ENVIRONMENTAL ASSESSMENT

For the

MIDDLE FORK FIRE SALVAGE TIMBER SALE
(EA# OR080-07-06)

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
SALEM DISTRICT
CASCADES RESOURCE AREA

MARCH 2007

BLM
Salem District

As the Nation's principal conservation agency, the Department of Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering economic use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U. S. administration.

BLM/OR/WA/GI-07/026-1792

Dear Reader:

The Middle Fork Fire burned 1,170 acres in September 2006, including 280 acres of BLM administered land. The proposed project will salvage dead and dying timber from 34 acres of Bureau of Land Management lands burned in the Middle Fork Fire. Harvest will be by means of cable (23 acres) and ground based (11 acres) logging systems. There will be 0.22 miles of new temporary road construction and 7.81 miles of renovation of existing rocked and bituminous (paved) surfaced roads.

Public involvement for the Middle Fork Fire Salvage Timber Sale began in October 2006 with scoping letters sent to landowners near or adjacent to BLM parcels within the Middle Fork Fire area, to federal, state, and county agencies, and to private organizations and individuals that requested information concerning projects of this type. Personal discussions and comment letters provided public input to BLM for consideration in this Environmental Assessment (EA).

We appreciate your taking the time to review this EA. If you would like to provide us with written comments regarding this project or EA, please send them to me at 1717 Fabry Road S., Salem, Oregon 97306.

Comments, including names and addresses of respondents, will be available for public review. If you would like to comment confidentially, you may request that your name and address be withheld from public review or disclosure under the Freedom of Information Act. Such requests would be honored to the extent allowed by law. All submissions from organizations or officials of organizations or businesses will be made available for public inspection in their entirety.

I look forward to your continued interest in the management of our public lands.

Rudy Hefter
Field Manager, Acting
Cascades Resource Area

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
SALEM DISTRICT

RESOURCE AREA: *Cascades* EA # OR080-07-06

ACTION/TITLE: *Middle Fork Fire Salvage Timber Sale*

LOCATION: T12S, R3E, Section 15, 21, 27 & 28; Linn County

FOR FURTHER INFORMATION CONTACT: Rudy Hefter, Acting Field Manager
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TABLE OF CONTENTS

FINDING OF NO SIGNIFICANT IMPACT ..... *vii*

1.0 INTRODUCTION *1*

1.1 Summary of the Proposed Project **1**

1.2 Purpose of and Need for Action **1**

1.3 Conformance with Land Use Plan, Statutes, Regulations, and other Plans **2**

1.4 Results of Public Scoping **4**

2.0 PROPOSED ACTION AND ALTERNATIVES *5*

2.1 Alternative 1 - No Action **5**

2.2 Alternative 2 – Proposed Action **5**

2.3 Project Design Features **8**

2.4 Alternatives Considered Yet Not Analyzed in Detail **10**

3.0 ENVIRONMENTAL EFFECTS *12*

3.1 Identification of Affected Elements of the Environment **12**

3.2 Cumulative Effects Analysis in this EA **14**

3.3 Vegetation **15**

3.4 Soils **17**

3.5 Hydrology **19**

3.6 Fisheries **26**

3.7 Botanical Resources **28**

3.8 Wildlife **30**

3.9 Fire and Fuels **40**

3.10 Visual Resources **43**

3.11 Cultural Resources **44**

4.0 CONTACTS AND CONSULTATION *45*

4.1 Public Scoping and Notification **45**

4.2 Consultation **45**

5.0 PROJECT MAPS *47*

5.1 Burn Severity Map **47**

5.2 Proposed Action Map **47**

5.3 Road Construction / Improvement Map **47**

6.0 References *48*

List of Tables

Table 1: *Treatment Table* 6
Table 2: *Fuels Treatments* 7
Table 3: *Road Work* 8
Table 4: *Seasonal Operating Restrictions* 9
Table 5: *Review of Critical Elements of the Environment (BLM H-1790-1, Appendix 5)* 12
Table 6: *Review of Other Elements of the Environment* 13
Table 7: *Planned BLM Timber Harvest* 15
Table 8: *Summary of Special Habitats, Remnants, And Coarse Woody Debris (CWD) Present By Project Area* 30
Table 9: *Minimum Number Of Snags (Per 100 Acres) Necessary to Support Species Of Cavity Nesting Birds At 40 Percent Of Potential Population Levels (RMP P. 21, As Per Neitro Et Al, 1985)* 31
Table 10: *Unit Acres, Critical Habitat Acres, Land Use Allocations, Pre-Burn, Post Burn And Post Treatment Spotted Owl Habitat Types, And Proposed Treatments* 32
Table 11: *Acres by VRM Class* 43

FINDING OF NO SIGNIFICANT IMPACT

Introduction

The Bureau of Land Management (**BLM**) has conducted an environmental analysis (Environmental Assessment Number OR080-07-06) for proposal to implement Middle Fork Fire Salvage project located on BLM lands within Township 12 South, Range 3 East, Sections 15, 21, 27 and 28, Willamette Meridian (*EA Section 1.1*).

Middle Fork Salvage is a proposal to salvage dead and dying timber from 34 acres of Bureau of Land Management lands within the boundaries of the September 2006 Middle Fork Fire. Three units, totaling 27 acres, will be either regeneration or patch cut and two units, totaling 7 acres will be partial cut. Harvest will be by means of cable (23 acres) and ground based (11 acres) logging systems. There will be 0.22 miles of new temporary road construction and 7.81 miles of renovation of existing rocked and bituminous surfaced roads.

The Middle Fork Fire Salvage 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 determination (**FONSI**). The analysis in this EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (**RMP/FEIS**). The proposed project has been designed to conform to the *Salem District Record of Decision and Resource Management Plan***,** May 1995 (**RMP**) and related documents which direct and provide the legal framework for these projects (*EA Section 1.3*).

The EA and FONSI will be made available for public review ***March 14, 2007*** to ***March 30, 2007***. Copies of the EA are also available upon request by calling Randy Herrin, project leader, at (503) 375-5646. The notice for public comment will be published in a legal notice by the *Albany Democrat Herald* newspaper. Written comments should be addressed to Rudy Hefter, Acting Field Manager, Cascades Resource Area, 1717 Fabry Road S., Salem, Oregon 97306.

Finding of No Significant Impact

Based upon review of the Middle Fork Salvage EA and supporting documents, I have determined that the proposed project 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.

There are no significant impacts not already adequately analyzed, or no significant impacts beyond those already analyzed, in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS) to which this environmental assessment is tiered. Therefore, supplemental or additional information to the analysis in the RMP/FEIS in the form of a new environmental impact statement (**EIS**) is not needed. This finding is based on the following discussion:

Context: Potential effects resulting from the implementation of the proposed project has been analyzed within the context of the Quartzville Creek 5th field watersheds, and the project area boundary. The proposed project would occur on approximately 34 acres of BLM land; encompassing approximately 0.04 % of this Watershed [40 CFR 1508.27(a)] (*EA section 3.2.1*).

Intensity:

1. The proposed project is unlikely to a have significant adverse impacts, as described in paragraph 1, on the affected elements of the environment [40 CFR 1508.27(b) (1)] (*EA section 3.1*) for the following reasons:
    - Project design features described in *EA section 2.3* would reduce the risk of effects to affected resources to be within RMP standards and guidelines and to be within the effects described in the RMP/EIS.
    - ***Vegetation*** (*EA section 3.3*): 1/ Due to the intensity of the fire in the areas where salvage will occur, understory vegetation was heavily impacted. Shrub and herb layer species as well as suitable habitat for many of these species was totally eliminated in most of the salvage area. Other species such as bryophytes and lichens and their habitat were also greatly reduced or eliminated. 2/ No suitable habitat for any Survey and Manage or BLM Special Status species is known or likely to be present within the salvage area. Therefore, the project would not contribute to the need to list any BLM Special Status species. 3/ The long term effects of the timber salvage would produce healthy ecological functions such as nutrient cycling and species diversity and would greatly decrease the risk of insect and disease outbreaks. 4/ Invasive/Nonnative Species –Seeding with native species on soil exposed as a result of the salvage operation would occur to reduce population increase of invasive/nonnative species identified in the salvage area. No greater increase in the invasive/nonnative species identified during field surveys is expected to occur as a result of the proposed salvage over that which would occur naturally. Due to the fire intensity and the amount of bare soil that now exist in the burned area, a natural increase in the invasive/nonnative species will likely occur regardless of which alternative is chosen. Machinery used in the salvage operation would be cleaned and free of off site contaminants to prevent the introduction and spread of invasive/nonnative species.
    - ***Soils, Hydrology, and Fisheries*** (*EA sections 3.4—3.6*): All new road construction would occur outside of riparian reserves on low to moderate slopes with stable surfaces emanating from the existing road network. Within the harvest units there would be "full leave" riparian reserves, which mean that no harvest would take place within the Riparian Reserve land use allocation. The "full leave riparian" reserves have high surface roughness which functions to trap any overland flow and sediment before reaching streams. There would be no change in shade within the primary and secondary shade zones. Soil Compaction is limited to no more that 10% of each unit's acreage. Timber haul and road work (including culvert replacement) would take place during the dry season.
    - ***Wildlife*** *(EA section 3.8)*: The proposed action would not result in significant effects because: 1/ Six to eight snags per acre and coarse woody debris (CWD) would be largely retained, with a minor degree of loss anticipated as a result of falling and yarding operations, and safety considerations. 2/ No suitable habitat for any "Survey and Manage" and BLM Special Status species known or likely to be present would be lost. Therefore, the project would not contribute to the need to list any BLM Special Status species. 3/ The project would not significantly change species richness (a combination of species diversity and abundance) of the Migratory and Resident Bird community.

No species would be become extirpated in stands as a result of the project, though some less common species would be likely to enter stands immediately in response to reduced canopy closure and tree density. 4/ See # 6, for effects to northern spotted owl.

- ***Visual Resources*** (*EA section 3.10*)***:*** The small size and terrain position of Units C and D and the size, location and partial cut prescription for units A2 and A3 make it unlikely that any of these units would be visible from view points along the Quartzville Creek Road or Greenpeter Reservoir. Unit A1 will be visible but the proposed action of removing fire killed trees would tend to blend with the adjacent private lands, making the entire ridge top more uniform in appearance.
- ***Fire and Fuels*** (*EA section 3.9*)***:*** The proposed fuel treatments would lower the surface fuel loads left from logging and the fire to reduce the potential risk from new fire starts or high intensity fires spreading rapidly. Reducing fuel loads also results in more efficient and quicker fire suppression in the future, less risk for fire fighters and less resource damage Any pile burning would occur under smoke management guidelines, so air quality would not be affected. Reducing the fuels would reduce the amount of smoke in the event of wildfires reoccurring in the project area.

2. The Middle Fork Fire Salvage project would not affect:
   - Public health or safety [40 CFR 1508.27(b)(2)];
   - Unique characteristics of the geographic area [40 CFR 1508.27(b)(3)] - 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 section 3.1*);
   - Districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places, nor would the proposed projects cause loss or destruction of significant scientific, cultural, or historical resources [40 CFR 1508.27(b)(8)] (*EA sections 3.1, 3.11*).

3. The proposed project is not unique or unusual. The BLM has experience implementing salvage timber sales in 50-65 year old timber stands without highly controversial effects [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)] The proposed project would not retard or prevent the attainment of the ACS objectives (*EA section 3.1*). No hazardous materials or solid waste would be created in the sale area. There would be no reduction in the amount of late-successional forest habitat on federal forestlands (RMP p. 22) (*EA sections 3.3.1, 3.8.3*).

5. The interdisciplinary team evaluated the proposed 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 (*EA sections 3.2 – 3.8*.). The Middle Fork Fire Salvage project contributes to cumulative effects to the following resources:
   - Water and Fisheries Resource:
     - Sediment: The risk of short term (during the action and the first winter following) increases in stream turbidity as a result of road repair, fire trail rehabilitation and hauling may contribute to increased turbidity levels directly below road/stream intersections. These would be maintained below the limits required by the Oregon State DEQ.

Cumulatively the limited magnitude (not visible more than 800 meters downstream of the crossing) and duration (primarily in the first winter following road repairs) of this effect would be non-detectable on the scale of the seventh field watershed and would be unlikely to have any effect on any designated beneficial uses. (*EA section 3.5*)

6. This project is not expected to have significant effects to Endangered or Threatened Species or habitat under the Endangered Species Act (ESA) of 1973 [40 CFR 1508.27(b) (9)].

No threatened or endangered plants or animals were observed in the project area.

Northern spotted owl: A preliminary letter describing the magnitude of the fire and the scope of potential salvage plans was submitted to the Willamette Province Level I Team on October 26, 2006. On February 15, 2007, the draft Biological Assessment for the Middle Fork Fire Salvage Project was presented to the Willamette Province level I Consultation Team. U.S. Fish and Wildlife Service (USFWS) concurred with the preliminary effect determination that the proposed salvage may affect, but is not likely to adversely affect, the spotted owl and critical habitat. The final Biological Assessment for the proposed salvage was submitted for Informal Consultation with U.S. Fish and Wildlife Service (USFWS) on March 6, 2007. A letter of Concurrence is expected in April 2007.

The project would not have significant effects to northern spotted owls because 1/ No known spotted owls would be affected by salvage or connected actions, and there are no known spotted owl sites within the provincial home range radius of the fire perimeter 2/ There would be no effect on suitable habitat and removal of dead or dying trees would not affect the dispersal capabilities of seven acres of dispersal habitat; 3/ The proposed action would not limit or delay the ability of critical habitat in the salvage units and the fire perimeter to reach suitable habitat conditions in the future. The proposed salvage and connected actions will incorporate all applicable Management Standards set forth in the Letter of Concurrence. See *EA section 3.8*.

Fish: The only ESA listed fish species that may be present in the project watershed is Upper Willamette River (UWR) chinook salmon. Since 2004 the ODFW has been experimentally planting pre-smolt spring chinook salmon in Quartzville Creek and the Middle Santiam River. A determination has been made that the proposed action would have "no effect" on UWR chinook salmon. Therefore, consultation with NOAA Fisheries on the potential effects of the project on UWR chinook salmon would not be required. Potential effects of the salvage activities and connected actions on the listed fish species would be related to sediment inputs to streams associated with road construction/decommissioning, culvert replacement/removal and timber hauling, as well as water temperature increases associated with removal of riparian vegetation.

The selected action incorporates very little road construction (0.2 mile, none within Riparian Reserves) or decommissioning and no existing culvert replacement or removal. The retention of full Riparian Reserves on all streams will prevent any decrease in stream shade that could result in an increase in stream temperature. Timber hauling on unpaved roads would be restricted to periods of dry road conditions. In addition, streams in the vicinity of the project area flow into Green Peter Reservoir where any potential effects of degraded water quality in the project area streams would be quickly diluted. The determination of "no effect" is based on the factors stated above that would prevent increases in sediment inputs or temperature in Quartzville Creek (EA Section 3.6.3).

7. The proposed 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)]. The alternatives are consistent with other Federal agency and State of Oregon land use plans County land use plan and zoning ordinances. Any permit requirements associated with the implementation of this project would be obtained and complied with. Project design features would assure that potential impacts to water quality would be in compliance with the State of Oregon In-stream Water Quality Standards and thus the Clean Water Act (*EA section 3.5.3*). Additionally, the proposed projects are consistent with applicable land management plans, policies, and programs (*EA section 1.3*).

Prepared by: Randall L. Herrin — March 13, 2007
Randy Herrin — Date

Reviewed by: Carolyn Sands — March 13, 2007
Carolyn Sands, NEPA — Date

Approved by: Rudy Hefler — 3/13/07
Rudy Hefler, Acting Field Manager — Date
Cascades Resource Area

1.0 INTRODUCTION

1.1 Summary of the Proposed Project

This project would salvage dead and dying timber from 34 acres of Bureau of Land Management lands within the boundaries of the September 2006 Middle Fork Fire. Three units, totaling 27 acres, will be either regeneration or patch cut and two units, totaling 7 acres will be partial cut. Harvest will be by means of cable (23 acres) and ground based (11 acres) logging systems. There will be 0.22 miles of new temporary road construction and 7.81miles of renovation of existing road.

The project area is in the Quartzville Creek 5th field watershed, approximately fourteen miles northeast of Sweethome, Oregon, and three miles northeast of Green Peter Dam in T12S, R3E, Sections 15, 21, 27 and 28. Project area maps are in section 5 of this document.

1.2 Purpose of and Need for Action

The Middle Fork Fire burned 1,170 acres in September 2006, including approximately 280 acres of BLM lands in the Quartzville Creek watershed, with an estimated 77 acres burned in the moderate to severe category with nearly 100 % mortality. The balance of the area experienced a lower intensity fire resulting in individual tree and small patch mortality. Up to 3.5 million board feet of timber on BLM land were killed in the fire. Following the fire, an interdisciplinary BLM team analyzed the impacted lands and developed a plan to salvage timber where appropriate.

The purpose and need of the proposed action is to

- *'Provide for salvage harvest of timber killed or damaged by events such as wildfire, windstorms, insects, or disease, consistent with management objectives for other resources'* (RMP p. 46) (see EA section 1.3, bullet 1),
- Recover some economic value from burned timber,
- Expedite stand recovery, and
- Provide sufficient standing and down wood for habitat needs and protection of soil and water.

1.2.1 Decision Criteria/Project Objectives

The Cascades Resource Area Field Manager will use the following criteria/ objectives in selecting the alternative to be implemented. The field manager would select the alternative that would best meet these criteria. The selected action would:

- Meet the purpose and need of the project (EA section 1.2)
- Comply with the *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP) and related documents which direct and provide the legal framework for management of BLM lands within the Salem District (EA section 1.3)
- Would not have significant impact on the affected elements of the environment beyond those already anticipated and addressed in the RMP EIS.
- Harvest fire-killed merchantable timber and dying trees (see EA sections 2.2.1), in a timely manner
- Be responsive to concerns for an economically efficient project.
- Accelerate forest regeneration and promotes stand diversity
- Ensure adequate amounts of snags and down wood for habitat diversity

- Use the minimum transportation system to facilitate implementation of the project.
- Minimize erosion and impacts to soil productivity
- Reduce fuel hazard
- Would not contribute to the expansion of invasive/nonnative weed populations.

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

The following documents direct and provide the legal framework for *Middle Fork Fire Salvage Project.*

1. *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP): The RMP has been reviewed and it has been determined that proposed action conforms to 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). The proposed project is within the Matrix Land Use Allocation (LUA) as described in the RMP, pp. 8 and 20-21. Connected action such as road work is within the Matrix and Riparian Reserve LUAs as described in the RMP, pp. 8, 9-11, and 20-21. Portions of the project area are also within designated Critical Habitat for the Northern Spotted Owl.

   Implementing the RMP is the reason for doing this project (RMP p.1-6, 46). This project would contribute to the Salem District's timber harvest commitment on matrix lands by salvage harvesting approximately 0.75 to 2 million board feet of timber. The requirement to produce forest commodities was further emphasized in the settlement agreement between the forest industry and federal land management agencies (Douglas Timber Operators, et al. v. Secretary of Agriculture, et al., Civil No. 01-6378-AA (D. Oregon)) which identified matrix and O&C land as the primary land allocations for forest commodity production. The O&C Act requires the BLM to manage O&C lands for permanent forest production on a sustained yield basis while protecting watersheds, and manage in accordance with other environmental laws (RMP p. 2).

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 (the Northwest Forest Plan, or NWFP);
3. *Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines* January, 2001(SM/ROD)*;* and *Implementation of 2003 Survey and Manage Annual Species Review,* December 2003;
4. *Record of Decision Amending Resource Management Plans for Seven Bureau of Land Management Districts and Land and Resource Management Plans for Nineteen National Forests within the Range of the Northern Spotted Owl, Decision to Clarify Provisions Relating to the Aquatic Conservation Strategy,* March 2004 (ACSROD).

The analysis in the Middle Fork Fire Salvage EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS). The RMP/FEIS includes the analysis from the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl,* February 1994 (**NWFP/FSEIS**).

The RMP/FEIS is amended by the *Final Supplemental Environmental Impact Statement for Survey and Manage, Protection Buffers, and Other Mitigation Measures in the Northwest Forest Plan,* November 2000 (**SM/FSEIS**)*;* and the *Final Supplemental Environmental Impact Statement, Clarification of Language in the 1994 Record of Decision for the Northwest Forest Plan National Forests and Bureau of Land Management Districts Within the Range of the Northern Spotted Owl,* October 2003 (**ACS/FSEIS**).

The following documents provided additional direction in the development of proposed action:
1. *Quartzville Creek Watershed Analysis* (September 2002)
2. *Middle Fork Fire Salvage Biological Assessment* (March 2007)

All of the above documents are available for review in the Salem District Office. Additional information about the proposed activities is available in the Middle Fork Fire Salvage EA Analysis File, also available at the Salem District Office.

Northern Spotted Owl (NSO) Status Review:

The following information was considered in the analysis of the proposed action: a/ *Scientific Evaluation of the Status of the Northern Spotted Owl* (Sustainable Ecosystems Institute, Courtney *et al.* 2004); b/*Status and Trends in Demography of Northern Spotted Owls, 1985-2003* (Anthony *et al.* 2004); c/ *Northern Spotted Owl Five Year Review: Summary and Evaluation* (USFWS, November 2004); and *Northwest Forest Plan – The First Ten Years (1994-2003):* d/ *Status and trend of northern spotted owl populations and habitat, PNW Station Edit Draft* (Lint, Technical Coordinator, 2005). To summarize these reports, although the agencies anticipated a decline of NSO populations under land and resource management plans during the past decade, the reports identified greater than expected NSO population declines in Washington and northern portions of Oregon, and more stationary populations in southern Oregon and northern California.

The reports did not find a direct correlation between habitat conditions and changes in NSO populations, and they were inconclusive as to the cause of the declines. Lag effects from prior harvest of suitable habitat, competition with Barred Owls, and habitat loss due to wildfire were identified as current threats; West Nile Virus and Sudden Oak Death were identified as potential new threats. Complex interactions are likely among the various factors. This information has not been found to be in conflict with the NWFP or the RMP *(Evaluation of the Salem District Resource Management Plan Relative to Four Northern Spotted Owl Reports, September 6, 2005).*

Survey and Manage Species Review

The Bureau of Land Management (BLM) is aware of the August 1, 2005, U.S. District Court order in Northwest Ecosystem Alliance et al. v. Rey et al. which found portions of the *Final Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines* (January, 2004) (EIS) inadequate. Subsequently in that case, on January 9, 2006, the Court ordered:

- set aside the 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* (March, 2004) (2004 ROD) and
- reinstate the 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measure Standards and Guidelines* (January, 2001) (2001 ROD), including any amendments or modifications in effect as of March 21, 2004. The BLM is also aware of the November 6, 2006, Ninth Circuit Court opinion in Klamath-Siskiyou Wildlands Center et al. v. Boody et al., No. 06-35214 (CV 03-3124, District of Oregon).

In Northwest Ecosystem Alliance et al. v. Rey et al the U.S. District Court modified its order on October 11, 2006, amending paragraph three of the January 9, 2006 injunction. This most recent order directs:

"Defendants shall not authorize, allow, or permit to continue any logging or other ground-disturbing activities on projects to which the 2004 ROD applied unless such activities are in compliance with the 2001 ROD (as the 2001 ROD was amended or modified as of March 21, 2004), except that this order will not apply to:

a. Thinning projects in stands younger than 80 years old;
b. Replacing culverts on roads that are in use and part of the road system, and removing culverts if the road is temporary or to be decommissioned;
c. Riparian and stream improvement projects where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement large wood, channel and floodplain reconstruction, or removal of channel diversions; and
d. The portions of project involving hazardous fuel treatments where prescribed fire is applied. Any portion of a hazardous fuel treatment project involving commercial logging will remain subject to the survey and management requirements except for thinning of stands younger than 80 years old under subparagraph a. of this paragraph."

Units A-2, and A-3 of the Middle Fork Fire Salvage Project meets **Criterion A** above: Thinning projects in stands younger than 80 years old. Units A-1, C and D involve salvage of severely burned areas that have experienced a stand replacement fire, and thus are currently young stands. Furthermore, the salvage units contain no suitable habitat for any Survey and Manage Species due to the fire.

1.4 Results of Public Scoping

This project first appeared in the September 2006 edition of the quarterly Salem District Project Update, which was mailed to over 1,000 addresses. During the public scoping process, approximately 35 letters were sent to interested groups and individuals as well as to those who own land or live near the project area. In response, two scoping letters were received. One writer urged the removal of all dead and dying trees, which was considered in an alternative described in Section 2.4.1 of this EA. The other expressed concern over potential impacts due to salvage harvest and recommended letting the "fire-burned areas recover naturally". This is analyzed in the No Action Alternative, Section 2.1.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Alternative 1 - No Action

The no action alternative is defined as not implementing the proposed action and also serves as a baseline for evaluating the environmental effects of the action alternatives.

In the no action alternative, existing post-fire conditions would be maintained, timber killed in the Middle Fork Fire would not be salvaged, only natural tree/stand decay processes would occur (trees would fall and decompose but would not be harvested), and post-fire levels of coarse wood would remain unchanged.

2.2 Alternative 2 – Proposed Action

2.2.1 Salvage Harvest Fire-Killed Timber and Dying Trees

The proposed action is to cut and remove merchantable dead and dying trees burned in the Middle Fork fire. For this proposal, dead and dying trees are generally those where more than fifty percent of the cambium has been killed and/or where a high proportion of the crown is scorched and buds are killed. The following criteria would be used to determine the trees to be harvested:

- Trees with signs of high fire intensity at the base of the tree - heavy fuel that burned a long time probably means the cambium is dead.
- Thickness of the bark - Thinned bark trees will die, thick barked ones may survive.
- All hemlocks and hardwoods where the fire has scorched the entire circumference of the bole
- All hemlocks where the exposed roots are black from the fire.
- All trees where the live crown ratio is less than twenty percent.
- Any other tree, where in the judgment of the marker, the tree will die within three years. (Silv Report p. 5, 9)

Units proposed for salvage harvest are shown in Table 1, Treatment Table. No salvage harvest would occur in riparian reserves. An average of 6 live green trees and/or snags/acre would be left standing for wildlife and future sources of down wood. Trees expected to survive more than three years post-fire would not be harvested, unless they're located in cable corridors. Fire severity in Section 15 was so extreme that large tracts experienced 100% tree kill. In Sections 21, 27 and 28, fire behavior was such that some individual trees and patches inside the fire lines were killed but most trees are expected to survive (See Map 5.1, Burn Severity).

Table 1: *Treatment Table*

T-R-Sec-Treatment Area	Acres	Plant Series	Land Allocation	Treatment	Tractor (acres)	Cable (acres)	Harvest Volume (mbf)	Tree Plant (acres)
12-3-15 Unit A1	23	WH[1]	Matrix GFMA	Regen salvage harvest, tree plant	0	23	805	23
12-3-15 Unit A2	5	WH	Matrix GFMA	Partial Cut salvage harvest	5	0	50	
12-3-15 Unit A3	2	WH	Matrix GFMA	Partial Cut salvage harvest	2	0	20	
12-3-27 Unit C	3	WH	Matrix Connectivity	Patch Cut salvage harvest	3	0	105	3
12-3-27 Unit D	1	WH	Matrix Connectivity	Patch Cut salvage harvest	1	0	35	1
TOTAL	**34**				**11**	**23**	**1,015**	**27**

A "regen" or regeneration harvest, as used in this context, is similar to a clear cut except that wildlife trees, legacy trees and snags are left in place. The term stems from the fact that the unit will be left in a condition for a new stand of trees to be regenerated after harvest operations. A Partial Cut harvest is one in which only some of the trees in the unit would be removed. In this case, only the dead and dying trees would be removed and the remaining live trees would still be present. A Patch Cut is similar to a regen harvest, but much smaller in size. Patch cuts typically are the size of naturally occurring openings within a forest stand, one to five acres.

2.2.2 Fuel Hazard Reduction

The proposed action is to reduce activity fuels in the proposed units following harvest and other areas within the perimeter with high accumulations from the fire. Areas that have a fuel bed consistent with fuel models 11 and 12 – light and medium logging slash (flame lengths >4') would be treated to reduce the fuel model to 8 – closed timber (flame lengths <4'). Fuel hazard reduction would be balanced with the ecological need to retain some woody material on site for soil stability and hillslope roughness. The method of treatment would be selected based on the amount of fuels left from the fire or logging and/or location of the site (access, topography, private property boundary). For example, the steeper slopes in Unit A1 would have minimal fuel treatment, hand piling of small fuels accumulations and no removal of larger fuels from the slope.

Machine/Hand Piling And Burning. Wood 1-6" in diameter and longer than 2' would be hand or machine piled. The piles would be covered and burned during the wet weather in the fall or winter. Piles would be located to minimize heat damage to tree crowns or tree boles. An operational variation of the more typical slash hand piling and burning would be to add woody material by hand to a burning pile, and keep adding to the burning pile until the material is cleaned up within a workable radius around the burning pile. This method is known as "swamper burning". Burning of piles would be done in accordance with "The Oregon Smoke Management Plan".

[1] WH = western hemlock

Generally speaking, piles would be burned when the surrounding vegetation and activity fuels would not support active burning at the close of a protracted east wind event. This would usually occur after November 1st of any given year.

Mechanical Treatment. Wood less than six inches in diameter and longer than two feet would be mechanically masticated (ground or chipped) and scattered. No burning would occur. This treatment would only occur on slopes less than 36% and using equipment that did not result in overall project compaction over 10% of the area. Any machine treatments (piling or mastication) would only occur during dry soil conditions.

Slashing. A post harvest assessment would determine the need for cutting (followed by hand piling/burning) fire killed unmerchantable conifer and hardwood stems 1-8"dbh. Slashing is expected to be minimal because most of the stems in these size classes were consumed in the wildfire and are already on the ground.

The following table shows the units and proposed surface treatments to reduce future fire risk.

Table 2: *Fuels Treatments*

Unit	Unit Acres	Primary treatment	Slash treatment acres	2nd Treatment or option to primary
A1	23	Machine/hand pile and burn	4	Mechanical treatment
		Leave most in place on the steep slopes – Lop and Scatter	19	Hand pile
A2	5	Machine/hand pile and burn	5	Mechanical treatment
A3	2	Machine/hand pile and burn	2	Mechanical treatment
C	3	Machine/hand pile and burn	3	Mechanical treatment
D	1	Machine/hand pile and burn	1	Mechanical treatment
Along property boundary within fire perimeter		Large fuels left Hand pile accumulations of finer fuels	50	Mechanical treatment of accumulations
Total			**74**	

2.2.3 Young Stand/Forest Development

Conifer seedlings would be planted in units 1A, C and D, as needed according to BLM standards in the year following salvage logging. Units would be planted with a mixture of Douglas-fir, noble fir, sugar pine, western white pine and western red cedar, which are all naturally occurring species within this watershed.

2.2.4 Roads

New roads would be constructed, as shown in Table 3, below and on the Road Construction / Improvement Map, 5.3. These spur roads would be decommissioned (water barred, blocked, seeded or mulched) in the same operating season. Two roads that had been closed and were reopened during the Middle Fork Fire suppression effort would be used to facilitate harvest of timber and would then be

closed. The stream crossing on road 12-3E-15.1 (one of the existing closed roads that was reopened while fighting the fire) will be improved by installing a culvert. After operations have been completed this road will be blocked.

Table 3: *Road Work*

Roads					
Road Name	Activity	Temp/Perm	Surface Type	Miles	Feet
A-1, A-2	New Const.	Temporary	Natural Surface	0.17	905
A-3	Renovation	Temporary	Rocked	0.30	1,584
A-4	Renovation	Temporary	Rocked	0.40	2,112
C-1	New Const.	Temporary	Natural Surface	0.02	120
C-2	New Const.	Temporary	Natural Surface	0.03	180
Boulder Creek	Renovation	Permanent	Bituminous (paved)	3.67	19,378
Boulder Creek	Renovation	Permanent	Rocked	3.44	18,163
Sub-Total	New Const.	Temporary	Natural Surface	0.22	1,205
Sub-Total	Renovation	Permanent	Rocked/ Bituminous	7.81	41,237

2.3 Project Design Features

Project design features (PDFs) are included in the proposed action for the purpose of reducing anticipated adverse environmental impacts which might stem from project implementation.

2.3.1 Reserve Trees

The following trees would be reserved from harvest.

- All un-merchantable dead, down and dying trees for future coarse woody debris.
- All old growth trees.
- All Douglas-fir with twenty percent or greater live crown ratio. These will probably survive and grow.

2.3.2 Logging Systems

To reduce ground disturbance and soil compaction, logs would be suspended at one end and skidded only on approved trails. Existing skid trails and tractor fire trails would be used when possible. Tractors would be restricted to slopes less than 36%. Tractors would not be used when soil moisture is high, typically between November 1 and May 1.

Skid roads would be water barred after use and blocked where they intersect haul roads.

Where possible, cable yarding corridors would be located away from draws, and would be hand water barred as needed to avoid channeling of water. Corridor location would avoid surviving green trees and leave snags to the extent possible. Woody debris may be hand placed on corridors to reduce surface erosion. All landings, including fill slopes, would be located away from headwalls and draw bottoms and adjacent draw side slopes.

2.3.3 Road Construction, Decommissioning and Use

Road construction, decommissioning and use of natural surface roads would be limited to periods of dry soil conditions to minimize surface runoff and potential erosion. Waterbars would be constructed to minimize surface runoff and potential erosion.

All new road construction will be decommissioned following salvage operations. This will include removal of culverts, and stabilization of fills and seeding. Two existing roads, which were reopened during fire suppression and would be used to facilitate salvage of timber, would be blocked to vehicular traffic upon completion of operations. All newly disturbed areas associated with road and landing construction would be seeded with a locally adapted mix of native species seed.

Hauling on unpaved roads would be restricted to weather conditions that would not contribute to erosion or sedimentation of streams.

2.3.4 Seasonal Operating Restrictions

Table 4: *Seasonal Operating Restrictions*

Seasonal Operating Restrictions			
Location	**Restricted Activities**	**Restricted Dates**	**Reasons / Comments**
Entire project area	Road Construction, Yarding, log hauling and machine piling.	Nov. 1-May 1	Erosion control. (Dates may vary depending on weather, road surface, drainage, and soil moisture.)
Partial Cut Areas	Falling and Yarding	March 1 – July 15	Bark Slippage (may be waived if damage to residual trees mitigated)
Unit A1, A2, A3	All activities.	February 1 – July 31	Falcon nesting. (may be waived depending on results of occupancy surveys.)

2.3.5 Riparian Reserves

Riparian areas would be buffered with 400' no-harvest zones (200' each side). Where roads, skid trails and tractor fire trails exist within Riparian Reserves, they may be used for harvesting fire killed and dying trees that are outside of Riparian Reserves. Following harvest any skid trails and tractor fire trails within the Riparian Reserves that were used to harvest timber would be rehabilitated (surface scarified, waterbarred, berms pulled in, seeded with native seed)

2.3.6 Noxious Weeds

The BLM portions of the burned area would be surveyed for noxious weeds for up to three years (beginning in 2007). All populations would be documented and treated in accordance with the Salem District Integrated Weed Management Plan and the RMP (p. 64). Treated populations would be monitored for at least 3 years.

Oregon Certified blue wild rye (Elymus glaucus) or other approved native seed from the Cascade eco-region of Oregon would be used where seeding takes place for noxious weed abatement or erosion control

Ground disturbing equipment would be cleaned prior to moving onto BLM lands or when moving from known noxious weed areas into weed-free areas.

2.3.7 Wildlife

Existing large down wood (= 20“) would be retained to the greatest extent possible.

Within or adjacent to regeneration or patch cut units, an average of 8 snags, and/or green trees, per acre greater than 16” dbh would be retained. Trees selected for leave would generally be in the larger size classes, and would be those which are the most likely to survive falling and yarding operations. All existing old growth remnant trees would be left. See also, EA section 2.3.1 - Reserve Trees.

2.3.8 Cultural Resources

Surveys revealed no cultural resource sites in the project area. If any cultural sites are found during project implementation, activities around the site would halt until a BLM archaeologist reviewed the site and determined appropriate protection measures. Sites would be buffered against project activities and trees would be felled away from buffers.

2.4 Alternatives Considered Yet Not Analyzed in Detail

2.4.1 Harvest All Areas with Fire Caused Tree Mortality

We initially considered implementing Regeneration harvesting all areas where there was a high tree mortality and partial cutting all other areas with lower mortality. This proposal would have resulted in 77 acres of regeneration harvest and 200 acres of partial cuts generating approximately 4 MMBF. This proposal was rejected because 1) several areas were considered unsuitable for harvesting because of steep slopes, and 2) much of the underburned area had very low amounts of fire killed timber.

2.4.2 Helicopter Yarding

Helicopter Yarding was considered for some areas in lieu of road construction. Most of these areas, however were dropped from consideration as unsuitable for harvest because of low volume per acre of fire killed timber.

2.4.3 Salvage within Riparian Reserve

Salvage of fire killed trees within the Riparian Reserves was also contemplated. To be consistent with the RMP, salvage within Riparian Reserves would be required to meet the Aquatic Conservation Strategy. The IDT felt that, although the Riparian Reserves and ACS would be benefited by a thinning, the numbers of trees killed by the fire did not rise to the level needed to be removed to reduce stand densities to a level where sufficient sunlight would reach the forest floor to stimulate regrowth of a understory of forest conifers. Consequently, the IDT recommended that the affected Riparian Reserves, as well as the fire areas containing the most Riparian Reserve, not be treated now, but be considered for a future commercial thinning.

3.0 ENVIRONMENTAL EFFECTS

3.1 Identification of Affected Elements of the Environment

The interdisciplinary team reviewed the elements of the human environment, required by law, regulation, Executive Order and policy, to determine if they would be affected by the Proposed Action. *Table 5* (Critical Elements of the Environment) and *Table 6* (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 5: *Review of Critical Elements of the Environment (BLM H-1790-1, Appendix 5)*

Critical Elements Of The Environment		***Status: (i.e., Not Present , Not Affected, or Affected)***	***Does this project contribute to cumulative effects? Yes/No***	***Remarks***
Air Quality (Clean Air Act)		Not Affected	No	Addressed in Text, *EA section 3.9.3*
Areas of Critical Environmental Concern		Not Present	No	
Cultural Resources		Not Affected	No	All of the proposed units have been surveyed for cultural resources. No cultural resources were found. Addressed in text *EA section 3.11*.
Energy (Executive Order 13212), Adverse Impacts		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.
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 (Executive Order 11988)		Not Present	No	
Hazardous or Solid Wastes		Not Present	No	
Invasive, Nonnative Species (plants) (Executive Order 13112)		Not Affected	No	Addressed in Text, *EA section 3.7.*
Native American Religious Concerns		Not Affected	No	None were identified during the scoping process
Threatened or Endangered (T/E) Species or Habitat Threatened or Endangered (T/E) Species or Habitat	Fish	Not Affected	No	Addressed in Text, *EA sections 3.6.3*
	Plant	Not Present	No	
	Wildlife - Bald Eagle	Not Affected	No	Addressed in Text, *EA section 3.8.3*
	Wildlife - Northern spotted owl (NSO)	**NSO Critical Habitat Affected**	**No**	**Project is in Critical Habitat CHU OR-14. No LSR or core areas would be affected Addressed in Text, *EA section 3.8.3***
		NSO Affected	**No**	NSO affected. No suitable habitat would be affected. **Addressed in Text, EA section 3.8.3**

Critical Elements Of The Environment	*Status: (i.e., Not Present , Not Affected, or Affected)*	*Does this project contribute to cumulative effects? Yes/No*	*Remarks*
Water Quality (Surface and Ground)	**Affected**	**yes**	**Addressed in Text, EA sections 3.5.3**
Wetlands/Riparian Zones (Executive Order 11990)	Not Affected	No	Addressed in Text, EA sections 3.5.3
Wild and Scenic Rivers	Not Present	No	
Wilderness	Not Present	No	

Table 6: *Review of Other Elements of the Environment*

Other Elements of the Environment		*Status: (i.e., Not Present , Not Affected, or Affected)*	*Does this project contribute to cumulative effects? Yes/No*	*Remarks*
Fire Hazard/Risk		**Affected**	**No**	**Addressed in Text, *EA section 3.9.3*.**
Other Fish Species with Bureau Status and Essential Fish Habitat (EFH)		EFH – Not Affected	No	See EA Section 3.6.3
Land Uses (right-of-ways, permits, etc)		Not Affected	No	
Late Successional and Old Growth Habitat		Not Present	No	No old growth or late successional stands are present within the project area.
Mineral Resources		Not Present		
Recreation		Not Present	No	
Rural Interface Areas		Not Present	No	
Soils		**Affected**	**No**	**Addressed in Text, *EA section 3.4.3*.**
Special Areas outside ACECs (Within or Adjacent) (RMP pp. 33-35)		Not Present	No	
Other Special Status Species / Habitat	Plants	Not Affected	No	Addressed in Text, *EA section 3.7.1*
	Wildlife	**Affected**	**No**	**Addressed in Text, *EA section 3.8***
Visual Resources		**Affected**	**No**	**Addressed in Text, *EA section 3.10.3***
Water Resources – Other (303d listed streams, DEQ 319 assessment, Downstream Beneficial Uses; water quantity, Key watershed, Municipal and Domestic)		Not Affected	No	Addressed in Text, *EA section 3.5.3*
Wildlife Structural or Habitat Components - Other (Snags/CWD/ Special Habitats**)**		**Snags/CWD Affected**	**No**	**Addressed in Text, *EA sections 3.8.3***

The affected elements of the environment will be discussed by the following resources in EA section 3.3 – 3.11: Vegetation, Soils, Hydrology, Fisheries, Botanical Resources, Wildlife, Fire and Fuels, Visual Resources, and Cultural Resources

Table 6a shows compliance with the four components of the Aquatic Conservation Strategy for all Action alternatives (1/ Riparian Reserves, 2/ Key Watersheds, 3/ Watershed Analysis and 4/ Watershed Restoration).

Table 6a: *Compliance of Components of the Aquatic Conservation Strategy*

ACS Component	***Project Consistency***
Component 1 - Riparian Reserves	Maintaining canopy cover along all streams and the wetlands would protect stream bank stability and water temperature. For project units in all watersheds, Riparian Reserve boundaries would be established consistent with direction from the *Salem District Resource Management Plan* (p. 10). No new road construction or timber salvage would occur within RMP Riparian Reserves. See EA Section 2.3.5
Component 2 - Key Watershed	There are no key watersheds in the proposed project area. No new permanent roads are proposed within the project area. Riparian Reserve management direction has been incorporated in the design of thinning units in the project area (RMP p. 7).
Component 3 - Watershed Analysis	*Quartzville Watershed Analysis*, (September, 2002)
Component 4 - Watershed Restoration	Reducing the amount of fire killed timber in the project area, treating the residual fuels and planting seedlings would be expected to result in long-term restoration of a coniferous forest.

3.2 Cumulative Effects Analysis in this EA

Current conditions in the project area result from a multitude of natural events and human actions that have taken place over decades. Cumulative effects are defined as the, "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions" (40 CFR § 1508.7).

A description of current conditions inherently includes the effects of past actions and serves as a more accurate and useful starting point for a cumulative effects analysis than by "adding up" the effects of individual past actions. "Generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions." (CEQ Memorandum *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis* June 24, 2005.)

Cataloguing past projects (other than the ones mentioned below) and their individual effects would not be useful in discerning the contribution of the incremental impact of the project's action alternatives. However, cataloguing and analyzing other present and reasonably foreseeable actions relevant to the effects of the proposed action *is* necessary and is described below. By comparing the "no action" alternative (current condition) to the action alternative, we can discern the cumulative impact resulting from adding the incremental impact of the proposed action to the current environmental conditions and trends. Scoping for this project did not identify a need to exhaustively list individual past actions or analyze their environmental effects in order to fully analyze the effects, including cumulative, of this project's action alternatives.

The following overview provides a context in which to analyze the effects of the Middle Fork Fire Salvage project. A statistical summary of the watershed and the future foreseeable actions provides a 'big picture' look at the watershed, puts the project into perspective, and allows for comparison of the action alternative with the no action alternative (existing conditions).

3.2.1 Environmental History

The Middle Fork Fire Salvage project area is in the 95,468-acre Quartzville 5th field watershed which drains into the Middle Santiam River. Thirty-two percent of the watershed is managed by BLM, 28% is private, 36% is Forest Service, 4% is U. S. Army Corps of Engineers, and 14 acres (less than 1%) are managed by the state of Oregon. The Quartzville Watershed Analysis (2002) describes the events that contributed to the current condition such as early hunting/gathering by aboriginal inhabitants, mining, road building, agriculture and water diversions, wildfire, and timber harvest.

Late seral (= 80 years old) forests comprise 60 percent of the federal ownership in the watershed. We can infer then, that commercial harvest or stand replacement fire has occurred on 40% of the Federal lands in the watershed since 1926. The earliest harvests have been regenerated and are progressing towards providing mature forest structure. Most of the private industrial lands have been and will continue to be moved from mid condition class to the early condition class.

The majority of the private lands within the fire perimeter have been salvage logged or are in the process of being salvaged as of the date of this EA. Alternative 2 proposes salvage logging on 34 BLM acres (3% of the fire area and less than 0.04% of the total watershed). Foreseeable harvest on BLM land in the watershed is listed in Table 7. Private industrial landowners are expected to continue with a similar harvest rotation as has occurred in the watershed since the 1940s.

Table 7: *Planned BLM Timber Harvest*

Planned BLM Timber Harvest (2006-2011)		
Project Name	**Planned Harvest Treatments**	**Acres**
South M & M (Sold July 2004)	Commercial thin –helicopter	33
	Commercial thin –tractor/cable	124
	Commercial thin –cable	50
	Right-of-way	4
	TOTAL	**211**

3.3 Vegetation

3.3.1 Affected Environment

Stand History:

The old growth Douglas fir, western hemlock and western red cedar in units A2 and A3 was logged between 1943 and 1946. The area was re-logged in 1948-1949. Most of this logging heavily impacted the area and left tractor trails that are still evident. There is some evidence that the logging slash was burned following the logging. Units A1, C and D have no recorded history of logging.

The Middle Fork Fire occurred on September 1, 2006 and burned hot in the areas of units A1, C and D, killing most of the trees. The areas encompassing units A2 and A3 received a lighter underburn which killed only the smaller Douglas-firs and the thin barked species such as western hemlock and red alder.

Stand Structure:
Unit A1 was an even-aged stand about 65 years old that consists of mostly western hemlock with some scattered Douglas-fir. There are also some scattered patches of old growth Dougals-fir. The younger trees probably originated following an earlier wildfire. Most of the hemlocks are dead and the smaller crowned Douglas-fir are dying. Some are beginning to fall over. Most of the patches of old growth survived. There is almost no coarse woody debris on the ground. All of the small material and any understory brush and herbs were consumed by the fire.

Units C and D averaged approximately 65 years old. The stand has been modified over time through natural events such as fire and disease. Within the current stand, crowns are closed with little light reaching the forest floor. There are few large snags and little coarse woody debris. The pre-fire understory vegetation was mostly killed and consumed by the fire along with any seedlings or saplings.

Units A2 and A3 consist of an even-aged stand of mixed Douglas-fir and western hemlock about 50 years old. The stand is of natural origin following the original logging. Most of the hemlock and the smaller crowned Douglas-fir are dead or dying. These dead and dying are generally scattered with some small clumps where all trees are dead. The residual live trees are mostly Douglas-fir and compose about half of the original stand. There are large down logs throughout these units because the original logging left large cull logs behind. Understory trees and brush have been consumed by the fire leaving the forest floor relatively clean.

Forest Health:
Most of the hemlocks that appear green are dead or dying because they have thin bark and their roots were exposed to the heat of the fire. The smaller Douglas-fir with smaller crowns that now appear green are predicted to die within 3 years. The surviving trees will probably be under stress for a few years and may be susceptible to bark beetles. In addition, there is evidence found of *Phellinus weirii* root disease pockets. (See Entomology report in the Middle Fork Fire Salvage Project file.)

3.3.2 Environmental Effects: Alternative 1 - No Action

Leaving the dead and dying trees will allow them to fall gradually over time, leaving substantially more down wood. This could lead to a potential fire hazard and re-burn. The amount of light reaching the forest floor would be similar to the proposed action and a similar quantity of pioneer species will become established. There would be no yarding roads to create additional seed beds and to cause possible damage to residual trees. Nutrient cycling and species diversity may take longer in time to produce if no treatment were to be done.

3.3.3 Environmental Effects: Alternative 2 - Proposed Action

Salvaging dead trees will remove most of the dead wood. The fire created ideal seed beds for pioneer species and the yarding roads will create more seed beds. More light reaching the forest floor will allow seedlings and re-sprouting herbs and shrubs to become established. Planting conifer trees in Units A1, C1 & C2 will provide a future overstory. The new growth would provide vertical and horizontal structure diversity in the stands.

Reserve trees will continue to grow in diameter, height and crown ratio at an accelerated rate. Some damage can be expected to the residual trees from the logging operation. Scraping of bark and damage to roots can be expected in or near yarding roads. A few damaged trees is considered desirable as this will allow decay to begin and will be potential future cavity nesting habitat.

The long term effects of the treatment would produce healthy ecological functions such as nutrient cycling and species diversity and would decrease the risk of insect and disease outbreak and reduce fuel build up.

Cumulative Effects

In most cases the cumulative effects to vegetation is in the context of wildlife habitat, hydrology or other resources. Cumulative effects can be found in those sections of the document.

3.4 Soils

3.4.1 Affected Environment

The soils within the fire area on BLM lands are loamy soils with a high infiltration rate due to a higher rock content. Rocky Top is aptly named.
The steep slopes below Rocky Top have small to very large boulders which have moved downhill by gravity, possibly during previous fires. The soils on these steep slopes and the top have up to 60% coarse rock fragments, but there are deeper soils in depressions where soils collect and decomposition of organic matter stays onsite.

The fire on BLM lands burned in a mosaic pattern of low to high severity. The soil was impacted in different ways throughout the fire area. The areas to be harvested had the greatest intensity of fire and therefore, the greatest severity in fire effects to the soils. As heat is transferred downward into and through the soil, it raises the temperature of the soil. The greatest increase in temperature occurs at, or near, the soil surface. Within short distances downward in the soil, however, the temperature increases quickly diminish so that within 2.0 to 3.9 inches (5 to 10 cm) of the soil surface the temperatures are scarcely above ambient temperature. Residence time of the fire (the duration of heating) is a particularly important feature of fires, affecting the depth and magnitude of soil heating (Neary, etal., 2005). When the fire was rapidly spreading up a slope, soil damage was minimal, although 90% of the smaller hemlocks died from the radiant heat and crown fire. In other areas, the moisture in the woody herbaceous layer (~90%) reduced the severity so that soils were only slightly impacted. In areas of high burn severity, very little or no litter/duff remains. Severely burned soils result in increased runoff and erosion, and may exhibit hydrophobicity (DeBano 1989). The creation of this *water repellency* in soils involves both physical and chemical processes. The magnitude of change in soil physical properties depends on the temperature threshold of the soil properties and the severity of the fire. The greatest change in soil physical properties occurs when smoldering fires burn for long periods.

Field reconnaissance of Middle Fork project units following intense rainfall in November 2006 found no overland flow and erosion within the severly burned areas or on dozer fire trails. Needles, leaves and small branches litter the forest floor within the BLM ground. This fine debris reduces the impact of raindrops. There was no sign of hydrophobic soils.

3.4.2 Environmental Effects: Alternative 1 - No Action

Productivity in the high burn severity areas would likely be reduced over the next 5-15 years due to loss of organic matter, volatilization of nutrients, and reduced microbial activity. In some areas, short term productivity may increase due to added nutrient availability from rapid decomposition. In moderately burned areas, soil nutrients and microbial populations have declined but to a lesser degree than in severely burned areas. These effects would diminish over time as the areas revegetate, organic matter falls on the forest floor, and decomposition rates and beneficial soil microbial activity return.

The areas with the most potential for erosion are the very steep slopes (60+) and cliffs below Rocky Top. On the neighboring private land steep slopes which are now black with no vegetation, there is little erosion after the heavy rains of Nov. and Dec. 2006. Only one small scale slump (6'x6') was noted. This area will be left with the standing dead trees which will eventually fall and create pockets of organic material and soil and then vegetation. Young seral stands will develop slowly. All impacts will be naturally occurring.

3.4.3 Environmental Effects: Alternative 2 – Proposed Action

Soil Compaction:
Ground based harvest would occur on areas which do not contain any drainage features. Existing skid roads or fire trails would be used with limited use of new skid trails. New temporary roads, total 0.22 miles long would be constructed from existing roads compacting less than 0.8% of the total acres. Any fuel treatments using ground equipment would be limited to areas near property lines and outside riparian reserves, compacting less than 5% of the total burned area (300+ ac.).

Erosion:
The soils in the areas to be treated have high infiltration rates with low erosion potential. No hydrophobic soils have been observed, thus no overland flows are expected to occur. Tractor yarding and cable corridors can increase the risk for surface erosion in the short term, but this would be minimized in cable corridors, skid roads, and temporary skid roads through project design features.

After the second year following fire, vegetation growth, including expedited revegetation due to tree planting and the release of nitrogen, and associated development of soil organics would decrease potential erosion.

Productivity:
Soil displacement and compaction can reduce important microbial activity, nutrients, and soil organics (Amaranthus 1996) and impede ecological recovery in burned landscapes (Beschta 2004). As stated above, compaction would be very limited, occurring on a fraction of the landscape (less than one-percent of the fire area, and less than 1/100th of the watershed). Erosion would also be minimal to none (see discussion above).

Within the landscape the high severity burn areas that are being treated are small in size: therefore, soil displacement and compaction from the project would not measurably reduce microbial populations or soil organics across the project area compared to existing, fire-related impacts. Further, project design features would maintain all large down wood and some logging debris on site to provide soil nutrient sources. While the project design includes handpile/burn/mechanical mulching of any large patches of fuels within the units and fire perimeter to reduce short term fire hazard risk, some of the smaller woody debris would be retained to provide soil cover, roughness, and future nutrients. Therefore, a delay in ecological recovery of the burned landscape is unlikely as a result of this project compared to existing post-fire impacts to soils.

No salvage harvest, road construction, cable corridors are proposed in the riparian areas. Project related erosion would be so small as to be indiscernible from existing erosion resulting from the wildfire. Therefore, the project would not discernibly increase sediment or create routing mechanisms for delivering sediment to stream channels.

Cumulative Effects

Soil Impacts: The high fire severity in the proposed units consumed nearly all organic material except for large downed logs. The loss of organic matter reduces soil moisture-holding capacity, increases surface runoff, decreases soil aggregate stability, and depletes soil nutrients. These effects will diminish over time as the areas quickly revegetate, soil organic matter falls on the forest floor, and decomposition rates and beneficial soil microbial activity return. Large standing dead and live trees would be left for future CWD recruitment. Following activities, some woody debris would be left on site for soil organics and future nutrients (balanced with the fuels treatments for reduction of short term fire risk). Soil disturbances from cable and tractor systems would not reduce soil organics and would only very minimally increase compaction. Therefore, project activities would not generate cumulative effects leading to delayed recovery of soil productivity in this burned landscape.

3.5 Hydrology

3.5.1 Affected Environment

Stream Channels and Wetlands: Functional Condition:

The project area contains several small headwater streams tributary to the Green Peter Reservoir in the South Santiam watershed. The area hydrologist concluded that the project area streams field reviewed on BLM land are in "proper functioning condition" (U.S.D.I., 1998) because they are well shaded, have stable beds and banks, adequate quantities of wood, a particle size distribution expected for these channel types and a diversity of riparian species.

No wetlands or ponds were identified within the project area. Several areas with high water tables and seasonal saturation were located during field work. These sites mostly coincide with high water tables (symbol- FWNW, or fragile due to high water table, non-woodland) identified in the BLM GIS Timber Production Capability Classification (TPCC). FWNW sites are excluded from treatment in the proposal.

Watershed Hydrology:
Project area streams are similar to other Western Cascades streams where highest discharge takes place during winter storm events. Summer base-flow (when mean stream discharge drops below 20% of the mean winter flow) normally begins in perennial channels sometime in July and continues from August-October. Many small headwater channels (intermittent or ephemeral) dry up completely during this period.

The proportion of the seventh field watersheds in the project area within rain-on-snow elevations (ROS) varies from a high of 60% in Middle Quartzville Creek to a low of 28% in Lower Rumbaugh Creek. The risk of peak flow enhancement within each seventh field will vary with the proportion of this area that has been recently harvested. The proportion of ROS area with current crown closure <35% ranged from a high of 27% to a low of 4%. This analysis indicates that there is currently a *low risk for peak-flow enhancement* in all of the project seventh field watersheds (Hydrology report pp8-9), including those areas that burned**.** Nevertheless, some of the small tributaries that are located within the burn area could experience increases in peak flows over the next decade as the forest stand recovers.

Estimated channel network expansion at road-stream intersections for the project range from a low of 8% in Middle Quartzville to as high as 19% in Upper Middle Santiam Creek. Drainage density increases due to road stream intersections of approximately 20% or greater have the capacity to alter both the timing and quantity of peak flows (Wemple et al, 2003). Based on this, none of the seventh field watersheds in the project area are currently at risk for augmentation of peak flows due to the road network in the watershed. Upper Middle Santiam has the highest risk for water quality degradation due to proximity of the road network to streams (Hydrology report pp10-11).

Water Quality and Beneficial Uses:
The City of Sweet Home withdraws water from the South Santiam below Green Peter Reservoir. The ODEQ has completed a Source Water Assessment available on-line at: (http://www.deq.state.or.us/wq/dwp/swacompletesw.asp#4100851). Some resident fish are downstream from several of the proposed units. Additional beneficial uses include: Industrial Water Supply, Wildlife & Hunting, Fishing, Boating, Anadromous Fish Passage, Water Contact Recreation, Aesthetic Quality. Project area streams are not part of a key watershed or a Wild and Scenic river.

The ODEQ's 2002 303d List of Water Quality Limited Streams is a compilation of streams which do not meet the state's water quality standards (http://www.deq.state.or.us/wq/WQLData). Quartzville Creek and the South Santiam are listed for not meeting summer stream temperature standards. As a result, both streams and their tributaries (including project area streams) are covered under the Total Maximum Daily Load (TMDL) for the South Santiam, available at: http://www.deq.state.or.us/WQ/TMDLs/WillametteBasin.htm#W.

Shading and Stream Temperature:
The BLM has not collected stream temperature data on any of the small streams in the project area. Field surveys, review of aerial photographs and IVMP data indicate that shading is near to full potential along most of the perennial streams on public lands in the project area with canopy closure exceeding 80% along most stream reaches. This is particularly true of the numerous small streams on the west side of the Rocky Top Ridge in sections 15, 21 and 28. Therefore, it is reasonable to expect that summer temperatures in these stream reaches remain below the state threshold and are within the range of natural variation.

Except for the headwater streams on the east side of section 21, the fire did not burn along perennial streams on public lands and therefore, canopy closure and shading will likely be unaffected. In those few channels in section 21 where the fire has resulted in openings, they are small (less than 1 acre) and widely dispersed. In addition, many of the trees fell over or into these small channels and are providing shade directly over the stream.

On the east side of the Rocky Top Ridge (sections 22, 23 and 27) private land predominates and there are many miles of small streams with minimal riparian cover and shading. Within the burned area on private lands much of the residual stand will likely be removed for replanting in the winter of 2007; therefore, in these areas it's likely that canopy closure and shading will be even further reduced from pre-fire levels. No data was located for temperatures of perennial streams on private lands in the project area.

Sediment Supply and Turbidity: Neither the State of Oregon nor the water provider for the City of Sweet Home have identified water quality concerns or issues in project area watersheds related to sediment supply, transport or turbidity levels. In addition, no data for stream turbidity or sediment delivery and transport in the project area was located for this assessment.

Benavidos-Solorio (2005) found that the percentage of bare soil was highly correlated to sediment; soils with 80% bare soil had the highest sediment production while <40% bare soil had negligible sediment production. In the days immediately following the unusually large rainfall event on November 7 and 8, 2006, field reconnaissance of BLM lands in the project area by the resource area hydrologist found very little overland flow and erosion. This indicates a low occurrence of hydrophobic soils and high infiltration rates. Nevertheless, evidence of a large sediment supply and delivery of fine sediments was visible in some, but not all, stream channels that flow through the burned area.

During the same field review water clarity was high and turbidity low (visual assessment) in the small headwater streams originating in the project area. Wood in channels is providing roughness which slows water velocities and retains sediment.

As vegetation regrows, starting in year two, surface roughness and cover will increase, decreasing raindrop erosion and soil detachment. Within 5 years, the erosion potential is expected to be greatly reduced and turbidity will return to background levels.

3.5.2 Environmental Effects: Alternative 1 - No Action

The "no action" alternative would result in the continuation of current conditions and trends at this site as described in the *Affected Environment* section of this report. Any existing effects in the watershed would continue to occur from the development and use of private and other agency lands (primarily timber harvesting and road building).

3.5.3 Environmental Effects: Alternative 2 – Proposed Action

Stream Channels and Wetlands

In general, there would be no direct alteration of the physical features of the project area stream channels or wetlands under this proposal. New road construction would not cross stream channels or wetlands.

Stream banks, wetlands and channel beds are protected from direct physical alteration or disturbance by harvesting equipment. With the exception of proposed rehabilitation of the fire trail and repair of existing roads (discussed below) disturbances are kept a minimum of 200 feet (one site class tree length) from all wetlands and stream channels.

In addition, the proposed action is unlikely to affect stream flow in a measurable manner (see the discussion under watershed hydrology) and therefore any indirect effects to stream channels as a result of increases in peak flows is unlikely. Thus, the proposed action would be unlikely to result in any detectable effects, such as increases in bank erosion, channel incision, loss of floodplain connectivity or alteration of local wetland hydrology that could result from augmented peak flows or altered watershed hydrology.

Repairs to existing roads at stream crossings and through wetlands will maintain the channel alterations currently in place. In some cases, larger culverts and more stable fills will allow for improved channel morphology over the long term by reducing sediment inputs at the crossing and by increasing the culvert's capacity to accommodate the stream during peak flows (i.e., passage of water, wood and bed-load). Rehabilitation of the fire trail that was constructed to serve as a fire line and for access to the area would help restore the channel's physical characteristics (width, depth, gradient, etc.) at those locations where the trail has intersected stream channels and altered them.

Project Area Stream Channels and Wetlands: Cumulative Effects

With the exception of road maintenance sites at stream crossings, this proposal would be unlikely to result in any detectable direct or indirect effects, such as increases in bank erosion, channel incision, loss of floodplain connectivity or alteration of local wetland hydrology, to stream channel or wetland morphology or function. Effects from maintenance of stream crossings and rehabilitation of the fire trail would be limited to the site of disturbance and unlikely to result in any alterations to channels or floodplains downstream or elsewhere in the watershed. Since the proposal is not likely to result in measurable direct or indirect effects to channel or wetland function, and all effects are within the range of those disclosed in the RMP, the proposal would be unlikely to contribute cumulatively to existing stream channel or wetland effects in these watersheds (See EA section 3.5.2).

Watershed Hydrology

Stream Flow Effects from Removal of Fire Killed Vegetation

Increases in mean annual water yield following the removal of watershed vegetation have been documented in numerous studies around the world (Bosch et al., 1982). Forest vegetation intercepts and evapo-transpires precipitation that might otherwise become runoff. As a result of the trees killed by the fire, there is likely an existing incremental increase in annual water yield in the project watersheds which correlates with the removal of the conifer over-story (Troendle et al., 2006). Similarly, the fire killed trees, many of which have already been removed on private lands in the watershed, will no longer function to reduce summer base flows or to intercept and evapo-transpire

winter snow. Therefore, it is likely that both summer base flows and winter peak flows in the small watersheds affected by the fire have increased.

However, this proposal would not remove any trees expected to live beyond three years and therefore has little potential to further affect stream flow. The proposed alternative will not lead to any additional increase in annual water yield, base flow or peak flows in these watersheds because these effects are a result of the death of the fire killed trees and not their removal. Removal of the fire killed trees and replanting may, in fact, speed up hydrologic recovery of the site by restoring vegetative cover more quickly.

Stream Flow Effects from Roads

Existing Roads

This proposal will not alter existing roads in a way that would likely reduce or increase effects to stream flow attributable to the current road network. Thus it will maintain the current condition and trends relative to hydrology and stream flow, associated with existing roads. In addition, existing roads were inventoried by area specialists and recommendations for improvement and repair of road surfaces would be implemented under the proposed action. Some of these actions would reduce existing road effects on stream flow by routing water to soil surfaces where it can re-infiltrate.

New Road Construction

Although most of the roads that would be utilized under this proposal already exist, up to one mile of new road construction is proposed. However, none of the seventh field watersheds in the project area are currently at risk for augmentation of peak flows due to the road network in the watershed.

New road construction and renovation would result in direct hydrologic effects to the surfaces altered by road construction. In these locations, rainfall interception and routing of surface and subsurface water would be altered for the life of the road. The spatial extent, and potential for contributing to a direct or indirect effect on stream flow, of new road construction would vary with the position of the road surface on the landscape and the quantity of soils and vegetation disturbed at the site.

New road construction under the proposed action would be limited to stable slopes primarily outside of riparian reserves, and no new stream crossings would be constructed. Slopes in this area are low to moderate and would not require extensive full bench or cut and fill construction. Road surfaces would be designed to efficiently drain surface water to adjacent slopes where it would infiltrate into the soil and groundwater. The proposed new roads are at low risk for intercepting ground water and routing surface drainage to streams; therefore, they are unlikely to result in an extension of the stream network or to have any measurable affect on watershed stream flow or peak flows.

Watershed Hydrology: Cumulative Effects

Since the proposal is not likely to result in measurable direct or indirect effects to stream flow the proposal would be unlikely to contribute to any existing cumulative effects to stream flows in these watersheds. Current condition of the watersheds in the project area indicates low risk for augmentation of peak flows due to forest openings. This proposal would result in no additional increase in forest openings in ROS areas with crown closure <35% and would be unlikely to contribute cumulatively to the augmentation of peak flows even if they were occurring in these watersheds as a result of past forest harvest. Proposed road use and construction is unlikely to contribute cumulatively to any

change from current conditions in the watershed because the proposed road work and use would not alter surface or subsurface hydrology.

Since there is unlikely to be any detectable direct or indirect effect to the watershed's ground water, the proposed action carries low risk for contributing to any existing cumulative effects to ground water either in the uplands or in lower valley positions.

Water Quality

Summer Stream Temperature Maximums in Perennial Streams

To ensure that any harvesting adjacent to perennial streams will not increase summer temperature maximums, the BLM has agreed to follow the ***Northwest Forest Plan Temperature TMDL Implementation Strategies*** (U.S. Forest Service and Bureau of Land Management. 2005): For example, no shade producing vegetation within the "primary shade zone" (estimated to be no more than 60 feet from the active stream channel in all cases) of perennial streams would be cut or removed. In addition, canopy closure in the secondary shade zone would be reduced to no less than 50 percent.

Under the proposed alternative no vegetation will be removed or disturbed within the riparian. Therefore, these channels have little potential to be heated by exposure to direct solar radiation as a result of the proposed action.

Available data indicates that most forest management activities have little effect on pH or conductivity (U.S.E.P.A., 1991). Hard rock mining is the one activity most likely to have a measurable effect on these variables (Kunkle et al., 1987) and is not proposed. Therefore, it is unlikely that the proposed action will have any measurable effect on pH or conductivity in project area streams.

Sediment Supply, Transport and Turbidity

Road Construction and Maintenance

The risk of road related landslides in these locations is minimal. All new road construction would occur on low to moderate slopes with stable surfaces emanating from the existing road network. Road construction in this proposal would not cause an expansion of the stream network. Therefore it would not provide additional opportunities for road sediment from fill failures or ditch-line run-off to enter stream channels.

All road construction would utilize the Best Management Practices (BMPs) required by the Federal Clean Water Act (as amended by the Water Quality Act of 1987) to reduce non-point source pollution to the maximum extent practicable.

BMPs recognize and make use of the fact that, although road construction can lead to an increase in sediment available for erosion, without pathways or mechanisms for that sediment to enter streams, it would not affect water quality.

Maintenance and improvements of existing roads (i.e., culvert and ditch cleaning, added rock and blading of road surfaces, removal of fill) and construction of the stream crossing would likely result in increased turbidity during project implementation at stream/road intersections on perennial streams. During project work, turbidity in perennial streams would be visually monitored and be maintained within limits set by the Oregon DEQ.

Turbidity at stream crossings may also increase slightly in the first winter following the project. This would be most evident during early winter storms at a few locations where run-off on the road surface may be diverted to stream channels. Increased turbidity is unlikely to be visible or measurable beyond 800 meters below the site of the disturbance (Foltz and Yanosek, 2005). Turbidity levels would likely decrease within one or two years. Within this time period, the supply and transport of fines from the road surface would return to pre-project levels.

Any sediment yield increase would be difficult to measure and is unlikely to contribute more than a small fraction to the supply or transport of fine sediment in these watersheds. Over the long term, road repairs would help reduce the risks to water quality and watershed hydrology that these roads currently pose by improving road drainage, fill stability and increasing the size of culverts to accommodate greater stream flow volume.

Hauling

The main haul route would be on rocked forest roads to the main paved surface road next to the reservoir. Project design features call for no hauling during wet periods when the potential for fine sediment delivery to streams is highest.

To ensure haul is not contributing to increased turbidity in local streams, the authorized officer will visually monitor the road network and turbidity levels at road/stream intersections during haul.

If turbidity levels approach limits set by the Oregon DEQ, the authorized officer will require the BLM contractor to reduce fine sediment run-off into the stream. Methods include (but are not limited to): adding rock to the road and regrading of the road surface to improve drainage, placement of bark bags or other material in the ditch to filter sediment out of the water, restricting haul until conditions improve.

Tree Harvest and Yarding

Areas with potential for slope instability and mass wasting were identified during field work for the project proposal. All proposed treatment units are outside of any areas mapped as unstable or prone to mass wasting. Tree removal is not proposed 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 induced by loss of root strength are unlikely to result from this action. In addition, the minimal levels of surface disturbance under this proposal would be unlikely to result in the concentration of runoff on mass wasting susceptible slopes.

Tree falling and yarding into or through streams would not occur under this proposal. The "no treatment buffers" around all streams will eliminate most disturbance of stream-side vegetation. Therefore, it is unlikely that this proposal will increase bank erosion or channel cutting by altering channel roughness, redirecting flows or altering bank-stabilizing vegetation. The potential for increases in stream energy due to alterations of peak flows was discussed previously.

Yarding corridors, if sufficiently compacted and disturbed, *may* route surface water and sediment into streams. Several factors mitigate any potential sediment inputs to streams as a result of the proposed action: 1) even when compacted, large quantities of residual slash (i.e., brush, limbs and branches) on yarding corridors (both machine and cable) would contribute to reducing the accumulation of runoff by deflecting and redistributing overland flow laterally to areas where it will infiltrate into the soil, 2) gentle to moderate slopes in much of the project area provide little

opportunity for surface water to flow, 3) the 200 foot no-treatment zones protecting riparian areas have high surface roughness which functions to trap any overland flow and sediment before reaching streams, and 4) the small size of trees being yarded would limit surface disturbance to minimal levels. Where yarding operations are resulting in excessive compaction and/or gouging of the soil surface, the contracting officer would require the operator to take additional actions, such as utilizing intermediate supports, and constructing water bars to reduce effects below a detectable level.

In summary, the proposed action will not likely alter the water quality of surface waters in a detectable manner and, by extension, has little opportunity to alter ground water quality. No new pathways which could lead to groundwater pollution would be created nor does it introduce into the environment pollutants that can put groundwater quality at risk (i.e., heavy metals, organic compounds, toxic materials, etc.).

Water Quality: Cumulative Effects

Overall, this proposal is unlikely to have any detectable direct or indirect effect on stream temperatures, fine sediment supply, pH, or dissolved oxygen. Current conditions and trends in water quality would likely be maintained under the proposed action. Therefore, the proposal has little potential for contributing to any cumulative effects to these water quality attributes in these watersheds.

In a similar manner, the risk of short term (during the action and the first winter following) increases in stream turbidity as a result of road repair, fire trail rehabilitation and hauling may contribute to increased turbidity levels directly below road/stream intersections. These would be maintained below the limits required by the Oregon State DEQ.

Cumulatively the limited magnitude (not visible more than 800 meters downstream of the crossing) and duration (primarily in the first winter following road repairs) of this effect would be non-detectable on the scale of the seventh field watershed and would be unlikely to have any effect on any designated beneficial uses.

3.6 Fisheries

3.6.1 Affected Environment

None of the streams that drain the project area are fish-bearing in the vicinity of the project area. Surveys for fish presence were conducted with a backpack electroshocker on June 24, 1999 as part of the survey effort for a potential thinning sale in Fools Canyon. Most of the streams in the project area are too small and steep to support fish populations, and the proposed salvage units are generally around the headwaters of the stream systems. The largest stream, Fools Canyon Creek, supports cutthroat trout (*Oncorhynchus clarki*) from its mouth at Green Peter Reservoir upstream approximately 100 feet, at which point upstream migration is blocked by a barrier waterfall approximately one mile downstream of proposed salvage Unit C.

Resident fish species found downstream of the project area in Green Peter Reservoir and Quartzville Creek include native populations of cutthroat (*Oncorhynchus clarki*) and rainbow (*O. mykiss*) trout, mountain whitefish (*Prosopium williamsoni*), northern pikeminnow (*Ptychocheilus oregonensis*), large scale sucker (*Catostomus spp.*), sculpin (*Cottid spp.*) and dace (*Rhinichthys spp.*). Introduced fish

species found in Green Peter Reservoir include kokanee (*O. nerka*), largemouth bass (*Micropterus salmoides*) and smallmouth bass (*M. dolomieui*). Kokanee are adfluvial (reside in lakes and ascend tributary streams to spawn) and are known to spawn in Quartzville Creek. Largemouth or smallmouth bass may at times enter the lower reaches of Quartzville Creek from Green Peter Reservoir.

Threatened and Endangered Species

Since 2004 the ODFW has been experimentally planting pre-smolt spring chinook salmon in Quartzville Creek and the Middle Santiam River. It is possible that planted chinook may be present in Green Peter Reservoir near the shorelines at any time of the year. It is unlikely that spring chinook utilize any of the tributaries to the reservoir in the vicinity of the proposed project area. Streams that drain the project area are too small to be suitable habitat for chinook. Spring chinook are native to the South Santiam River watershed and were present in Quartzville Creek and the Middle Santiam River prior to the construction of Foster and Green Peter Dams. Chinook were eliminated from both stream systems due to inadequate fish passage facilities at the dams. The chinook that are now present as a result of the ODFW planting efforts are included in the Upper Willamette River (UWR) chinook salmon Evolutionarily Significant Unit (ESU) which is listed as 'threatened' under the ESA. Consultation with NOAA Fisheries is required for projects that 'may affect' listed species.

Aquatic Habitat

Streams that drain the project area are generally 1st and 2nd order headwater streams with well vegetated, stable banks except where vegetation was removed or reduced by the Middle Fork Fire and where fire control lines constructed by tractors cross stream channels. Woody debris is abundant in the smaller size classes. Large logs found in the stream channels are generally in the later stages of decay.

3.6.2 Environmental Effects: Alternative 1 - No Action

Under the no action alternative no direct or indirect effects would occur to fish habitat. There would be no adverse or beneficial impacts because there is no fish habitat close enough to the proposed project area to be affected by the No Action Alternative.

3.6.3 Environmental Effects: Alternative 2 – Proposed Action

Fish Habitat

Under the Proposed Action no direct or indirect effects would occur to fish habitat. There is no fish habitat close enough to the project area to be affected by the proposed action. Effects of the project on habitat for aquatic species other than fish are not anticipated due to the retention of Riparian Reserves of 200 feet on each side of the streams. No salvage activities would occur within the Riparian Reserves. Where existing tractor trails constructed for fire suppression are used for log skidding, the post-harvest rehabilitation would reduce sediment inputs to those headwater streams. Existing stream shade levels would be maintained by excluding salvage activities from the Riparian Reserves, thereby preventing increases in stream temperatures. The nearest potential fish habitat is essentially Green Peter Reservoir, approximately one mile downstream of the nearest proposed project units.

If the project were to result in degradation of water quality due to introduction of sediment or an increase in water temperature, the potential effects on fish in Green Peter Reservoir would be negligible due to the buffering effect of the reservoir which would quickly dilute any effects of degraded water quality from the project area streams.

Road Work
The road construction proposed under this alternative is not expected to contribute to degradation of aquatic habitat by introduction of sediment or otherwise altering water quality. All of the proposed roads are on ridgetop or midslope locations without proximity to streams or riparian areas. Road construction, decommissioning, maintenance and renovation would be conducted during the dry season and implemented to the standards described in the transportation management objectives and Best Management Practices described in the RMP. Such design features are expected to prevent introduction of road derived sediment to project area streams.

Timber Hauling
Timber haul routes would be on rocked forest roads to the paved roads adjacent to the reservoir. Project design features call for no hauling on unpaved roads during wet periods when the potential for fine sediment delivery to streams is highest.

Threatened and Endangered Species
A determination has been made that this proposed project would have 'no effect' on Upper Willamette River chinook salmon. The determination is based on project design features that are expected to prevent increased sediment inputs to streams or increases in water temperature by excluding all project activities from Riparian Reserves and restricting timber hauling on unpaved roads to periods of dry road conditions. Additionally, project area streams drain to Green Peter Reservoir where any potential effects of degraded water quality in the project area streams would be quickly diluted by the reservoir.

3.7 Botanical Resources

3.7.1 Affected Environment

The high intensity ground fire that occurred September 2006 had devastating effects on surface vegetation. Due to fire intensity the understory vegetation was heavily impacted. Shrub and herb layer species as well as suitable habitat for many of these species was totally eliminated throughout most of the burned area. Other species such as bryophytes and lichens and their habitat were also greatly reduced or eliminated. No suitable habitat for any Survey and Manage or BLM Special Status species is known or likely to be present within the burned area. Due to the fire intensity and total consumption of surface litter and organic matter, suitable habitat for species considered unpractical to survey for (fungi) was also greatly reduced or eliminated. The salvage of timber within the burned area will have no affect on Survey and Manage or BLM Special Status species, and the proposed project complies with the 2001 S&M ROD as modified.

Special Status /Survey and Manage Species
No Special Status or Survey and Manage Species or habitat are know from or likely to occur within the burned area. Any suitable habitat that may have existed in the burned area was eliminated due to fire intensity.

Invasive /Nonnative Species
Invasive/nonnative species identified in the project area are BLM Priority III / Oregon Department of Agriculture list "B" species. These are common roadside species such as thistle, tansy ragwort and scotch broom.

3.7.2 Environmental Effects: Alternative 1 – No Action

All areas within the burned area would revegetate through natural seeding and sprouting of perennial plants that survived the fire.

Special Status /Survey and Manage Species
No effects are expected because no Special Status Species are currently present. With no known sites or suitable habitat within the burned area, the impact to Survey and Manage and Special Status species would remain the same as the Proposed Action. If any undiscovered sites are present within the burned area, natural process (e.g. wind fell trees) would be the greatest contributor to disturbance and habitat modification.

Invasive Species
Due to the fire intensity and the amount of bare soil and suitable habitat that now exist in the burned area, natural increase in the invasive/nonnative species is likely to occur without human caused disturbances (e.g. timber harvest and associated activity). The largest increase in invasive/nonnatives will be in those known from the area with windblown seed dispersal (i.e. thistles and ragwort).

3.7.3 Environmental Effects: Alternative 2 – Proposed Action

Special Status /Survey and Manage Species
No effects are expected because no Special Status or Survey and Manage Species are currently present. If any Threatened & Endangered, Bureau Special Status, Special Attention or Survey & Manage species are discovered on site, appropriate mitigation would be implemented.

Invasive Species
Seeding of soil exposed as a result of the salvage operation would occur to reduce population increase of invasive/nonnative species identified in the salvage area. No greater increase in the invasive/nonnative species identified during field surveys is expected to occur as a result of the proposed action over that which would occur naturally. Due to the fire intensity and the amount of bare soil that now exist in the burned area, a natural increase in the invasive/nonnative species will likely occur regardless of which alternative is chosen. Seeding with native seed will reduce the amount of available suitable habitat for invasive/nonnative species and will help speed the recovery of the burned area. Machinery used in the salvage operation would be cleaned and free of off site contaminants to prevent the introduction and spread of invasive/nonnative species not known from the project area.

Cumulative Effects
Due to the intensity of the fire and extreme habitat modification has occurred, rehabilitation of the site through overstory thinning or removal, and understory seeding and planting will greatly improve the habitat within the burned area and lessen the opportunity for invasive/nonnative species to become established. No cumulative effects are anticipated.

3.8 Wildlife

3.8.1 Affected Environment

There are two major forest types that were burned and now are proposed for salvage. Units A-1, A-2, and A-3 are located on the top, sides and base of Rocky Top, a prominent feature with an elevation of about 3400 feet. The stands were a mix of about two-thirds Western hemlock and one-third Douglas-fir averaging 65 years of age. The site is poor and diameters average only 10 to 12 inches dbh. There are a few (about 1 per acre) old-growth remnants scattered throughout the unit. Units C and D were predominantly Douglas-fir averaging about 65 years of age. Diameters average 18 to 22 inches. There are no old-growth remnants present in these units. None of the stands burned by the fire were considered to be late successional. Units A-1, C and D (27 acres) are limited to severe burn intensity areas where tree mortality is expected to be close to 100%. Units A-2 and A-3 (7 acres) are in moderate burn areas where mortality is expected to be near 50%.

About 35% (27 acres) of the severe intensity burn areas and 4% (7 acres) of the light to moderately burned areas would be salvaged under this proposal. In the greater fire perimeter, 88% (240 acres) of the BLM lands would not be salvaged.

Residual Old Growth Trees, Coarse Woody Debris (CWD) and Special Habitats

Table 8 summarizes the presence of residual old growth trees, special habitats, and the amount of CWD present in the units prior to salvage. The presence of CWD, residual old growth trees and special habitats is based on stand exam data, aerial photos, and field review by specialists. CWD must be at least 20" in diameter at the large end, 20 feet in length, and in decay classes 1 and 2, to satisfy management direction as described in the Salem Resource Management Plan (RMP, p. 21). Material of this size that is in more advanced stages of decay is summarized as well, since this material will contribute to forest floor wildlife habitat conditions for some decades.

Table 8: *Summary of Special Habitats, Remnants, And Coarse Woody Debris (CWD) Present By Project Area*

Name/Unit#	Location	Seral Stage	Remnant Old Growth	Special Habitats*	CWD**
A-1	12S-3E-15	Mid	Yes 1/ac	Yes	0'/0'+
A-2, 3	12S-3E-15	Late Mid	No	No	0'/500'+
***B	12S-3E-21	Mid	Yes <1/ac	No	0'+/500'+***
C	12S-3E-21	Mid	No	No	0'/200'
D	12S-3E-27	Mid	No	No	0'/200'

Seral Stage Age Classes (years) based on Stand Exam data: Early Seral = 0-30; Early Mid Seral = 30-40; Mid Seral = 40 – 60; Late Mid Seral = 60 -80; Early Mature Seral = 80 - 120; Mature = 120 - 200; Old Growth =200+

* Special habitats within the units include: wet and dry meadows, talus, cliffs & rock outcrops.

** Linear ft/acre >19" dbh & >20' long, hard (decay classes 1-2)/soft (decay classes 3-5) logs.

*** Area B has been dropped from the proposal.

Residual old-growth trees are present in low numbers in Unit A-1 (about 1/acre). Most of the old-growth trees (80%) are located outside of the Unit A-1 and in Area B, which are not proposed for salvage. CWD that would meet RMP management direction (240+ linear feet per acre of material in decay classes 1 or 2, at least 20" in diameter at the large end, and 20 feet in length) is currently lacking in all of the units proposed for salvage (RMP, p. 21). Large CWD in decay classes 3-5 is present in all of the units, however, it was scorched and highly damaged by intense heat.

Within Unit A-1 there are small (<10') rock outcroppings and surface rock. The extensive cliffs and rock outcroppings are located outside of Unit A-1 in the severely burned area. There are no special habitats present in the other units. Special habitats include wet and dry meadows, talus, rock outcroppings, cliffs and caves.

Snags and Snag-Associated/Cavity Nesting Species

Before the fire, the number of snags and standing dead material was in a snag deficit condition with fewer than two per acre and less than 40% potential cavity nesting populations. The fire burned in a mosaic, typical of wildfires in Western Oregon, creating snags in a highly variable pattern across the area. In lightly burned areas, fewer than 10 snags per acre were created. In severely burned areas, 100 to 200 snags per acre were created. In addition, many trees which were live post fire will die, greatly contributing to the snag/standing dead and CWD available within the fire perimeter. As a result of the fire, snag habitat exceeds the 40 percent of maximum population densities requirement for the five woodpecker species throughout the majority of the fire perimeter (RMP, p.21).

Where snag habitat does not meet the 40 percent level is in portions of Area A which lack the large diameter component (>25 inches dbh), including Units A-2 and A-3.

Table 9 summarizes the number of snags necessary to meet management direction in the RMP (p. 21) for five cavity-excavating woodpecker species which are referred to in Neitro et al (1985). The hairy woodpecker, red-breasted sapsucker and pileated woodpecker are species associated with conifer stands in the Western Cascade Mountains, and are most likely to be affected by salvage operations. Northern Flicker and Downy woodpecker are not typically associated with closed-canopy conifer-dominated stands in the Western Cascades, though both species may be found in or around the project areas.

Table 9: *Minimum Number Of Snags (Per 100 Acres) Necessary to Support Species Of Cavity Nesting Birds At 40 Percent Of Potential Population Levels (RMP P. 21, As Per Neitro Et Al, 1985)*

Diameter class (inches dbh)	***Snag Decay Stage*** ***Hard 2-3***	***Soft 4-5***	***Total by diameter class (per 100 acres)***
11+		Downy woodpecker (6)	6
15+	Red-breasted sapsucker (18)	Hairy woodpecker (77)	95
17+		Northern flicker (19)	19
25+	Pileated woodpecker (2)		2
Total – all diameter and decay classes			**122**

Federally Listed Species

Bald Eagles

Green Peter Reservoir supports two nesting pairs of bald eagles. A Bald Eagle Management Area has been designated on BLM lands on Green Peter Peninsula which includes the two nest sites. Bald eagles are suspected to occur in the fire perimeter as flyovers. The closest salvage unit is 0.75 miles and the fire perimeter is located over 0.5 miles from Green Peter Reservoir. The closest nest site is over one mile from the closest salvage unit (Unit D). None of the salvage units is within sight distance of any of the nest sites. None of the fire perimeter is located within the Bald Eagle Management Area.

Northern Spotted Owls

The Middle Fork Fire burned about 90 acres of dispersal habitat, of which, about 30 acres (including Units A-2 and A-3) still qualify as dispersal habitat. The remaining 60 acres (including Unit A-1) was burned so severely that it no longer qualifies as dispersal habitat. About 160 acres of marginally suitable habitat 65 years of age was burned by the fire. Most (95%) of this habitat still qualifies as dispersal habitat. About 25 acres of BLM lands within the fire perimeter was non-habitat primarily due to rock outcroppings and cliffs and is not capable of becoming suitable habitat in the future. The proposed salvage units consist of 27 acres of non-habitat capable of becoming suitable habitat in the future, and 7 acres of dispersal habitat. Unit acres, critical habitat acres, pre-burn spotted owl habitat types, post burn habitat types, proposed treatments, and post treatment spotted owl habitat types are shown in Table 10.

Table 10: *Unit Acres, Critical Habitat Acres, Land Use Allocations, Pre-Burn, Post Burn And Post Treatment Spotted Owl Habitat Types, And Proposed Treatments*

T-R-Sec-Treaatment Area	Unit Acres	Critical Habitat Acres	Land Use Allocation	Pre-burn Spotted owl habitat type	Post-burn Spotted owl habitat type	Proposed Treatment	Post-treatment Spotted owl habitat type
12S-3E-15 Unit A-1	23	23	Matrix GFMA	Dispersal	Non-habitat	Regen salvage harvest, tree plant	Non-habitat
12S-3E-15 Unit A-2	5	5	Matrix GFMA	Dispersal	Dispersal	Partial Cut salvage harvest	Dispersal
12S-3E-15 Unit A-3	2	2	Matrix GFMA	Dispersal	Dispersal	Partial Cut salvage harvest	Dispersal
12S-3E-21 ***Area B	N/A	N/A	Matrix CONN	Marginally Suitable	Non-habitat, and Dispersal	None	Non-habitat, and Dispersal***
12S-3E-27 Unit C	3	3	Matrix CONN	Marginally Suitable	Non-habitat	Patch Cut salvage harvest, tree plant	Non-habitat
12S-3E-27 Unit D	1	0	Matrix CONN	Marginally Suitable	Non-habitat	Patch Cut salvage harvest, tree plant	Non-habitat
TOTAL	**34**	**33**					

Matrix Land Use Allocations: GFMA=General Forest Management Area; CONN=Connectivity
Seral Stage Age Classes (years) based on Stand Exam data: Early Seral = 0-30; Early Mid Seral = 30-40; Mid Seral = 40 – 60; Late Mid Seral = 60 -80; Early Mature Seral = 80 - 120; Mature = 120 - 200; Old Growth =200+
*** Area B, Section 21 of T. 12 S., R 3 E., has been dropped from the proposal.

Of the 34 acres in the salvage proposal, 33 acres are located in Critical Habitat (CHU OR-14). The proposed salvage is not located in LSR and there are no unmapped 100 acre core areas of known spotted owls in the vicinity of the proposed units. There are no known spotted owl sites within 1.2 miles (provincial home range radius) of the fire perimeter. The closest known spotted owl site is located approximately 1.5 miles to the north. Surveys for spotted owls are in progress in the vicinity. Surveys were conducted during 2005 and 2006. No spotted owls were found within disturbance range (0.5 mile) of the salvage units.

Special Status and Survey and Manage Species

The following BLM Special Status Species (Bureau Sensitive and Assessment categories) are documented or suspected to occur in the fire perimeter, based on field inventories of the habitats present and a review of the existing literature (Wildlife Report pp 16 - 20).

Post fire Stand Exam data indicate that the stands proposed for salvage no longer support suitable habitat for Special Status and Survey and Manage species.

Bureau Sensitive – Oregon Slender Salamander
Oregon slender salamander, a Bureau Sensitive Species, has been found throughout the Cascades Resource Area in stands across the full range of seral stages. Its distribution on BLM land within the planning area appears to be limited by dry conditions at low elevations along the Willamette Valley floor, and by cold conditions at higher elevations (Dowlan, unpublished 2006).

The Oregon slender salamander is suspected to occur within the fire perimeter where CWD in advanced decay classes of adequate size (generally >16" diameter at the large end) occurs. Due to the burn intensities, Oregon slender salamanders are not expected to occur in the salvage units. CWD in advanced decay classes was severely scorched and damaged within the units proposed for salvage. Most of the CWD outside of the moderate to severe burn intensity areas remains intact.

Habitat is generally described as conifer-forested stands dominated by Douglas-fir with large amounts of large rotten (decay class 3 to 5) Douglas-fir down logs. Old logs, stumps and large woody material piles around stumps, and exfoliated tree bark on the ground are used for cover, feeding and breeding. Larger material that can hold moisture through summer drought is generally considered to be most important in maintaining moderate subsurface microclimate conditions. Optimal habitat for these animals is generally described as late-successional forest conditions with cool, moist microclimates and large down wood.

Bureau Sensitive - Northern Goshawk
The goshawk is a Bureau Sensitive species which prefers older forests with dense canopy closures at higher elevations. The fire perimeter is located at mid elevations. No goshawks are known to be present in the fire perimeter, but they are suspected to occur. The salvage units no longer provide suitable habitat for goshawks, but could provide open habitats for foraging.

Bureau Sensitive –Peregrine Falcon
The peregrine falcon was formerly listed by the U.S. Fish and Wildlife Service as an Endangered species. Currently, it is a Bureau Sensitive species. There is a peregrine falcon nest site on the cliffs to the south of Unit A-1 on adjacent private lands. The peregrine falcons have been very successful at this nest site. In 2006, they successfully fledged three young by late July. The nest site is located within the fire perimeter about ¼ to one mile downhill from unit A-1. The burn intensity in the vicinity of the nest site was severe. None of the units are in sight distance of the nest site. Oregon Department of Fish and Wildlife staff plans to monitor the nest site several times in 2007 during the nesting season to determine occupancy and reproductive success.

Survey and Manage Category B – Red Tree Vole

Red tree vole is associated with conifer forests west of the Cascades summit. The project area is within the "Northern Mesic Zone" of the range identified for the species. Surveys are required within the Northern Mesic Zone when (Biswell et al 2002):

- the canopy of the stand that would be removed or disturbed has an estimated quadratic mean diameter (QMD) > 16 inches dbh or an average mean diameter (AMD) > 15 inches dbh, and;
- the canopy that would be disturbed consists of stands that are:
  - in a mature or old-growth condition, or are older mixed-age conifer forests containing Douglas-fir, grand fir, Sitka spruce , western, or white with multi-layered canopies and large branches capable of supporting nests and providing travel routes, or:
  - conifer stands with a canopy closure of 60% or greater of the intermediate, co-dominant and dominant trees and with two or more predominant conifer trees per acre. Predominant trees should have one or more of the following characteristics: large limbs, well developed crowns, cavities, broken tops, or mistletoe, that may provide structure for suitable platforms for red tree vole nests. Predominant trees are overstory trees remaining from an earlier cohort, which should have a portion of their crowns above the dominant canopy, and;
- the proposed activities are likely to have a significant negative impact on the species' habitat, its life cycle, microclimate, or life support requirements.

Though the project area is within the Northern mesic zone of the red tree vole range, none of the stands that would be salvaged meet the stand-level criteria as described above. Red tree voles are suspected to occur within the fire perimeter, but not in the salvage units due to the moderate to severe intensities of the burn (All units) and younger age classes (Units A-1, A-2, and A-3).

Survey and Manage – Mollusks

Habitat and range data and previous surveys for mollusks and amphibians conducted over 9,000 acres on the Cascades Resource Area since 1991 indicate that no Special Status and/or Survey and Manage mollusk species are likely to be present in the proposed salvage units.

Bats

Three former Protection Buffer bat species occur in the Cascades Resource Area (silver-haired bat, long-eared myotis, and long-legged myotis). These species are associated with caves and mines, bridges, buildings, cliff habitat, or decadent live trees and snags with sloughing bark. Large snags and standing dead trees with bark attached are used variously as solitary roosts, maternity roosts, and hibernacula by these species, and six other bat species associated with Douglas-fir forests (Christy and West 1993). Other Special Status bat species are closely associated caves, cliffs, buildings and abandoned mines. There are some cliffs and/or rock outcroppings in and adjacent to Unit A-1. All of the extensive, well developed cliffs and rock outcroppings are located outside of Unit A-1 in the severely burned area. These areas were dropped from the proposal due to logging, yarding and safety concerns. Within Unit A-1 there are small (<10') rock outcroppings and surface rock.

Migratory and Resident Bird Species

The proposed salvage units are located in the Western Oregon Cascades Physiographic region. The Partners in Flight conservation plan which addresses the Western Oregon Cascades is the *Conservation Strategy for Landbirds in Coniferous Forest of Western Oregon and Washington* (1999). None of the proposed salvage units are located in a high priority forest type and the Western Oregon Cascades is not identified as a high priority physiographic region.

In the *Conservation Strategy for Landbirds in Coniferous Forest of Western Oregon and Washington*, focal species were selected based on their conservation need and/or their degree of association with important habitat attributes in coniferous forests of Western Oregon and Washington. The proposed salvage Units A-1, C and D are in burned over early seral stands. Focal species for this forest condition include the olive-sided flycatcher, Western bluebird, orange-crowned warbler, and rufous hummingbird. The olive-sided flycatcher is associated with residual canopy trees and the Western bluebird is associated with snags. Both of these elements are abundant in the post fire perimeter. The orange-crowned warbler is associated with deciduous vegetation and the rufous hummingbird is dependent on nectar producing plants. A flush of these habitat elements is expected in the early stages of stand re-establishment in the fire perimeter. The olive-sided flycatcher and the rufous hummingbird show long term declines in the Cascades based on breeding bird surveys.

Proposed salvage Units A-2 and A-3 are in mid seral stands that were in the stem exclusion stage prior to the fire. The pre-fire forest conditions were structurally simple and characterized by an even-aged, single-layered, closed-canopy with poor understory development, and low in landbird species composition and richness. Due to fire mortality, these post fire mid seral stands have been opened up considerably. Focal species for mid seral stages include the Hutton's vireo and black-throated gray warbler. The habitat attributes that these species associate with are deciduous canopy/subcanopy layers.

Big Game

Big game species that are found in the project areas include Roosevelt elk (*Cervus elaphus roosevelti*) and black-tailed deer (*Odocoileus hemionus*). A herd of about 120 elk are known to occur in the vicinity. Proposed salvage Units A-1, C and D are in early seral stands which provide forage areas with adjacent cover.

Units A-2 and A-3 provide hiding and low quality thermal cover. Newly burned over early seral communities are abundant on adjacent private lands surrounding the project areas. The Salem District Record of Decision and Resource Management Plan (RMP) approved May 1995, identifies Green Peter Peninsula as a priority area for elk (RMP p.26).

3.8.2 Environmental Effects: Alternative 1 - No Action

The majority of effects to wildlife species and habitat have already occurred as a result of the fire. Salvage operations on 27 acres (35%) of severely burned areas and 7 acres (4%) of moderately burned areas within the fire perimeter would not occur. A total of 34 acres or approximately 12% of the BLM lands within the perimeter would not be salvaged.

Residual Old Growth Trees, Snags and Coarse Woody Debris

There would be no loss of standing dead material in the short term, and in the long term (10+ years), there would be more standing dead material available for recruitment as snags, CWD and down logs within the 34 acres proposed for salvage (about 12% of the total area within the fire perimeter).

Federally Listed Species: Northern Spotted Owl

There would be no disturbance effects to unknown or undetected spotted owls caused by management action. Habitat conditions would remain as described in the Affected Environment, and would continue to develop slowly over time. No standing dead trees would be harvested and there would be no modification of capable non-habitat and dispersal habitat in Critical Habitat. It would take the same

amount of time to develop suitable habitat in salvaged versus unsalvaged areas within the fire perimeter. Planting severely burned areas could accelerate the establishment of new stands, thus suitable habitat more rapidly than leaving these areas unplanted.

Federally Listed Species: Bald Eagle

Under both the action and no action alternatives, there would be no effects to bald eagles because the Green Peter bald eagle nest sites and the Bald Eagle Management Area are not within disturbance distance and not within sight distances of any of the salvage activity.

Survey and Manage and BLM Special Status Species

The majority of the effects to wildlife species and their habitat have already occurred due to the fire. Changes in habitat due to the fire have had an immediate effect on wildlife habitat, including suitable habitat for Survey and Manage and Special Status Species which were burned in the fire. In the short term, there would be no disturbance effects and no immediate change in current habitat conditions for Survey and Manage and BLM Special Status Species as a result of salvage operations. In the long term (10+ years), there would be more standing dead material available for recruitment as snags, CWD and down logs within the 34 acres proposed for salvage (about 12% of the total area within the fire perimeter).

Migratory and Resident Birds

Habitat conditions would remain as described in the Affected Environment, and would continue to develop slowly over time. There would be no loss of standing dead material for recruitment as snags, down logs and CWD, thus, there would be no adverse effects to cavity dwelling species such as the Western bluebird within the salvage units, (about 12% of the total area within the fire perimeter).

Big Game

In the short term (0 to 10 years), there would be no disturbance effects due to the proposed action. There would be no short-term impacts to thermal and hiding cover as a result of disturbance, opening roads, renovating roads and road improvements. Stands proposed for salvage would not be further opened up and no forage seeding would occur.

3.8.3 Environmental Effects: Alternative 2 – Proposed Action

In the short term, it is important to note that the majority of adverse effects to wildlife species and habitat have already occurred as a result of the fire. In the long term, it is expected that growth, size, branch diameter, and crown ratio of the surviving post fire trees would increase, and development of understory vegetation will be stimulated. These changes increase structural complexity and improve habitat quality and availability for a range of invertebrate and vertebrate species.

Residual Old Growth Trees, Snags and Coarse Woody Debris (CWD)

Old-growth components in Unit A-1 would be left standing to the greatest extent possible under standard contractual logging procedures and Occupational Safety and Health Administration (OSHA) requirements (RMP p. D-2). Any which are felled or otherwise knocked down would be retained on site as CWD, which is also valuable as wildlife habitat.

Within the salvage units, there would be a loss of standing dead material in the short term, and in the long term for recruitment as snags, down logs and CWD due to salvage operations (about 12% of the

total area within the fire perimeter). Of the estimated 77 acres burned in the fire perimeter which burned in the severe category with nearly 100% mortality, 27 acres or 35% would be salvaged. Of the estimated 200 acres of light to moderately burned areas, 7 acres or 4% would be salvaged. Within the fire perimeter, most existing snags and CWD in all sizes and decay classes would be reserved. This would effectively reserve the best existing habitat features for primary excavators (woodpeckers), and secondary cavity users, such as songbirds, and small mammals. Post salvage, snag habitat would far exceed the 40 percent of maximum population densities requirement for the five woodpecker species throughout the majority of the fire perimeter (RMP, p.21) with the exception of portions of Area A, (T 12, S, R 3 E., Sec 15). Snag habitat would also meet the standards of the Dec-Aid Decayed Wood Advisor for snags at the 50% tolerance level (Mellens et. al., 2006).

In addition, many trees which were live post fire will die, greatly contributing to the snag/standing dead and CWD available within the fire perimeter. The RMP guidelines for snags (40 percent maximum population densities) and CWD (240+ linear feet per acre of material in decay classes 1 or 2, at least 20" in diameter at the large end, and 20 feet in length), could be met throughout the fire perimeter in one to four decades.

Federally Listed Species: Bald Eagles

There would be no effects to bald eagles because the Green Peter bald eagle nest sites and the Bald Eagle Management Area are not within disturbance distance and not within sight distances of any of the salvage activity. No seasonal restriction for bald eagles is recommended.

Federally Listed Species: Northern Spotted Owl

Refer to Table 10 for a summary of proposed salvage unit acres, critical habitat acres, pre-burn spotted owl habitat types, post burn habitat types, proposed treatments, and post treatment spotted owl habitat types. The proposed salvage units consist of 27 acres of non-habitat capable of becoming suitable habitat in the future, and 7 acres of dispersal habitat.

The proposed action may affect, but is not likely to adversely affect the northern spotted owl due to disturbance of unknown or undetected spotted owls during the breeding season from March 1 to September 30. Units A-1, A-2 and A-3 have a seasonal restriction from February 1 through July 31 to protect the peregrine falcon. This seasonal restriction would also restrict activities during the critical nesting season for the spotted owl in its entirety (March 1 to July 15).

The salvage of units C and D could take place within the critical nesting season, but they would be of short duration (less than one week), and there are no known spotted owls within disturbance range of the units. The proposed action would have no effect on suitable habitat and no habitat would be downgraded to a lower classification as a result of salvage. No known spotted owls would be affected by salvage or connected actions, and there are no known spotted owl sites within the provincial home range radius of the fire perimeter. Dispersal habitat in Units A-2 and A-3 would be maintained after harvest. None of the proposed units are located in Late Successional Reserves.

The proposed salvage may affect, but is not likely to adversely affect critical habitat for the northern spotted owl due to the modification of habitat within a Critical Habitat Unit (CHU OR-14). However, given the pre-salvage lack of functionality or suitability of the habitat within the fire perimeter and the salvage units, it is unlikely that salvage would result in adverse effects to spotted owl critical habitat. There would be no effect on suitable habitat and removal of dead or dying trees would not affect the dispersal capabilities of seven acres of dispersal habitat. The proposed action would not limit or delay the ability of critical habitat in the salvage units and the fire perimeter to reach suitable habitat

conditions in the future. Tree planting in the salvage areas could accelerate the development of suitable habitat, which would be expected to develop in 6 to 8 decades.

In the short-term, disturbance associated with thinning (logging, road-building, etc,) may have temporary effects on the presence or movement of unknown or undetected spotted owls. However, thinning would maintain dispersal habitat, therefore maintaining the ability of the habitat to accommodate movement of birds after thinning is completed.

Special Status and Survey and Manage Species

Bureau Sensitive – Oregon Slender Salamander

In all of the units, salvage is not expected to result in short term effects to Oregon slender salamanders due to the absence of suitable habitat within the salvage units. Within the fire perimeter, Oregon slender salamanders would persist at sites within stands where CWD of adequate size and distribution currently occurs.

In the long term, there would be a loss of standing dead material available for recruitment as down logs and CWD for future Oregon slender salamander habitat within the salvage units. This would have adverse effects to species which find their primary habitat in down logs and CWD such as the Oregon slender salamander. These adverse effects would be small in scale and limited to the salvage units. Approximately 65% of the intensely burned areas and 96% of the light to moderately burned areas within the fire perimeter would remain unsalvaged. The RMP guidelines for CWD (240+ linear feet per acre of material in decay classes 1 or 2, at least 20" in diameter at the large end, and 20 feet in length), could be met throughout the fire perimeter in one to four decades.

Bureau Sensitive – Northern Goshawk

No suitable goshawk habitat would be affected by the proposed salvage and no goshawks are known to be present in the project areas, therefore no adverse effects to goshawks are anticipated.

Bureau Sensitive –Peregrine Falcon

With the seasonal restriction on units A-1, A-2, and A-3 in place from February 1 to July 31, no disturbance effects are anticipated during the nesting season. ODFW is planning to monitor the nest site for occupancy and reproductive success. If no nesting peregrines are present, then the seasonal restriction could be waived.

Survey and Manage Category B – Red Tree Vole

No suitable red tree vole habitat would be affected by the proposed salvage, therefore no adverse effects to red tree voles are anticipated.

Bats

There would be a loss of some standing dead for recruitment as snags as a result of salvage operations. The standing dead which would be salvaged averages smaller diameters and much of it is not suitable for bats. Diameters average 10 to 12 inches in Units A-1, A-2, and A-3; and 18 to 22 inches in units C and D. The old-growth trees and snags in Unit A-1 and Area B represent the best habitat for bats. Area B is not proposed for harvest and old-growth components in Unit A-1 would be reserved and left standing to the greatest extent possible. The remaining snags within the fire perimeter would provide better habitat conditions for bat species than pre-fire snag levels. Other Special Status bat species are closely associated caves, cliffs, buildings and abandoned mines. There are no caves, buildings or abandoned mines in the project area and all of the extensive, well developed cliffs and rock outcroppings are located outside of Unit A-1 in the severely burned area.

Migratory and Resident Birds

Bird species richness at the stand level has been correlated in some recent studies with habitat patchiness, densities of snags, and density by size-class of conifers (Hagar, McComb, and Emmingham 1996, Hansen et al. 2003). The majority of the effects to migratory and resident birds have already occurred due to the fire. Changes in habitat structure due to the fire are likely to have an immediate effect on bird communities in these stands.

About 115 acres of mid seral stands and 162 acres of early mature were burned. About 68 acres of mid seral and 9 acres of early mature stands burned intensely, and have been replaced by early seral stages. The number and densities of snags has greatly increased from less than 2 per acre to over 200 per acre in severely burned areas. These changes favor early successional focal species such as the rufous hummingbird and orange-crowned warblers; and cavity dwelling species such as the Western bluebird. The mosaic of open areas, snags and surviving green trees and unburned mid seral and early mature favors the olive-sided flycatcher; and the future development of hardwood/brush components and canopy layers favors mid seral focal species such as the Hutton's Vireo and black-throated gray warbler. Within the salvage units, there would be a loss of standing dead material for recruitment as snags, down logs and CWD due to salvage operations. This would have adverse effects to cavity dwelling species such as the Western bluebird in the salvage units. These adverse effects would be small in scale and limited to the salvage units. Approximately 65% of the intensely burned areas and 96% of the light to moderately burned areas within the fire perimeter would remain unsalvaged. No species would be extirpated and no migratory or resident bird species with BLM special status would be impacted in stands as a result of salvage.

Big Game

Big game species would be temporarily disturbed by the proposed action. Logging equipment noise and human presence may cause animals to avoid or disperse from the project areas temporarily. Thermal and hiding cover quality would decrease in the short-term (less than 2 years) as a result of disturbance, opening roads, renovating roads and road improvements. After salvage operations are complete, new and renovated roads would be blocked, decommissioned, and/or gated restricting access to salvage areas, and disturbance would return to low levels. Salvage would further open up areas burned by the fire and forage seeding would provide quality forage in the short term. Vegetative forage would increase in quantity as a result of forage seeding and increased light, attracting early successional species to the areas such as elk and deer.

In the long term (10+ years), thermal and hiding cover quality would increase and vegetative forage such as saplings, shrubs, grasses and forbs would decrease as a result of increasing canopy closure, which would decrease the amount of light reaching the forest floor.

Cumulative Effects

Residual Old Growth Trees, Snags and CWD:

Most of the old-growth trees (80%) are located outside of the Unit A-1 and in Area B, which are not proposed for salvage. Old-growth components in Unit A-1 (about 1 per acre) would be left standing to the greatest extent possible. Any which are felled or otherwise knocked down would be retained on site as CWD. Cumulative effects to snags and CWD are expected to be minimal. Of the estimated 77 acres in the fire perimeter which burned in the severe category with nearly 100% mortality, 27 acres or 35% would be salvaged. Of the estimated 200 acres of light to moderately burned areas, 7 acres or 4% would be salvaged. Within the fire perimeter, most existing snags and CWD in all sizes and decay

classes would be reserved. Additional trees which were live post fire will die, greatly contributing to the snag/standing dead and CWD available within the fire perimeter. Standing dead and CWD would greatly exceed pre-fire conditions after salvage operations.

Northern Spotted Owl:
The proposed action alternative would not contribute to cumulative effects to spotted owls because dispersal habitat within and between known spotted owl sites would be maintained, and no suitable habitat would be removed or downgraded within or outside of known spotted owl sites.

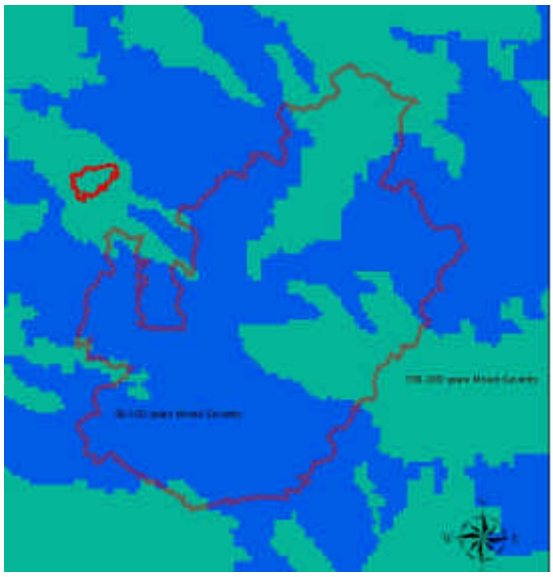
Survey and Manage and BLM Special Status Species:
The proposed action alternative would not contribute to cumulative effects to Survey and Manage and BLM Special Status Species due to the post fire lack of suitable habitat for these species within the salvage units. The proposed salvage would not be expected to contribute to the need to list any Bureau Sensitive species under the Endangered Species Act (IM OR-91-57, Oregon-Washington Special Status Species Policy) because habitat for these species that is known to occur in the fire perimeter would be not be eliminated, and habitat connectivity would not be changed.

Migratory and Resident Birds:
Habitat changes resulting from the proposed salvage would not eliminate any forest cover or change habitat patch size nor contribute to a fundamental change in the species composition of existing bird communities within the watershed. Therefore, no adverse cumulative effects would occur to migratory birds.

Big Game:
No adverse cumulative effects to big game species populations are expected. The proposed action would not fundamentally change or eliminate any forest cover or change any habitat patch size. Therefore, thermal and hiding cover present before treatment would be maintained after harvest. Forage seeding would result in the short term benefit of enhancing forage quality within the fire perimeter.

3.9 Fire and Fuels

3.9.1 Affected Environment



The project area was modeled for two fire regimes: 50-100 years Mixed Severity and 100-200 years Mixed Severity. The actual fire demonstrated that this was accurately modeled as mixed. There are areas where the fire burned intensely killing all vegetation next to areas where the fire simply crept on the ground burning pockets of debris with the whole range of effects in-between.

Since it had over 100 years since a large fire occurred in the project area, the potential risk for a fire was high. There are also predictions that climate change will result in more frequent and larger fires (Westerling etal 2006, Swetland 2006, Whitlock etal 2003). The physical setting (steep with all aspects), weather and fuels combined to result in the mix of wildfire intensity and severity.

Most of August was hot and dry. The weather on the first day of fire suppression (9/01/06) at 8 AM was hot (92°F) and dry (RH 17%) with an east wind (15 mph), spotting had occurred (½- ¾ mile). The fire had burned 700 acres within the first few hours.
The first fuel to burn was young plantations where the branches, brush and pre-commercial thinning slash allowed fire to spread rapidly with the wind up the steep slopes.

Spotting occurred to the west into the both young and older forest types. The fire spread west and north with the wind. As the east wind died down and the normal west wind movement started, the fire backed down west facing slopes or burned upslope from previous spots.

The areas with the greatest mortality were caused by wind events at the right moment; on steep slopes (radiant heat preheated fuels upslope), or pockets of accumulated surface debris. Fine fuels had moisture levels of 2-5% for the first few days of the fire. The ignition component (IC) was 41 on the day the fire started. This means that 41% of the time that a firebrand landed it would ignite and need suppression. The relative humidity was down to the mid teens during the day.

These indicators all signal conditions for quick ignition, rapid buildup, extensive crowning, any increase in wind causes increased spotting, crowning, loss of control; fire moves up bark of trees igniting aerial fuels; dangerous burning conditions. (FBH, Appendix B)

The large woody debris (1000 hour fuels) on the forest floor was drier than normal (11-12% fuel moisture – on June 15th they were at 35%). Because of this low level of moisture the large down wood and snags caught fire and smoldering combustion of large woody debris radiated intense heat to nearby trees and roots. Other areas with only light surface fine fuels experienced mostly surface fire that was quick and only burned the top inch of the duff layer.

The private section of land to the east will be re-stocked as quickly as possible. A recent study of postfire logging (McIver, 2007) showed that logging activity doubled the mass of woody fuels, particularly in the smaller size classes. The increase in total woody fuel was the result both of logging activity creating slash and the natural fall-down of dead trees. This equates to a short-term increase in fire risk for a developing stand. (Donato et al, 2006) Both of these studies were done in large fire (>5,000 ac.) areas, we will be treating much smaller areas within the total fire area, but the potential still can exist if we do not plan for treating the fuels on the area. The adjacent private lands will be at increased risk because of the logging slash fuel mass.

Air Quality

Fuels can be burned to reduce accumulations. Prevailing winds are from the west which carries any smoke away from the valley with its people and structures. Redmond and Bend are the down-wind communities of greatest concern in our prescribed burning program. These communities are located so far to the east that the project poses very little if any threat to their air quality.

3.9.2 Environmental Effects: Alternative 1 - No Action

Fuels: Natural fuel loads will build over time at a faster rate than under alternative 2, contributing over time to higher potential fire severity and intensity in the surrounding area. Over time, as more snags fall, the increase in large dead fuels on the surface would create a more receptive bed for fire brands and increase spotting potential. Wildfire severity would increase due to the increased residence time and intensity of the burning large fuel (burns longer and hotter), but it would not greatly affect spread rates, which are largely determined by the amount of fine fuels. Vegetation will reestablish naturally. Brush species would be less flammable than conifer species for the first 15-20 years, after which the live-to-dead ratio in the brush would increase, thus increasing flammability and potential for surface to crown fire occurrences.

Air Quality: In the event of wildfires, air quality would deteriorate due to smoke emissions from wildfires. The potential for large quantities of smoke over long periods of time and at uncontrollable times is high. During the fire season (June – September) weather patterns are often stable creating inversions in the valley bottoms trapping smoke.

3.9.3 Environmental Effects: Alternative 2 – Proposed Action

Fuels: Natural fuel loads will build over time but at a lower rate due to the removal of biomass through salvage logging and treatment of activity fuels. The proposed fuel treatments lower the surface fuel loads left from logging and the fire to reduce the potential risk from new fire starts or high intensity fires spreading rapidly. Reducing fuel loads also results in more efficient and quicker fire suppression, less risk for fire fighters and less resource damage

Machine/hand piling and burning reduces the fuel load and risks. Burning of any piles is deferred until late fall when the ground is saturated, including soil under landing piles. These wet soil conditions moderate any heat damage done to the soil when the piles are burned.

Mastication changes the size and distribution of the fuels which reduces the intensity and spread of a fire. It could reduce vegetation regrowth if it was too thick and take nitrogen away from other sources as it decomposes it into the organic layer. The amount of fuel on-site will determine if this is a viable option.

Air Quality: Any pile burning would occur under smoke management guidelines, so air quality would not be affected. Reducing the fuels would reduce the amount of smoke in the event of wildfires reoccurring in the project area.

3.10 Visual Resources

3.10.1 Affected Environment

The BLM lands within the Middle Fork Fire area are a mixture of VRM classes 2, 3 and 4, as shown in Table 11.

Table 11: *Acres by VRM Class*

Unit Number	VRM 2	VRM3	VRM4
A1		11	12
A2			5
A3			2
C	3		
D	1		

Unit A1 is on top of Rocky Top Ridge. This feature is partially owned by private industry and part managed by BLM. The portions owned by industry have been recently logged.

The portions managed by BLM suffered some of the most intense fire behavior, resulting in a high percentage of fire killed trees. The resulting (and current) view of this prominent landscape feature is of fire killed trees on the north half of the ridge with clearcut private lands to the south. On the less steep, lower slopes, where the other units lay, the flatter topography and standing green timber largely obscures the impacts of the fire.

3.10.2 Environmental Effects: Alternative 1 – No Action

BLM lands affected by the fire would remain as is. Unit A1, on Rocky Top Ridge would be highly visible and would present a view of fire killed trees in stark contrast to the logged off private lands sharing the south end of the ridge. The dead trees in the other units would be visible until the red needles fall off and the units would then be hidden by the surrounding trees and topography.

3.10.3 Environmental Effects: Alternative 2 – Proposed Action

The proposed salvage would not dominate the view of the casual observer. Fire killed trees within the five proposed harvest units would be felled and removed. Live trees within these units would be retained. Due to the small size of the units in VRM 2, the units would be obscured by the surrounding trees and would be unlikely to attract the attention of the casual observer. Units A2 and A3 are partial cuts and would be unlikely to be visible, and certainly would not dominate the view of the casual observer. Being located on top the Rocky Top Ridge, Unit A1 would be visible, but harvesting the fire killed trees would tend to blend with the adjacent private lands, making the entire ridge top more uniform in appearance.

3.11 Cultural Resources

3.11.1 Affected Environment

The project area is in the lower elevations of the Cascade foothills at approximately 1900 to 3500 feet in elevation with slopes ranging between ten to over 80 percent. Vegetative cover is typical Cascade conifer communities with an understory of vine maple, Oregon grape, sword fern and tree litter. The project is in the Quartzville Creek drainage and is dissected by several small unnamed intermittent tributaries. Much of the area had been burned, eliminating brush and vegetative debris, which made visibility very good. Historic records report findings of a scatter of jasper flakes and some cabins in the general area, but nothing in the specific project locations. Field surveys in the project area revealed no new sites.

3.11.2 Environmental Effects: Alternative 1 - No Action

Under this alternative no additional disturbance of the area would occur. Any artifacts that may be present would remain undisturbed and unrecorded.

3.11.3 Environmental Effects: Alternative 2 - Proposed Action

Salvage operations would disturb the ground and potentially could uncover hidden artifacts, allowing their discovery. Provisions in the timber sale contract would require a cessation of all activities upon discovery of any objects or sites of cultural value. Resumption of operations would be allowed only when examination, recordation and protection of culturally important resources is assured.

4.0 CONTACTS AND CONSULTATION

4.1 Public Scoping and Notification

4.1.1 Tribal Governments, Adjacent Landowners, General Public, And State County And Local Government Office

In compliance with NEPA, the project first appeared in the September 2006 edition of the quarterly Salem District Project Update, which was mailed to over 1,000 addresses. During the public scoping process, approximately 35 letters were sent to interested groups and individuals as well as to those who own land or live near the project area. In response, two scoping letters were received. Concerns raised in these letters are addressed in Section 1.4 of this EA.

4.1.2 Availability of Document and Comment Procedures

The EA and FONSI will be made available for public review ***March 14, 2007*** to ***March 30, 2007***. Copies of the EA are also available upon request by calling Randy Herrin, project leader, at (503) 375-5646. The notice for public comment will be published in a legal notice by the *Albany Democrat Herald* newspaper. Written comments should be addressed to Rudy Hefter, Acting Field Manager, Cascades Resource Area, 1717 Fabry Road S.., Salem, Oregon 97306. Emailed comments may be sent to OR_Salem_Mail@blm.gov. Attention: Rudy Hefter

4.2 Consultation

4.2.1 ESA Section 7 Consultation

US Fish and Wildlife Service

Northern Spotted Owl: A preliminary letter describing the magnitude of the fire and the scope of potential salvage plans was submitted to the Willamette Province Level I Team on October 26, 2006. On February 15, 2007, the draft Biological Assessment for the Middle Fork Fire Salvage Project was presented to the Willamette Province level I Consultation Team. U.S. Fish and Wildlife Service (USFWS) concurred with the preliminary effect determination that the proposed salvage may affect, but is not likely to adversely affect, the spotted owl and critical habitat.

The final Biological Assessment for the proposed salvage was submitted for Informal Consultation with U.S. Fish and Wildlife Service (USFWS) on March 6, 2007. A letter of Concurrence is expected in April 2007. The proposed salvage and connected actions will incorporate all applicable Management Standards set forth in the Letter of Concurrence.

NOAA Fisheries (NMFS)

Endangered Species Act Determination of Effect for Lower Columbia River Steelhead Trout, Lower Columbia River Chinook Salmon And Upper Willamette River Chinook Salmon

The only ESA listed fish species that may be present in the project watershed is Upper Willamette River (UWR) Chinook salmon. Since 2004 the ODFW has been experimentally planting pre-smolt spring Chinook salmon in Quartzville Creek and the Middle Santiam River. A determination has been made that the proposed action would have “no effect” on UWR Chinook salmon. Therefore, consultation with NOAA Fisheries on the potential effects of the project on UWR Chinook salmon

would not be required. Potential effects of the salvage activities and connected actions on the listed fish species would be related to sediment inputs to streams associated with road construction/decommissioning, culvert replacement/removal and timber hauling, as well as water temperature increases associated with removal of riparian vegetation.

The selected action incorporates very little road construction (0.2 mile, none within Riparian Reserves) or decommissioning and no existing culvert replacement or removal. The retention of full Riparian Reserves on all streams will prevent any decrease in stream shade that could result in an increase in stream temperature. Timber hauling on unpaved roads would be restricted to periods of dry road conditions. In addition, streams in the vicinity of the project area flow into Green Peter Reservoir where any potential effects of degraded water quality in the project area streams would be quickly diluted. The determination of "no effect" is based on the factors stated above that would prevent increases in sediment inputs or temperature in Quartzville Creek (EA Section 3.6.3).

4.2.2 Consultation with Resource Experts

Bruce Hostetler, Entomologist, U. S. Forest Service, Forest Health & Disease Service Protection Center, 16400 Champion Way, Sandy, Oregon 97055-7148

Nancy Taylor, Wildlife Biologist, Oregon Department of Fish and Wildlife, 7118 NE Vandenberg Avenue, Corvallis, Oregon 97330

5.0 PROJECT MAPS

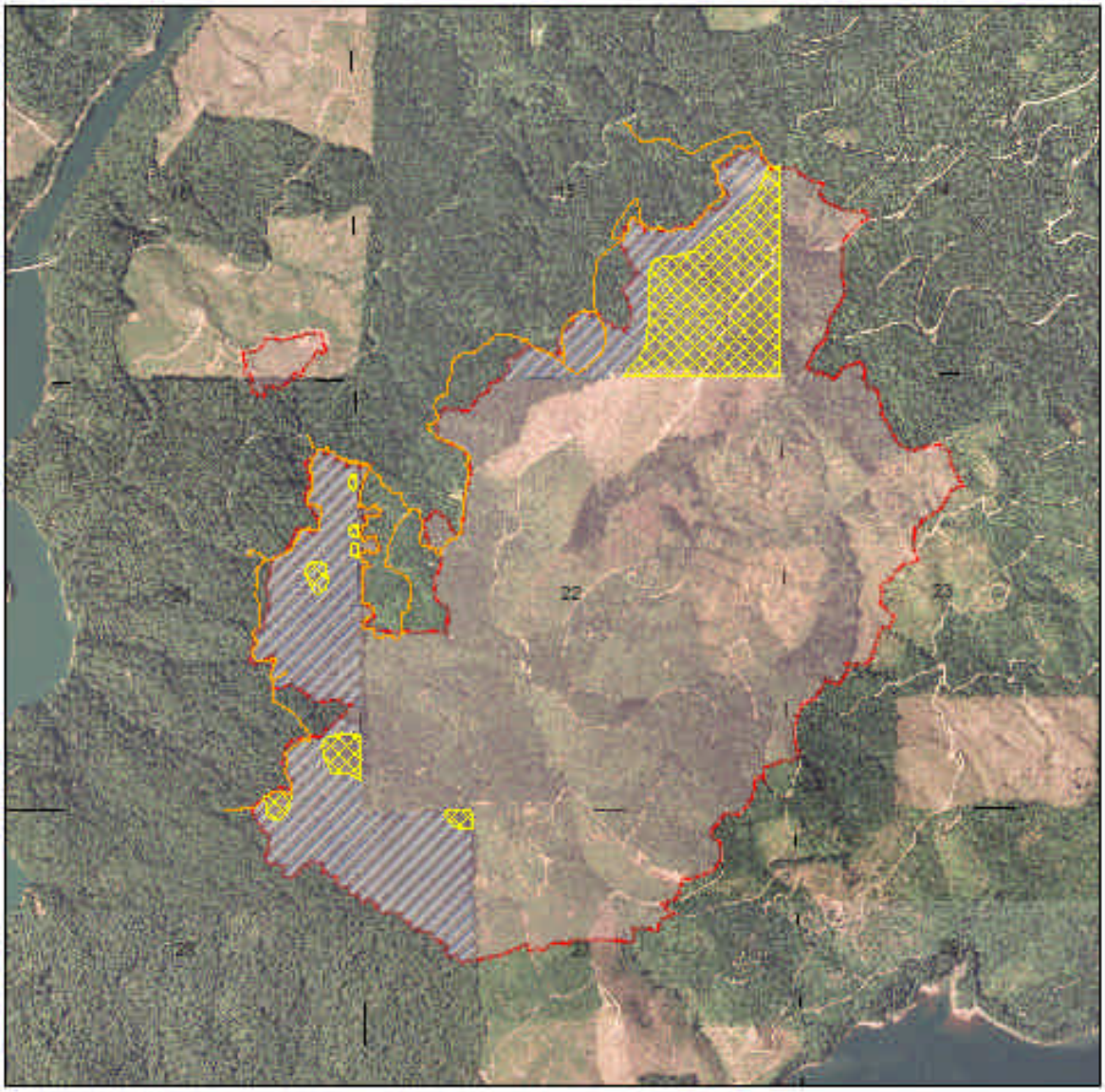
5.1 Burn Severity Map

5.2 Proposed Action Map

5.3 Road Construction / Improvement Map

Middle Fork Fire Salvage

5.1 Burn Severity Map



T. 12 S., R. 3 E., W. M.

1,000 0 1,000 2,000 3,000 4,000 5,000 Feet

1 inch equals 2,000 feet

Legend

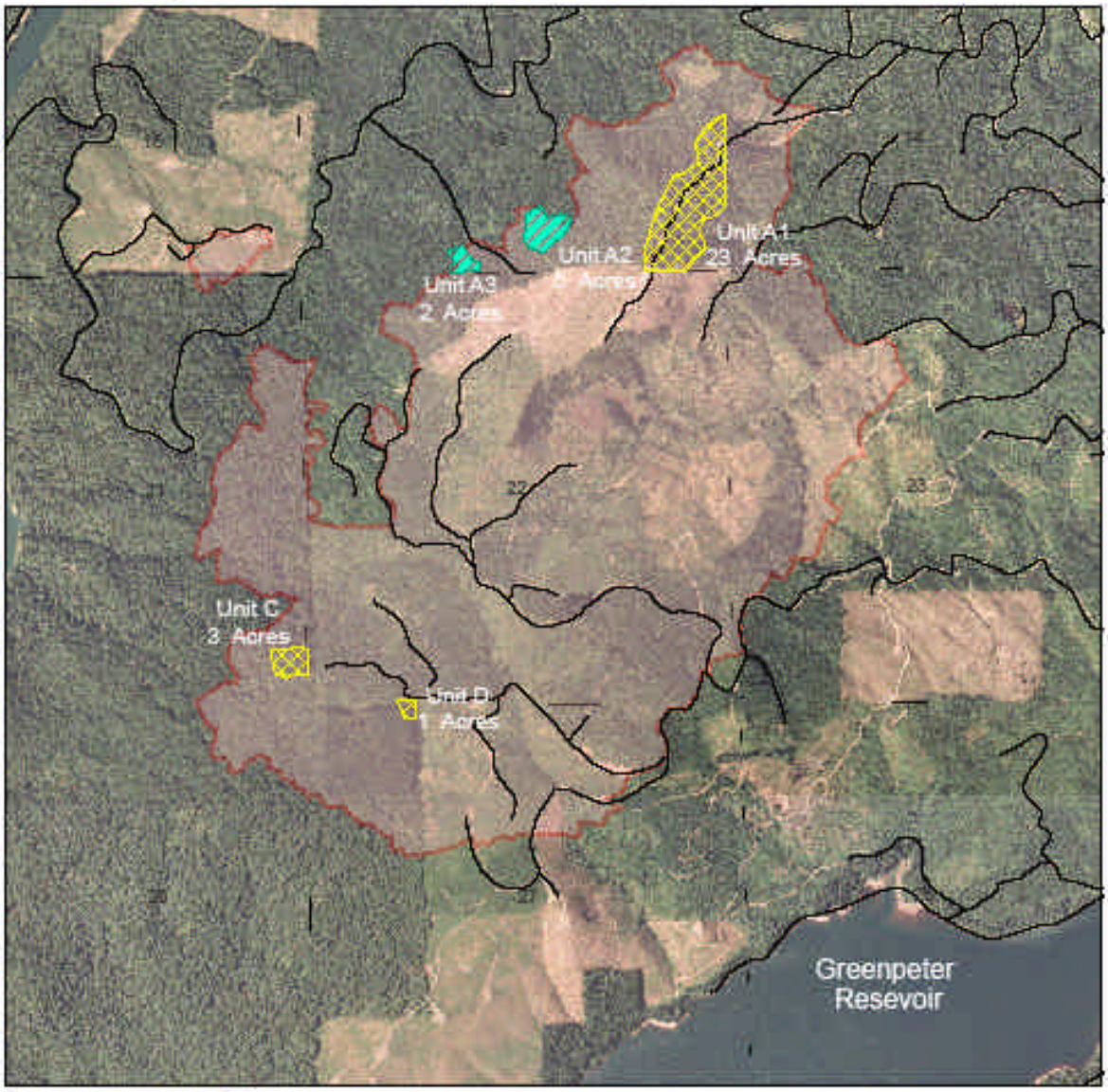
- Final Fire Perimeter
- High Intensity Fire
- Lower Intensity Fire
- Dozer Fire Trails

This map reflects fire intensity only on BLM lands within the Middle Fork Fire area.

N
W E
S

Middle Fork Fire Salvage

5.2 Proposed Action



T. 12 S., R. 3 E., W. M.

Legend

Salvage Units

Harvest Type

- Partial Cut
- Regen
- Fire Area
- Existing Roads

1,000 0 1,000 2,000 3,000 4,000 Feet

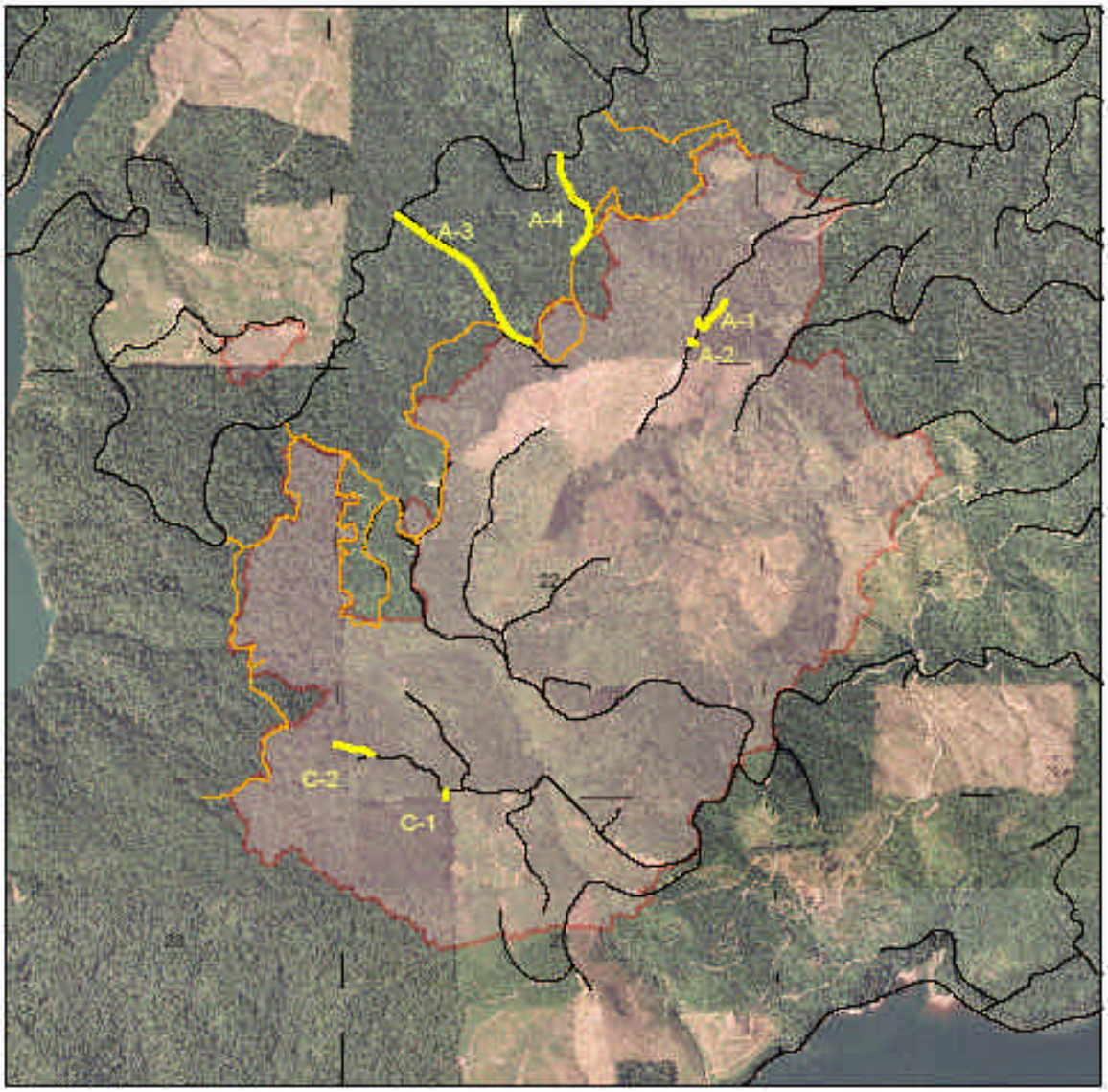
1 inch equals 2,000 feet

N W E S

Unit No.	ACRES	Harvest Type
Unit A1	23	Regen
Unit A2	5	Partial_Cut
Unit A3	2	Partial_Cut
Unit C	3	Regen
Unit D	1	Regen

Middle Fork Fire Salvage

5.3 Road Construction / Renovation



Legend

- Road_Const/Renovate
- Dozer Fire Trails
- Fire_Area
- Existing Roads

1,000 0 1,000 2,000 3,000 4,000 5,000 Feet

1 inch equals 2,000 feet

N
W E
S

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggreagate use with or without other data.

6.0 References

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