the slash is. In ground based yarding, compaction and displacement could be considerably reduced if a harvester-forwarder system is used. Within the areas of soil compaction a moderate to heavy amount of soil compaction and a moderate amount of topsoil displacement is expected from ground based yarding. Infiltration capacity and surface erodibility would not be reduced beyond 3 to 6 years. Impacts could be substantially mitigated by operating during dry seasons, using designated skid trails or operating equipment on top of a slash bed.

On the approximately 70 acres that would be skyline yarded, compaction would be light.

As harvest operations and layout are designed to meet the objectives of the Resource Management Plan, soil compaction and displacement would be minimized (USDOI BLM 1995).

Roads

Constructing up to 1.2 miles of new rocked surface road and 0.35 miles of new temporary natural surface spur roads would displace topsoil and severely compact subsoil on less than 3.4 acres of forested land, converting it to non-forested land. The new rocked roads would be blocked following harvest. The new temporary natural surface spur roads would be decommissioned (ripped, seeded, and blocked) following harvest; this would stabilize the soil surface by promoting more rapid revegetation than leaving it open. The short term increase in exposed soil from new road activities would yield slight (non-measurable) surface erosion. However any resulting runoff would infiltrate rapidly into adjacent undisturbed soils. For further erosion discussion, see Hydrology Report. Additionally, placing slash debris over exposed surfaces, water bars, and blocking vehicle access would decrease surface erosion and runoff. Furthermore, this provides a source of organic material to the disturbed soil. Over time, some recovery back to forested conditions would occur. Road maintenance necessary to log (e.g. filling, brushing, grading) on existing drivable roads would not notably affect soil resources. Road improvements and reconstruction would occur during dry season to minimize soil impacts.

Pile Burning

On the relatively small burned sites (many on already disturbed landings), surface organic material (O-horizon) would be removed increasing erosion potential and rain compaction until natural revegetation. Since burning would occur during wet soil conditions, heat damage to the upper soil layer (A-horizon) would be moderate and only occur in scattered localized sites.

3.2.3.2 No Action Alternative

Current soil compaction within the project area, associated with past logging, would continue to recover at the current rate. No new soil compaction or displacement would take place within the project area.

3.2.4 Wildlife

(Butte Creek Thinning Timber Sale Wildlife Report pp. 1-26)

Affected Environment

SPECIAL HABITATS

(Special habitats include wet and dry meadows, talus slopes, cliffs, and wetlands.)

The known special habitats within and adjacent to this proposed thinning are limited to three meadows (two wet and one dry).

OTHER WILDLIFE HABITAT

Interior habitat: The project area(s) currently provide little effective interior habitat due to the small amount of public ownership and small individual tracts. The primary exception is Unit O which is a very dense uniform stand. Adjacent private lands do not exhibit interior habitat characteristics.

Travel/connectivity corridors: Current conditions provide for very limited protective (timbered) travel. The Federal lands under consideration are scattered and discontinuous.

SPECIAL STATUS, SEIS SPECIAL ATTENTION, AND SPECIES OF CONCERN

See the Special Status/Special Attention Species list for habitat description and species occurrence in the vicinity of the proposal (EA Appendix 3).

Federally Listed Species: Northern spotted owl

The entire project involves dispersal habitat for the northern spotted owl. Consultation with the U.S. Fish and Wildlife Service has been initiated.

Bureau Sensitive, Bureau Assessment, and Other Species of Concern

Four species of bats which are listed as Protection Buffer and/or Bureau Tracking species could potentially be present in the project area. These species are associated with caves and mines, bridges, buildings, cliff habitat, or standing cull and snags with bark attached. General habitat surveys were conducted in the fall/winter of 2003. No mines, bridges, buildings, or cliff/cave habitats were identified. There are snags and scattered remnant old-growth trees with bark attached that may provide suitable habitat for bats; however, this resource is very scarce in these mid-seral stands.

The goshawk is a Bureau Sensitive species which prefers older forests with dense canopy closures at higher elevations. The proposed units are located at mid-elevations. The habitat in the vicinity of the units is marginally suitable for goshawks.

Snags, culls and CWD: See table below - Low in numbers, the combination of past stand replacement fires and logging activity removed most snags, culls and CWD. Snags and down logs that are present generally are either small or highly decayed (class 5+) with larger material being limited to areas in or adjacent to riparian reserves and the occasional remnant old-growth tree. While most of the snags and down logs do not meet the criteria set within the District RMP for cavity excavators and users, they are however a valuable habitat feature for other species groups such as herpetofauna and mollusks as well as for foraging by woodpeckers

Current conditions based on data from the Stand Exams:

Unit	Location	Acres	Remnant Old growth Trees Present?	Special Habitats?	Snags*(per acre)		CWD**(down logs)		
					7" to 19"	19+"	Linear Ft/acre		% Cover per Acre
							<19"	>19"	
A	6-2-19	11	No	No	35	17	1087	0	1
B	6-2-19	123	Yes	Wet meadow	35	17	460	231	1.5
C,D, E,F	6-2-29	123	No	No	61	2	264	182	1.1
G	6-2-29	18	No	No	61	2	0	64	.9
H	6-2-25	72	No	No	75	4	482	300	2.4
I	6-2-25	20	No	No	75	4	994	182	1.7
J	6-2-25	6	No	No	75	4	0	0	0
K	6-2-35	40	Yes	No	20	15	1380	1001	4.1
L	6-2-35	23	Yes	No	20	15	2576	864	4
M	7-2-1	49	Yes	Wet meadow	39	-	0	0	0
O	7-2-25	171	No	Dry meadow (2)	62	29	336	0	.7

*Snags = all decay classes over 15 feet tall

**CWD does not include soft (class 5+) logs

Up to 93 vertebrate wildlife species are associated with snags in the forested environment in Washington and Oregon. Hard snags are utilized by more species than soft snags, and most snag-using wildlife species are associated with snags greater than 14.2 inches. All existing snags and CWD would be retained on site. Any snags which are felled or otherwise knocked down would be retained on site as CWD, which is also valuable as wildlife habitat. There are 86 vertebrate species associated with CWD, of which, 58 are associated exclusively with CWD for their life history requirements (Rose et al).

Environmental Effects

3.2.4.1 Proposed Action

General effects to wildlife populations and habitats:

- There would be no anticipated effect to identified special habitats because they are posted outside of the proposed thinning and are adequately buffered.
- Much of the material that would have developed into snags and CWD has been removed in previous harvest entries. Large diameter material over 20 inches would be recruited over decades, and snags and CWD would be generated over long periods of time. Existing material would remain intact, but continue to decay.

- Incidental Changes to Existing CWD habitat: In the short term (less than 10 years), existing snags and CWD habitat may be degraded (e.g. incidental damage to small or soft existing CWD from falling trees and yarding trees to the landings) due to logging activities. Project design features reduce the risk of damage to CWD habitat (EA p 7).
- In the long term, green tree retention, CWD recruitment, topping and base girdling to create snags and CWD would introduce this type of material, thus increasing stand structure for the future life of these stands. Snag densities and CWD levels would approach NWFP standards over time.
- There would be no effect on Bureau Sensitive, Special Attention, or other species of concern. Habitat conditions would remain as described in the Affected Environment and would continue to develop over time.
- There would be no changes to late-successional habitat and open road densities.

Effects to species:

- The Butte Creek proposal is not expected to result in a trend toward federal listing, loss of population viability, or elevation of status to any higher level of concern.
- In the short term, the quality of approximately 700 acres of dispersal habitat would be reduced, but would remain dispersal habitat.
- In the short term, retention of existing snags and CWD would reserve habitat for primary excavators, amphibians and bat species. Direct adverse impacts to snags and CWD due to logging and site preparation could have short term adverse impacts on these species. Impacts are expected to be lower due to the scarcity of this type of material (they should be avoidable during logging operations). In the short term, some micro-habitat drying is anticipated to occur as canopies are opened up, however, micro-habitat drying is anticipated to be minimal due to the high green tree retention.
- In the long term, green tree retention, snag creation and additional CWD recruitment would contribute to habitat for primary excavators, amphibians and bat species in future stands, especially in Riparian Reserve treatment areas. Canopies are expected to develop and close within 10 to 30 years.
- No entry buffers, areas not thinned, and untreated Riparian Reserves would adequately protect aquatic amphibians such as the red-legged frog, tailed frog and the Cascade torrent salamander, and provide protection for bats which forage over open water and in riparian areas.
- Approximately 700 acres of marginal habitat for goshawks would be degraded through the reduction of canopy closures below current levels.

Cumulative Effects:

Much of the landscape which encompasses these proposed project areas has been highly modified. Only small scattered sites could be considered as natural. Logging, road building, homesteading, farming and urbanization have had a substantial influence on the landscape. A cumulative effects analysis is difficult when viewing this project area (approximately 28,700 acres of which 2871 are managed by the BLM) and it would be impossible to predict potential future conditions on the majority of the landscape primarily due to the diverse land uses and high number of owners.

This proposal to commercially thin approximately 700 acres represents two percent of the total analyzed area and 20 percent of the Federal ownership within that area. The area includes approximately 240 miles of roads of which 19 miles are controlled by BLM. The total miles equate to about 5.4 miles per section of land. This proposed project is anticipated to add 1.24 miles of new roads – all of which would be blocked or gated upon completion of the project and should have little or no effect on wildlife.

3.2.4.2 No Action Alternative

- Natural processes would continue, and competition among overstory trees would continue. Large diameter material over 20 inches would be recruited over decades, and snags and CWD would be generated over long periods of time. Existing material would remain intact, but continue to decay. In some cases, these stands could take longer to develop late successional conditions if left untreated (due to past logging activity and the stand-replacement fire history).
- There would be no change in spotted owl habitat and no effect to spotted owls. Habitat conditions would remain as described in the Affected Environment, and would continue to develop over time.
- There would be no effect on Bureau Sensitive, Special Attention, or other species of concern. Habitat conditions would remain as described in the Affected Environment, and would continue to develop over time.
- There would be no changes to late successional habitat and road densities.

3.2.5 Air Quality and Fire Hazard/Risk

(Butte Creek Thinning Timber Sale Fuels/Fire Ecology Report pp. 1-3)

Affected Environment

The affected environment pertaining to forest fuels is dependent on the fuels profile, hazard and risk. Fuels profile is the arrangement of fuel, hazard relates to the amount of fuel available to burn, and risk is the probability of a fire igniting the fuel.

The fuel loading in the proposed sale area is consistent with other timbered stands of the same age class in the Molalla Watershed. Two timber fuel models are represented as described in Fire Behavior Field Reference Guide, PMS 436-4; Fuel Model 8 “closed timber litter,” and Fuel Model 10 “timber with litter and understory”. The primary carrier of fire in these two Fuel Models is the litter beneath a timber stand. Fire behavior is described as spread rates ranging from low to moderate and fireline intensities ranging from low to high.

Hazards are low in areas of the proposed sale that are categorized as Fuel Model 8 and low to moderate in areas categorized as Fuel Model 10.

The probability, or risk of ignition, is low for two reasons. The first reason is the lack of natural ignitions (lightning) in the area. The second reason is the lack of human activity (recreation) in the area due to locked gates. As a result, the chance of wildfire is low.

Environmental Effects

3.2.5.1 *Proposed Action*

Where thinning is proposed in the sale area, the fuel model would change from a Fuel Model 8 to Fuel Model 11 (“light logging slash”- 80 percent) and Fuel Model 10 (timber with litter and understory”- 20 percent). The results of the proposed action would increase the hazard (fuel loading increase) from low to moderate for up to 10 years.

The risk of ignition would remain low. The risk of fire damage to the timbered stand (in case of a wild fire) would increase from *low-moderate* to *moderate-high*. Reduction of slash concentrations at landings would reduce fire control problems in case of wildfire and also remove an attractive nuisance.

Air Quality: Smoke produced from burning should have little impact on people because of the distance (approximately 6 miles) between the treatment area and residences, and be only a few hours in duration. In addition, prevailing winds would carry smoke away from populated areas to unpopulated, forest-covered areas.

3.2.5.2 *No Action Alternative*

There would be no effect on air quality or fire risk. The area would remain low risk for fire ignition due to the blocked and gated roads.

3.2.6 Botany

(*Butte Creek Thinning Timber Sale Botany Report pp. 1-12*)

Affected Environment

For a general description of the vegetation, see General Setting (p.19)

Special Status Species: Comprehensive botanical inventory of the proposed project areas were conducted between March and September of 2003 to look for any species that require protection or special management. No T&E or Bureau Special Status botanical species were found during subsequent surveys. There are no known sites of any T&E or Bureau Special Status botanical species within the project area or close vicinity as determined by field surveys and known site data search.

Invasive Species: All of the invasive nonnative plants identified during the field surveys of the proposed project area are common roadside weed species. These weed species are commonly found throughout western Oregon, tending to occupy areas of high light and ground disturbance (i.e. road corridors and fields).

Environmental Effects

3.2.6.1 Proposed Action

Bureau Sensitive, SEIS Special Attention, and Other Species of Concern:

This project would not contribute to the need to list any Special Status Species known or expected to occur in the vicinity of the project area. If SEIS Special Attention Species or Special Status Species are discovered on site, appropriate mitigation would be implemented as described on pages 2-41 and 2-86 of the RMP.

Invasive Species:

Any ground disturbing activity may lead to an increase in the invasive/non-native plant populations in project area. These populations may remain in existence until the treated stands develop closed canopies and shade out the invasive/non-native plants. All known invasive/non-native species from the project area are priority III noxious weeds and are well established and widespread throughout the Cascade Resource Area, Salem District BLM and Western Oregon. Eradication of Priority III noxious weed species is not practical using any proposed treatment methods due to their widespread infestations, though grass seeding exposed soil areas tends to abate the establishment of these species. Adverse effects from invasive/non-native are not anticipated.

3.2.6.2 No Action Alternative

No effect would occur to any Bureau *Sensitive, SEIS Special Attention, and Other Species of Concern*. Invasive nonnative plants would continue to exist and move through existing transportation systems.

3.2.7 Fisheries and Aquatic Habitat

(Butte Creek Thinning Timber Sale Fisheries and Aquatic Habitat Report pp. 1-4)

Affected Environment

Five of the proposed thinning units (Units A, B, C, D & G), all in the Butte Creek watershed, are adjacent to streams that support populations of cutthroat trout. Streams in the project area that do not support fish are mainly headwater channels that are too small and/or too steep to support fish.

Threatened and Endangered Species

Upper Willamette River chinook salmon and Upper Willamette River steelhead trout, both of which are found in Butte Creek and in the Molalla River, are listed as 'threatened' under the Endangered Species Act of 1973 (ESA). No non-ESA listed Special Attention fish Species are known to exist in Butte Creek or in the Molalla River.

Environmental Effects

3.2.7.1 *Proposed Action*

Riparian Reserve widths of one site potential tree height on each side of the stream on the non-fish-bearing first and second order streams adjacent to the proposed units would be adequate to protect the aquatic and riparian resources in streams adjacent to the project area in the Butte Creek watershed. In the Molalla River watershed where some Riparian Reserve thinning would occur along 1st order stream channels, the 50 foot minimum no harvest buffers would protect the aquatic and riparian resources from effects of the proposed thinning.

New roads proposed for construction are expected to have no impact on Riparian Reserves or aquatic habitat due to their stable ridgetop locations with no hydrologic connections or proximity to Riparian Reserves, and no potential to introduce sediment to stream channels. In order to prevent road sediment from entering stream channels as a result of hauling, hauling would be restricted to dry weather conditions when road related runoff is not present.

Threatened and Endangered Species

Upper Willamette River chinook salmon and Upper Willamette River steelhead trout, both of which are found in Butte Creek and in the Mollala River, are listed as ‘threatened’ under the Endangered Species Act of 1973 (ESA). Consultation with NOAA Fisheries is required for projects that “may affect” ESA listed species. A determination has been made that this project would have “no effect” on Upper Willamette River steelhead trout or Upper Willamette River chinook salmon (See Appendix 2, *Determination of Effect for Upper Willamette River steelhead and Upper Willamette River chinook salmon*).

3.2.7.2 *No Action Alternative*

Under the No Action alternative no changes in forest cover, road networks, road condition or riparian or aquatic habitat would occur.

3.2.8 Recreation and Rural Interface

(Butte Creek Thinning Timber Sale Recreation and Rural Interface Report pp. 1-2)

Affected Environment

All of the proposed treatment areas are characterized by a forest setting and are accessed by gravel forest roads. Evidence of man-made modifications such as roads and timber harvest are common on both private and public lands in the general area and are evident around the project area. There are no developed recreation sites in the vicinity of the proposed treatment area and the recreational activities occurring in the general area include camping, hunting, target shooting and off-highway vehicle use. Recreational use of all the proposed project area is relatively low due to the gating or blocking of roads that access this area.

Environmental Effects

3.2.8.1 Proposed Action

After harvest, a forest setting would still be maintained, and understory vegetation disturbed by logging activities would be expected to return within five years or sooner. Recreational use of the proposed treatment areas would be restricted in the short term during the thinning operation.

Cumulative Impacts: The proposed action would contribute towards a slight increase in logging truck traffic along Sawtell and Maple Grove Roads, which have moderate to high levels of use by the public. This would be for the three year duration of the project.

3.2.8.2 No Action Alternative

With the exception of unexpected changes (i.e. wildfire or disease), the proposed treatment areas would continue to provide a forest setting for dispersed recreational activities.

3.2.9 Comparison of Alternatives With Regard to the Purpose and Need

Table 5 : Comparison of Alternative by Purpose and Need

Purpose and Need (EA p. 4)	No Action	Proposed Action
Offer a marketable timber sale	Does not fulfill	Fulfills
Achieve a desirable balance between wood volume production, quality of wood and timber value at harvest	Partially meets wood volume production over course of rotation. Logs at end of rotation would be smaller diameter which generally reduces quality and value compared to thinned stands.	Maintains volume production over the course of the rotation. Lengthens the rotation so that logs at end of rotation would be larger diameter, which increases quantity, quality and value.
Maintain a healthy forest ecosystem with habitat to support plant and animal populations and protect riparian areas and water resources	Retains the one-canopy level stand with only occasional development of a substantial understory of shade intolerant Douglas-fir and a large number of smaller suppressed western hemlock.	Encourages the development of larger diameter trees and creates more diversity within stands.
Accelerate tree growth of larger conifers in Riparian Reserves.	Diameter growth would continue to increase gradually.	Diameter growth would be accelerated for those trees which have nearby trees removed.
Restore or enhance habitat for riparian-dependent species.	Diversity would develop slowly in this one-canopy level, evenly- spaced managed stand.	The variable spacing with openings to accelerate tree regeneration, trees exposed to open growing conditions to develop large limbs, and denser portions along with the creation of snags would accelerate the development of diversity.
Improvement of stand structural and spatial diversity		

Purpose and Need (EA p. 4)	No Action	Proposed Action
Provide appropriate access for timber harvest, silvicultural practices and fire protection.	Main routes would be maintained under either alternative.	Would implement maintenance of feeder roads, allowing improved access for management activities.

3.2.10 Compliance with Components Aquatic Conservation Strategy Objectives

Table 4 shows how the proposed action complies with the four components of the Aquatic Conservation Strategy (1/ Riparian Reserves, 2/ Key Watersheds, 3/ Watershed Analysis and 4/ Watershed Restoration, RMP pp. 5-6)

Table 6 : Compliance of Components of the Aquatic Conservation Strategy Objectives

ACS Component	Project Consistency
Component 1 – Riparian Reserves (RR)	The RR boundaries would be established consistent with direction from the Salem District Resource Management Plan (p. 10). Additionally, maintaining canopy cover along all streams and the wetlands would protect stream bank stability and water temperature.
Component 2 - Key Watershed	The project is located within the Upper Molalla River and Butte Creek/Pudding River watersheds, which are not designated key watersheds.
Component 3 - Watershed Analysis	Units A – G: No Watershed Analysis has been completed. Units H, I, J, K, M: <i>Molalla River Watershed Analysis</i> , May 1999. Unit O: <i>Abiqua/Butte Watershed Analysis</i> , 1995. The project is consistent with the recommendations in the Watershed Analyses.
Component 4 - Watershed Restoration	Increasing stand diversity in Riparian Reserves addresses this component.

This proposal is unlikely to impede and/or prevent attainment of the stream flow and basin hydrology, channel function, or water quality objectives of the Aquatic Conservation Strategy (ACS). Over the long term, this proposal should aid in meeting ACS objectives by speeding the development of older forest characteristics in the riparian zone. See Appendix 1 for a description of effects by ACS objective.

4.0 LIST OF PREPARERS

Table 7: List of Preparers

Resource	Name	Initial	Date
Ecology/ACEC	Barbra Raible	BR	11/10/04
Cultural Resources	Pete Hazen	PH	11-24-04
Hydrology/ Water Quality	Patrick Hawe	WPH	11/10/04
Soils	Wesley Wong	WW	11/10/04
Riparian Ecology / Silviculture	Colin Rabe	CR	11-18-04
Botany TES and Special Attention Plant Species	Terry Fennel	TGF	11/15/04
Wildlife TES and Special Attention Animal Species	Jim Irving	JIF	11/10/04
Fire Ecology / Fuels	Sam Caliva	RLC	11/10/04
Fisheries	Dave Roberts	DAR	11/10/04
Engineering	Steve Ditterick	SD	11/10/04
Recreation Sites and Visual Resources Management and Rural Interface	Laura Dowlan (nee Graves)	LD	11/10/04
NEPA / Plans	Randall L. Herrin	RLH	11/10/04

5.0 CONTACTS AND CONSULTATION

5.1 Agencies, Organizations, and Persons Consulted

5.1.1 ESA Section 7 Consultation

1. US Fish and Wildlife Service

Consultation will be included in the programmatic consultation process on FY 2005 and 2006 habitat modification projects in the Willamette Province. The final *Biological Assessment on Fiscal Year 2005-2006 projects within the Willamette Province which would modify the habitats of the bald eagle and the northern spotted owl* (BA) was submitted to the Fish & Wildlife Service in early September 2004. The Biological Opinion associated with these projects is expected in December of 2004. Overall, this project “may affect, but is not likely to adversely affect” the spotted owl due to the modification of dispersal habitat.

2. NOAA Fisheries (NMFS)

A determination has been made that this project would have “no effect” on Upper Willamette River (UWR) steelhead trout or Upper Willamette River chinook salmon, due to design criteria that include dry conditions hauling on non-paved roads, limited harvest activity within RR (approximately 20 acres), and slopes of less than 35% on more than 88% of the project area. Consultation with NOAA Fisheries is required for projects that

“may affect” ESA listed species, therefore consultation for this project is not necessary. See appendix 2 ESA Determination of Effect to UWR steelhead trout and UWR chinook salmon.

5.1.2 Cultural Resources - Section 106 Consultation and Consultation with State Historical Preservation Office:

Cultural resource surveys were completed, concentrating on the areas most likely to have been used by native peoples and early immigrants. No sites of cultural value were found. Should any sites of cultural value be discovered during implementation of this project, all activity would be suspended. The BLM completed its Section 106 responsibilities under the 1997 National Programmatic Agreement and the 1998 Oregon Protocol in October 2000.

5.2 Public Scoping and Notification.

5.2.1 Tribal Governments, Adjacent Landowners, General Public, and State County and local government offices:

A scoping letter dated July 13, 2004 was sent to 50 potentially affected and/or interested individuals, groups, and agencies. Five letters were received during the scoping period. Our response to these letters is available for review in Appendix 3, Scoping Letter Comments.

5.2.2 30-day public comment period

The EA and FONSI will be made available for public review from December 1, 2004 to December 31, 2004. The notice for public comment will be published in a legal notice by local newspapers of general circulation (Molalla Pioneer); sent to those individuals, organizations, and agencies that have requested to be involved in the environmental planning and decision making processes; and posted on the Internet at <http://www.or.blm.gov/salem/html/planning/index.htm> under Environmental Assessments. Comments received in the Cascades Resource Area Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before December 31, 2004 at 4:00 PM, Pacific Standard Time will be considered in making the final decisions for these projects.

6.0 MAJOR SOURCES AND COMMON ACRONYMS

6.1 Major Sources

Specialists reports can be found in the Butte Creek Analysis file. These reports are available for review at the Salem District Office.

Caliva, S. 2004. *Fuels Management /Fire Ecology Interdisciplinary Team Review*. Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Graves, Laura. 2004. *Butte Creek Timber Sale Visual Resources Report and Butte Creek Timber Sale Recreation and Rural Interface Report*. Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Hawe, Patrick 2004. *Hydrology/Channels/Water Quality: Environmental Assessment for the proposed Butte Creek project*. Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Hazen, Pete W. 2003. *Cultural Resource Inventory Report, Butte Creek Thinning Timber Sale*. Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Fennell, Terry. 2004. *Biological Evaluation for Special Status Plant Species/Survey & Manage Species and Noxious Weeds*. Butte Creek Botanical Species List. Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Irving, Jim. 2004. *Affected Resource: Wildlife FY 2005 Butte Creek*. Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Rabe, Colin. 2004. *Forest Productivity*. Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Roberts, Dave. 2004. *Butte Creek Timber Sale Environmental Assessment Fisheries and Aquatic Habitat*. Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Wong, Wesley. 2004. *Butte Creek Timber Sale Soils Report*. Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

USDA. Forest Service, USDI. Bureau of Land Management. March 2004. *Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl*. Portland, OR (SSSP).

USDA. Forest Service, USDI. Bureau of Land Management. January 2004. *Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines*. Portland, OR. (SSSP/SEIS)

USDA, Forest Service; USDI. Bureau of Land Management. August 2004. *Final Biological Assessment on Fiscal Year 2005-2006 projects within the Willamette Province which would modify the habitats of the bald eagle and the northern spotted owl*

USDA, Forest Service; USDI, Bureau of Land Management. December 2003. *Programmatic Biological Assessment for Activities with the Potential to Disturb Northern Spotted Owls and/or Bald Eagles in the Willamette Province for FY 2004-2005*.

USDA. Forest Service, USDI. Bureau of Land Management. 1994. *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*. Portland, OR. (NWFP)

USDA. Forest Service, USDI. Bureau of Land Management. 1994. *Final Supplemental Environmental Impact Statement Management of Habitat for Late Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*. Portland, OR. (NWFP/SEIS)

USDI. Bureau of Land Management. 2003. *Oregon and Washington Bureau of Land Management Special Status Species Policy*. BLM Instruction Memorandum No. OR-2003-054. Oregon State Office, Portland, OR.

USDI. Bureau of Land Management, USDA. Forest Service. 1999. *Molalla River Watershed Analysis*. Salem District, Cascades Resource Area, Salem, OR. (MWRA)

USDI. Bureau of Land Management. 1995. *Abiqua / Butte Watershed Analysis*.. Salem District, Cascades Resource Area, Salem, OR. (ABWA)

USDI. Bureau of Land Management, USDA. Forest Service; USDA, Natural Resources Conservation Service. 1998. *Riparian Area Management: Process for Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas*. TR 1737-15-98, Denver, CO.

USDI. Bureau of Land Management. 1995. *Salem District Record of Decision and Resource Management Plan*. Salem, OR. (RMP)

USDI. Bureau of Land Management. September 1994. *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*. Salem, OR. (RMP/FEIS).

Table 8: Summary of RMP References

RMP Topic	RMP page #
Air Quality	p. 22
Aquatic Conservation Strategy	pp. 5-7
Best Management Practices	Appendix C pp. C-1 to C-9
Cultural Resources	p. 36
Fire/ Fuels Management	pp. 65-67
Major Land Use Allocations	pp. 7-9
Matrix Land Use Allocation	pp. 20-22
Invasive nonnative plants	p. 64
Recreation	pp. 41-45
Riparian Reserve Land Use Allocation	pp. 9-15
Roads	pp. 62-64
Rural Interface Areas	pp. 39-40
Silvicultural Systems and Harvest Methods	Appendix D pp. D-1 to D-6
Special Forest Products	pp. 49-50
Special Status and SEIS Special Attention Species and Habitat –amended March 2004- see SSSP	pp. 29-33; Appendix B-1 pp. B-1-1 to B-1-7; Appendix B-2 pp. B-2-1 to B-2-2
Timber Resources	pp. 46-48
Visual Resources	pp. 36-37
Water and Soils	pp. 22-24
Wild and Scenic Rivers	pp. 37-38
Wildlife Habitat	pp. 24-26
Wilderness	pp. 38-39

6.2 Common Acronyms

ACS – Aquatic Conservation Strategy
BCAF – Butte Creek Timber Sale NEPA/EA Analysis File
BLM – Bureau of Land Management
BMP – Best Management Practice(s)
BSS – Bureau Sensitive Species
BO – Biological Opinion
BRNO – *Bridgeoporus nobilissimus*
CWD – Coarse Woody Debris
DBH – Diameter Breast Height
DF – Douglas-fir
EA - Environmental Assessment
ESA – Endangered Species Act
FONSI – Finding of No Significant Impact
GFMA – General Forest Management Area land use allocation (Matrix)
LSRA – Late Successional Reserve Assessment (1996)
LWD – Large Woody Debris
NEPA – National Environmental Policy Act (1969)
NOAA – National Oceanic Atmospheric Administration (National Marine Fisheries Service (NMFS) is now called NOAA Fisheries)
NWFP – *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Related Species within the Range of the Northern Spotted Owl* (1994) (Northwest Forest Plan)
ODFW – Oregon Department of Fish and Wildlife
RMP – *Salem District Record of Decision and Resource Management Plan* (1995)
RMPFEIS – *Salem District Proposed Resource Management Plan / Final Environmental Impact Statement* (1994)
ROS – Rain-on-snow
ROW – Right-of-Way (roads)
RR – Riparian Reserves (land use allocation)
SPZ – Stream Protection Zone (no-cut protection zone/no-cut buffer/no-treatment zone/stream buffer)
USDI – United States Department of the Interior
USFWS – United States Fish and Wildlife Service
WH – western hemlock

7.0 APPENDICES

7.0

7.1 Appendix 1: Aquatic Conservation Strategy Objectives Review Summary (RMP pages 5-6) for the Butte Creek Timber Sale

ACS Objectives	Remarks
<p>1. Maintain and restore distribution, diversity, and complexity of watershed and landscape features to ensure protection of aquatic systems.</p> <p><i>Both the Action and No Action Alternatives do not retard or prevent the attainment of ACS objective 1</i></p>	<p>No Action Alternative: The No Action alternative would maintain the development of the existing vegetation and associated stand structure at its present rate. The current distribution, diversity and complexity of watershed and landscape-scale features would be maintained.</p> <p>Action Alternative: The proposed variable thinning including denser portions of the Riparian Reserves would result in forest stands that exhibit attributes typically associated with stands of a more advanced age and stand structural development (larger trees, a more developed understory, and an increase in the number, size and quality of snags and down logs). Since Riparian Reserves provide travel corridors and resources for aquatic, riparian dependent and other late-successional associated plants and animals, the increased structural and plant diversity would ensure protection of aquatic systems by maintaining and restoring the distribution, diversity and complexity of watershed and landscape features.</p>
<p>2. Maintain and restore spatial connectivity between watersheds.</p> <p><i>Both the Action and No Action Alternatives do not retard or prevent the attainment of ACS objective 2</i></p>	<p>No Action Alternative: The No Action alternative would have little effect on connectivity except in the long term within the watershed.</p> <p>Action Alternative: Long term connectivity of terrestrial watershed features would be improved by enhancing conditions for stand structure development. In time, these reserves would improve in functioning as refugia for late successional, aquatic and riparian associated and dependent species. Both terrestrial and aquatic connectivity would be maintained, and over the long-term, as Riparian Reserves develop late successional characteristics, lateral, longitudinal and drainage connectivity would be restored.</p>
<p>3. Maintain and restore physical integrity of the aquatic system including shorelines, banks and bottom configurations.</p> <p><i>Both the Action and No Action Alternatives do not retard or prevent the attainment of ACS objective 3</i></p>	<p>No Action Alternative: It is assumed that the current condition of physical integrity would be maintained.</p> <p>Action Alternative: This proposal is unlikely to alter the current condition of channels in the project area and some improvement is expected over the long term.</p>
<p>4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.</p> <p><i>Both the Action and No Action Alternatives do not retard or prevent the attainment of ACS objective 4.</i></p>	<p>No Action Alternative: It is assumed that the current condition of the water quality would be maintained.</p> <p>Action Alternative: No entry buffers in Riparian Reserves would be maintained (minimum of 50 feet in treatment areas and from 180 to 220 feet in untreated areas). The proposed roads are on ridgetop or midslope locations with no hydrologic connections or proximity to streams or riparian areas. As a result, it is unlikely that this proposal would lead to a measurable change in water quality, including increases in sediment delivery to streams, stream turbidity, stream temperatures or dissolved oxygen levels, or the alteration of stream substrate composition, or sediment transport regime in project area streams.</p>

ACS Objectives	Remarks
<p>5. Maintain and restore the sediment regime under which the system evolved.</p> <p><i>Both the Action and No Action Alternatives do not retard or prevent the attainment of ACS objective 5.</i></p>	<p>No Action Alternative: It is assumed that the current levels of sediment into streams would be maintained.</p> <p>Action Alternative: No entry buffers in Riparian Reserves would be maintained (minimum of 50 feet in treatment areas and from 180 to 220 feet in untreated areas). Dry season hauling from unpaved roads would minimize sediment delivery. As a result, it is unlikely that this proposal would lead to a measurable change in sediment regime, including increases in sediment delivery to streams, stream turbidity, or the alteration of stream substrate composition or sediment transport regime.</p>
<p>6. Maintain and restore in-stream flows.</p> <p><i>Both the Action and No Action Alternatives do not retard or prevent the attainment of ACS objective 6.</i></p>	<p>No Action Alternative: No change in in-streams flows would be anticipated.</p> <p>Action Alternative: A preliminary analysis for the risk of increases in peak flow as a result of forest harvest was conducted using the Oregon Watershed Assessment Manual watershed analysis methods for forest hydrology (OWEB, 1997). Because the proposed project would remove less than half the existing forest cover, it is unlikely to produce any measurable effect on stream flows. Within riparian zones, substantial portions of the riparian canopy would be retained, therefore maintaining riparian microclimate conditions and protecting streams from increases in temperature.</p>
<p>7. Maintain and restore the timing, variability, and duration of flood plain inundation and water table elevation in meadows and wetlands.</p> <p><i>Both the Action and No Action Alternatives do not retard or prevent the attainment of ACS objective 7.</i></p>	<p>No Action Alternative: The current condition of flood plains and their ability to sustain inundation and the water table elevations in meadows and wetlands is expected to be maintained.</p> <p>Action Alternative: There would be no alteration of any stream channel, wetland or pond morphological feature. All operations, equipment and disturbances are kept a minimum of 50 feet from all wetlands and stream channels. Thus, the current condition of floodplain inundation and water tables would be maintained.</p>
<p>8. Maintain and restore the species composition and structural diversity of plant communities in riparian zones and wetlands to provide thermal regulation, nutrient filtering, and appropriate rates of bank erosion, channel migration and CWD accumulations.</p> <p><i>Both the Action and No Action Alternatives do not retard or prevent the attainment of ACS objective 8.</i></p>	<p>No Action Alternative: The current species composition and structural diversity of plant communities would continue along the current trajectory. Diversification would occur over a longer period of time.</p> <p>Action Alternative: The proposed action would have no adverse effects on species composition and structural diversity of plant communities in riparian areas and wetlands due no treatment buffers varying from a minimum of 50 feet in treatment areas, to the full Riparian Reserve in no treatment areas. The Riparian Reserve treatments outside of these 50 foot buffers would help to restore species composition by allowing more understory development and structural diversity by creating horizontal and vertical variations that are currently lacking in the riparian treatment areas.</p>
<p>9. Maintain and restore habitats to support well-distributed populations of native plant, invertebrate, and vertebrate riparian dependent species.</p> <p><i>Both the Action and No Action Alternatives do not retard or prevent the attainment of ACS objective 9.</i></p>	<p>No Action Alternative: Habitats would be maintained over the short-term and continue to develop over the long-term with no known impacts on species currently present.</p> <p>Action Alternative: The proposed action would have no adverse effect on riparian dependent species. Although thinning activities may affect invertebrates within the treatment areas, adjacent non-thinned areas should provide adequate refugia for the species. In the long term, the treatments would restore elements of structural diversity to treatment areas in Riparian Reserves. These attributes would help to provide resources currently lacking or of low quality, and over the long-term, would benefit both aquatic and terrestrial species.</p>

7.2 Appendix 2: ESA Determination of Effect for Upper Willamette River steelhead trout and Upper Willamette River chinook salmon for Butte Creek Thinning

Water Quality

Temperature

Temperature in all streams would be maintained by minimum no-harvest buffers of 50 feet along all stream channels adjacent to thinning units in the Molalla River watershed, with full retention of Riparian Reserves (RR) along all of the streams in the Butte Creek watershed. Where RR thinning occurs cut tree selection would be designed to prevent any decreases in stream shading.

Sediment/turbidity

The following project design criteria and site conditions are expected to prevent any increase in sediment input to stream channels or any increase in stream turbidity:

- Thinning only proposal, with average post-project leave tree densities of 72 trees per acre throughout the project area.
- Limited harvest activity within RR (approximately 20 acres), with no activity within 50 feet of any perennial stream channels.
- All roads proposed for construction are on stable ridgetop locations with no hydrologic connections or proximity to Riparian Reserves and no potential to introduce sediment to stream channels.
- Predominantly dry season timber hauling. Any wet season hauling would be restricted to dry weather conditions when road related runoff is not present.

Chemical contamination/nutrients

No activities associated with the project would increase chemical or nutrient inputs except a low probability event such as an accidental spill or vehicle accident.

Habitat Access

Physical Barriers

No barriers to fish migration would result from the project.

Habitat Elements

Large Woody Debris

In the Butte Creek watershed (Units A-G), the project would have no effect on LWD recruitment potential because no RR thinning would occur. In the Molalla River watershed (Units H-M), the limited RR thinning is likely to increase the growth rate of the leave trees within the RR, although the 1st order stream channels (mostly ephemeral) adjacent to the thinning units would not have the capability to transport LWD downstream. Therefore, the RR thinning would have no effect on LWD loading levels or recruitment potential in habitat occupied by ESA listed fish species.

Substrate
 Pool Frequency
 Pool Quality
 Off-channel Habitat

No project activities would be sufficiently close to stream channels or create enough disturbance to affect any of the above instream habitat elements in any streams within the project area or downstream of the project area.

Channel Conditions and Dynamics

Width/depth ratio
 Streambank Condition
 Floodplain Connectivity

No project activities would be sufficiently close to stream channels or create enough disturbance to affect any of the above channel conditions on stream channels within the project area or downstream of the project area.

Flow/Hydrology

Peak/base Flows

A preliminary analysis for the risk of increases in peak flow as a result of forest harvest was conducted using the Oregon Watershed Assessment Manual watershed analysis methods for forest hydrology (OWEB, 1997). The four sixth field watersheds that encompass the project area were analyzed separately using a weighting system based on the dominant precipitation type (rain, transient snow zone - TSZ, snow), and the percent of the area with crown closure <30%. The table below displays the results.

6th field Watershed Name	Crown Closure in Rain on Snow (ROS) Areas	Percent of Watershed in ROS Areas	Percent of ROS area with <30% Current Crown Closure	Peak-Flow Enhancement Risk
Trout Creek	50-70%	56%	15% (1,312 acres of 8,749 in TSZ)	Low
Middle Butte Creek	50-70%	27%	39% (1,520 acres of 3,927 in TSZ)	Low
Pine Creek	50-70%	63%	32% (4,729 acres of 14,971 in TSZ)	Low
Upper Butte Creek	50-70%	65%	15% (1,866 acres of 12,230 in TSZ)	Low

Risk of peak flow enhancement was determined by plotting the percent area in ROS vs. the percent area in ROS with crown closure <30% on a graph published in the assessment manual (Page IV-11, Figure 3). This assessment indicates that the four sixth field watersheds are currently at low risk for enhancement of peak flows. The effects on stream flow of the proposed action would likely be too small to measure and would be inconsequential in relation to the flow regime in any of the project watersheds.

For a detailed analysis of the potential effects of the project on peak/base flows see the Hydrology section (EA section 3.2.2) of the Environmental Assessment.

Drainage Network Increase

There would be no changes in the drainage network as a result of the project since there would be no road construction that would contribute increasing the drainage network. The road segments proposed for construction are on stable ridgetop locations and have no stream crossings or hydrologic connections.

Watershed Conditions

Road Density & Location

The project would result in a slight increase in road density. The proposed new roads are in stable, ridgetop locations and would not contribute to any degradation of aquatic habitat.

Disturbance History

The project would not result in an increased level of disturbance. Post-project stand densities would average 72 trees per acre (tpa); no potentially disturbing activities would occur in unstable areas or refugia for sensitive aquatic species.

Riparian Reserves

Only about 20 acres of RR thinning are proposed, with no harvest activity within 50 feet of any perennial stream channels. The RR thinning is expected to enhance forest habitat conditions by increasing the growth rates of leave trees and enhancing vegetation diversity and structure.

The project is expected to have 'no effect' on any of the factors evaluated above, other than a slight increase in watershed road density by construction of 900 feet of natural surface road and approximately 7,150 feet of permanent, rock surfaced road. The project is expected to have 'no effect' on Upper Willamette River chinook salmon or Upper Willamette River steelhead trout.

The project is also expected to have 'no effect' on Essential Fish Habitat as defined in the Magnuson-Stevens Act.

7.3 Appendix 3: Special Status / Special Attention Wildlife Species

Occurrence/ Effect	SPECIES & STATUS	HABITAT DESCRIPTION
INVERTEBRATES		NONE
HERPETOFAUNA		
P	RHYACOTRITON CASCADAE BA/SV Cascade torrent salamander	Prefers small cold streams and springs with water seeping through moss-covered gravel. Most common in mature and old-growth conifer forests below 4000 feet.
D – 27 sites	BATRACHOSEPS WRIGHTI BS/SU Oregon slender salamander	West slope of Cascades in Oregon. Prefers down logs and woody material in more advanced stages of decay. Most common in mature and old-growth conifer forests.
P	ASCAPHUS TRUEI BA/SV tailed frog	Cold, fast-flowing permanent springs and streams in forested areas.
S	RANA AURORA BA/SU red-legged frog	Common in marshes, ponds, and streams with little or no flow, from the valley floor to about 3000 feet in the Cascades. Populations in the Willamette Valley are of greater concern than Cascades populations.
BIRDS		
P	ACCIPITER GENTILIS BS/SC northern goshawk	Rare Summer resident in Cascades. Prefers mature or old-growth forests with dense canopy cover at higher elevations. Winters at lower elevations.
P	HALIAEETUS LEUCOCEPHALUS LT/ST bald eagle	No documented sightings within the project area.
P may-affect (habitat)	STRIX OCCIDENTALIS CAURINA LT/ST northern spotted owl	Prefers mature and old-growth conifer forests with large down logs, standing snags in various stages of decay, high canopy closure and a high degree of vertical stand structure.
S	CHORDEILES MINOR BS/SC common nighthawk (Willamette Valley)	Open habitats from the valley floor to high elevation clearcuts. Breeding populations of are concern, especially in the Willamette Valley.
MAMMALS		
P	ARBORIMUS LONGICAUDUS SM Red tree vole	This arboreal vole prefers mid to late seral forests with closed canopies. There are no know sites.

KEY

Status:

LE = Federal endangered **LT** = Federal Threatened **BS** = Bureau Sensitive **BA** = Bureau Assessment
BT = Bureau Tracking **FS**=Forest Service Sensitive **SM**=ROD Survey and Manage **B**=ROD Buffer or extra protection species
SE = State Endangered **ST** = State Threatened **SC** = State Critical **SV** = State Vulnerable
SU = State Uncertain **SP** = State Peripheral

Occurrence:

D=Documented
S=Suspected, likely occurs
P=Possible, but not likely

7.4 Appendix 4: Scoping Letter Comments

In compliance with NEPA, the project has appeared in the *Salem District Project Update* since October 2003 and in editions since then, which were mailed to over 1,000 addresses. A scoping letter dated July 13, 2004 was sent to 50 potentially affected and/or interested individuals, groups, and agencies. – Five letters were received during the scoping period. These letters are available for inspection in the project development file at the Salem District office. The following concerns were raised as a result of scoping:

Please define Commercial Thinning.

Commercial Thinning is defined in the Salem District Proposed Resource Management Plan / Final Environmental Impact Statement, Volume I, Chapter 6-2 as: The removal of merchantable trees from an even-aged stand to encourage growth of the remaining trees.

I am concerned if the proposed thinning will increased the amount of water coming off the hill.

This subject is addressed in-depth in the Hydrology report, the full text of which is available in the Butte Creek NEPA/EA Analysis File. Long-term, measurable effects to watershed hydrology, channel morphology, and water quality as a result of the proposed action are unlikely. Short-term, localized increases in stream sediment may occur as a result of harvest and road construction and use. However, these are unlikely to be measurable and would likely be insignificant relative to overall sediment yields in the watershed. Tree removal and road renovation and construction would not occur on steep, unstable slopes where the potential for mass wasting adjacent to stream reaches is high. Therefore, increases in sediment delivery to streams due to mass wasting are unlikely to result from this action. In addition, potential impacts resulting from tree harvest and road construction/renovation would be mitigated to reduce the potential for measurable sediment delivery to streams, by implementing Best Management Practices such as stream side buffers, minimum roads widths, minimal excavation, ensuring appropriate drainage from road sites, etc. Because the proposed project would remove less than half the existing forest cover, it is unlikely to produce any measurable effect on stream flows.

Please include a complete listing of animals and plants, locations of wetlands (how they are to be protected), the impacts on the creek itself (eg., sedimentation and temperature), potential for creating landsliding, alteration of groundwater levels, pollution of groundwater and effects of roads.

The wildlife, fisheries and botany sections of the NEPA/EA Analysis File discuss the resident species native to the project area. Listings of all of the resident species are not included, although Special Status Species are listed. It is important to realize that through the proposed action, we are not managing specific species of plant or animal (other than the trees being thinned) it is the habitat that is being manipulated and therefore it is the impacts to that habitat upon which the EA focuses. Streams and wetlands are described in the hydrology section of the EA and Analysis File as well as protections and impacts. Erosion potential and effects of roads on soils are described in the soils section of the EA and Analysis File as well as protection and impacts. Impacts to groundwater have been analyzed and are documented in the Analysis File. The proposed action is unlikely to affect the flow, quantity or quality of watershed groundwater.

Please have an archaeologist perform a cultural resource survey of the area where new roads will be going through. In the areas of the proposed thinning please perform a pre-thin surface survey as well as a post thin surface survey.

Cultural Surveys were conducted on the proposed thinning area in May of 2003, and are documented in the Butte Creek NEPA/EA Analysis File. No cultural resources were identified in addition to the known evidence of historic logging. Post harvest surveys have been included as a design feature of the project.