WALTER'S CABIN FOREST TREATMENTS
ENVIRONMENTAL ASSESSMENT
EA# OR-014-06-03

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
LAKEVIEW DISTRICT - Klamath Falls Resource Area

ABSTRACT: The following Environmental Assessment addresses the environmental effects associated with a variety of proposed actions from the Walter's Cabin Forest Treatments. Proposed treatments include; commercial timber harvesting, road improvements, road construction, road closures/decommissioning and fuels treatments (slashbusting).

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FREEDOM OF INFORMATION ACT AND RESPONDENT'S PERSONAL PRIVACY INTERESTS: The Bureau of Land Management is soliciting comments on this Environmental Assessment. Comments, including names and street addresses of respondents, will be available for public review at the above address during regular business hours. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

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CHAPTER 1 - INTRODUCTION

The Klamath Falls Resource Area Resource Management Plan (KFRA/RMP) provides direction for managing lands on the western part of the Lakeview District. The Walter's Cabin Forest Treatments environmental assessment (EA) will analyze the environmental impacts associated with a variety of proposed actions from the Walter's Cabin Forest Treatments. Proposed treatments include commercial timber harvesting, road improvements, road construction, road closures/decommissioning and fuels treatments (slashbusting). The location of the project area is shown in Figure 1. Many of the stands in the proposed Walter's Cabin Forest Treatments area are multi-aged, multiple canopy stands. Often, the stands occur in dense clumps interspersed with openings that have been planted with ponderosa pine and Douglas-fir. Many of the planted openings have grown into sapling to pole sized trees. Many stands proposed for treatment have a residual large tree overstory component of ponderosa pine, sugar pine, Douglas-fir, incense cedar and white fir and a dense understory component comprised mostly of white fir and ponderosa pine. Past management practices in the area have included timber harvesting, fuels treatments, fire suppression, grazing, and recreation.

Proposed Action

The following activities are included in the proposed action (see Chapter 2 for a detailed description):

Commercial Timber Harvest within the Matrix Land Allocation:

- Density Management/Variable Density Thinning - approximately 575 acres
- Fuels Treatment (Post Harvest) in the Matrix Land Allocation - approximately 670 acres of slashbusting

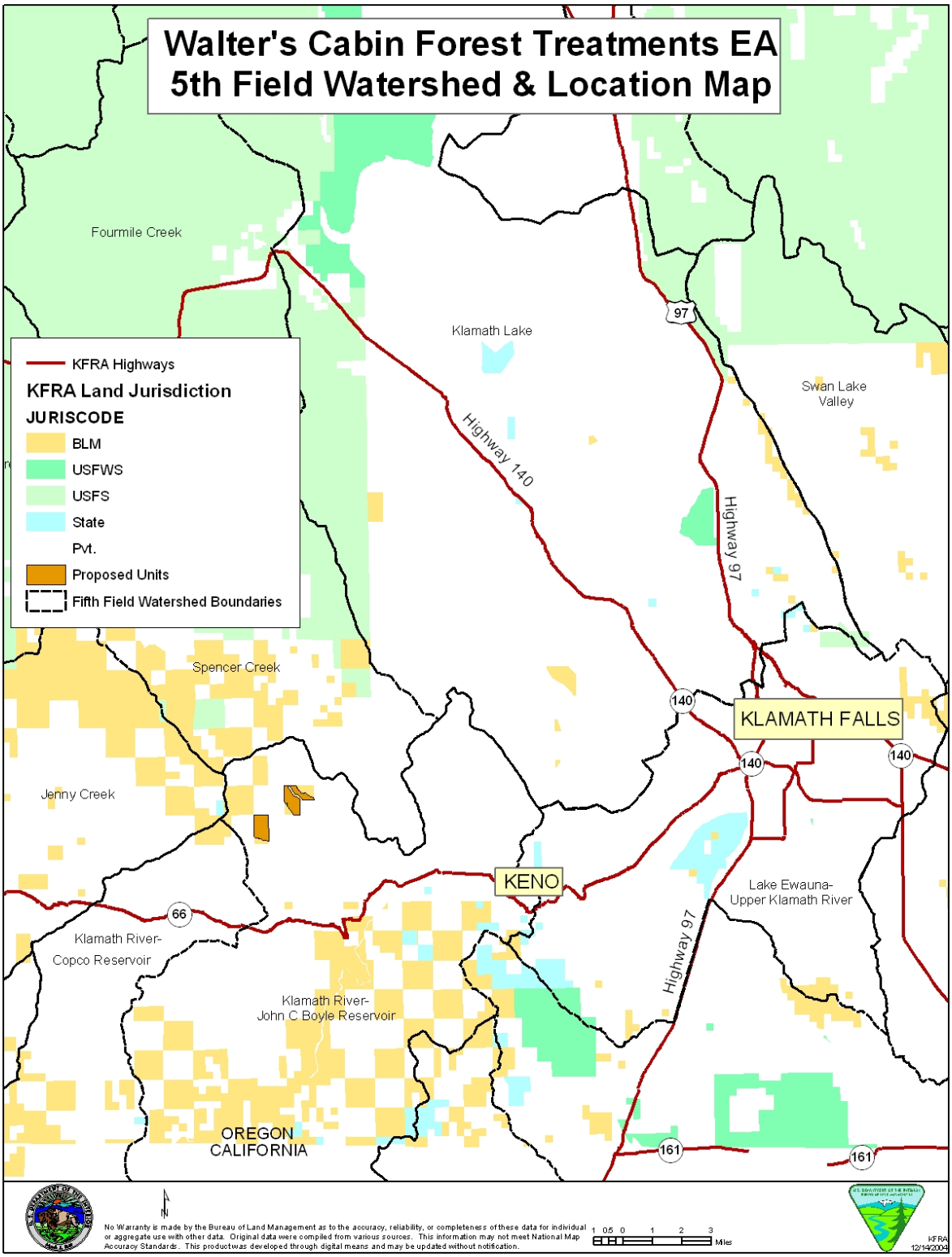
Road Treatments:

- Renovation (grading, brushing, ditch cleaning and drainage improvement) – approximately 3.4 miles of road
- Road closures (Blocking) – approximately 1.2 miles of roads closed and 8 road blocks installed/improved
- Road fully decommissioned – approximately .5 miles of roads would be ripped, seeded with native vegetation, and planted with conifer seedlings, where needed
- Road Construction – approximately 250 feet of new permanent road and approximately 1,300 feet of temporary spur roads. Approximately 100 feet of temporary spur road one is located on private land owned by the Inland Fiber Group (IFG).

Location

The proposed project area is located north of State Highway 66 and approximately 10 miles west of the town of Keno, Oregon (refer to Figure 1 – Location Map). All harvest treatments proposed in this EA would occur exclusively on BLM-administered lands within the Klamath Falls Resource Area (KFRA).

Figure 1 – Fifth Field Watershed and Location Map



Purpose and Need for Action

Purpose

- Implement actions to meet the objectives of the KFRA/RMP (discussed below).
- Achieve the desired future condition (discussed below).
- Improve the resiliency of residual trees from drought, insects, and disease.
- Produce a sustainable supply of timber and other forest commodities to support local and regional timber-related businesses.
- Reduce the forest fuel hazards and overstocking that makes these stands vulnerable to stand replacing wildfires.
- Protect riparian conditions.
- Reduce road density in the area while improving the condition of the remaining transportation system.

Need

Field observations and timber stand data show that the areas targeted for treatment in the proposed project area are presently overstocked, with declining forest health (stand resiliency) and reduced annual growth (BLM Walter's Cabin Precruise Data 3/5/2006). Some stands are already being impacted by insects and disease and need to be treated to stop the spread and reduce the loss of timber and habitat. (Note: Forest health in this EA is defined as the ability of the forest ecosystems to sustain themselves in the process of natural disturbances such as insect outbreaks and wildfires. A more detailed discussion of forest health is available in the KFRA/FEIS (pages 3-63 to 3-66). Trees within densely stocked stands are typically less vigorous and more vulnerable to stress and attack by insects and disease. There is a need to reduce the stand density to improve growing conditions (reduced competition for water, nutrients and light) and increase the vigor of the remaining trees on approximately 575 acres of dense, overstocked forested stands in the proposed project area.

In the KFRA/RMP, the lands being analyzed in this EA have been allocated to Matrix and Riparian Reserve land allocations. The Matrix lands have objectives to produce a sustainable supply of timber and other forest commodities as stated in the KFRA/RMP and O&C Act of 1937, which can be met by removing trees under commercial contract.

There is a need to thin timbered stands to reduce fire hazard. Overstocked stands have more surface, ladder and canopy fuels that result in a higher fire hazard in some forested areas.

There is a need to reduce the road density in order to work towards meeting KFRA/RMP objectives and to benefit wildlife and hydrologic function. Open road density on BLM lands in Section 15 is 5.0 miles per square mile. In Section 21, road density is 4.7 miles per square mile. The RMP objective is 1.5 miles of open road per square mile (KFRA/RMP, page 31).

Desired Future Condition and RMP Objectives

Matrix Forest Stands

For Matrix forest stands, the RMP explains in detail the desired future condition and objectives (See KFRA/RMP, page 22 and pages E-8 to E-11). In general, the desired future condition of the Matrix forest landscape is a healthy, diverse, and productive forest that is resilient to natural disturbances (disease, drought, insects, and fire) and meets the following objectives:

- Produces a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability (KFRA/RMP, page 22).
- Provides connectivity (along with other allocations such as riparian reserves) across the landscape for forest dependent plant and animal species (KFRA/RMP, page 22).
- Provides habitat for a variety of organisms associated with both late-successional and younger forests (KFRA/RMP, page 22).

- Provides for important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components such as down logs, snags, and large trees (KFRA/RMP, page 22).

Page E-9 of the KFRA/RMP discusses target stand conditions that over time would trend towards a forest composed of stands containing a variety of structure, trees of varying sizes and ages, and stands with an assortment of canopy configurations. Target Desired Species Composition (by percent conifer basal area), shown on Table E-1 (KFRA/RMP, page E-10) is designed to improve stand health and resiliency. The Walter's Cabin Timber Sale silvicultural prescription was developed to move the existing stands towards historical species compositions and these desired future conditions.

Riparian Reserves

In general, the desired future condition of riparian reserves is proper functioning condition of upland vegetation and riparian areas (lands adjacent to streams, wetlands, springs, and other water bodies, with vegetation and soils having physical characteristics showing permanent surface or subsurface water influence), except where resource management objectives would require an earlier successional stage (KFRA/RMP page D-43). The desired future condition of riparian reserves would be achieved by meeting the following objectives:

- the Aquatic Conservation Strategy Objectives listed on page D-6 of the KFRA/RMP
- reduced risk of high intensity fires as well as insect infestations
- reduced sediment input to streams from natural disturbances and management actions

Roads

The KFRA/RMP (pages D-13 to D-21) lists the desired future conditions and objectives for managing roads in the KFRA. The desired future condition for roads in the analysis area is a transportation system that meets the following objectives:

- Provides suitable transportation facilities for management and recreational use.
- Ensures that the road investment is maintained and that roads and road use are not contributing to resource damage.
- Reduces road densities where feasible.

Environmental Analysis and Decision Process

An interdisciplinary evaluation of the resources in the analysis area including wildlife, recreation, soils, fisheries, timber, cultural, hydrological, as well as other resources will be documented as part of this EA. The analysis is accomplished by examining the different resources in the analysis area and recommending a course of action that best meets the objectives outlined in the Klamath Falls Resource Area Resource Management Plan.

This Environmental Assessment is tiered to the Final - Klamath Falls Resource Area Resource Management Plan and Environmental Impact Statement, September 1994 (KFRA/FEIS). The purpose of this EA is to assess the effects of the proposed treatments and to determine if the environmental effects associated with the proposed site-specific treatments are significant and/or greater than those already analyzed in the KFRA/FEIS. If the effects are not significant or greater than those analyzed in the KFRA/FEIS, a Finding of No Significant Impact (FONSI) will be documented upon the completion of the analysis. In addition to providing analysis to determine whether or not an environmental impact statement is necessary, this EA will provide the public with information about the proposed treatments, describe the alternatives and the associated effects with each alternative, and assist the decision maker in selecting an alternative.

The KFRA Field Manager, as the responsible official, will decide whether or not to implement the proposed action and determine whether or not the proposed action is consistent with the KFRA/RMP as

well as other laws and regulations (i.e., the Endangered Species Act and Clean Water Act, etc.). The proposed treatments or projects would span at least a five year period. Information obtained from biological surveys and consultation is included in the EA and would also be incorporated in the final Decision Record to this EA.

Public Input Summary and Issue Development

A scoping letter dated March 7, 2006, was sent to the resource area timber sale EA mailing list of approximately 110 people. The letter explained the Walter's Cabin Timber Forest Treatment project proposal and asked the general public for comments. The resource area received comments from two individuals and three comments from two organizations. The issues and concerns raised were considered in formulation of alternatives (Chapter 2), analysis of the alternatives (Chapter 3) and development of mitigation measures. Issues and concerns included roads, soils, timber management, NEPA documentation, wildlife, water quality, fire and fuels. A table outlining the scoping issues and where in the EA responses to those issues can be found is available in the project record.

Management Direction and Conformance with Existing Plans

This Environmental Assessment (EA) is tiered to the Klamath Falls Resource Area Record of Decision and Resource Management Plan and Rangeland Program Summary, June 2, 1995 (KFRA/RMP) and the Klamath Falls Resource Area Resource Management Plan and Environmental Impact Statement, September 1994 (KFRA/FEIS). Management direction and recommendations for project design and implementation is contained in the KFRA/RMP and a number of supporting documents listed below:

- Klamath Falls Resource Area Integrated Weed Control Plan Environmental Assessment, July 21, 1993
- Range Reform FEIS, August 1995
- Final Environmental Impact Statement, Vegetation Treatment on BLM Lands in Thirteen Western States, 1991
- Aquatic Conservation Strategy Supplemental Environmental Impact Statement/Record of Decision 2004 (ACS/ROD)
- 2001 Record of Decision and Standard and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measure Standards and Guidelines (2001 ROD)
- 2003 Annual Species Review for the 2001 Record of Decision and Standard and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measure Standards and Guidelines (2003 ASR)
- Spencer Creek Pilot Watershed Analysis, August 1995

CHAPTER 2 - PROPOSED ACTION AND ALTERNATIVES

There are two alternatives analyzed in this EA. Following is a description of each alternative, including the proposed action, and other alternatives dropped from consideration.

Proposed Action Alternative

The proposed action is designed to meet the purpose and need of this EA by improving the health of forested stands, reducing fuel hazard conditions, and providing a sustainable supply of timber and other forest commodities. Table 1 shows the specific design of the proposed action. A description of these actions follows:

Westside Matrix Forest Lands

Density Management/Variable Density Thinning

Density Management/Variable Density Thinning would occur on approximately 575 acres of westside matrix lands. This type of harvest would be designed to maintain an uneven-aged, multi-strata stand

structure and reduce competition and stress to remaining trees (KFRA/RMP, Page 56). Generally, 80-120 square feet of basal area per acre would be retained in Units 15-1 and 21-1 with the average being 100. In some areas, basal areas retained would vary from 40 to 200 in order to provide for further variation of stand structure. The southernmost 65 acres of Unit 15-1 (area south and west of the 39-6E-15.1 road) would be marked to a basal area range of 100 to 140 square feet with the average being 120. The higher tree densities in this southern portion of 15-1 would be retained to provide additional canopy closure for northern spotted owl habitat. In general, 25 to 35 percent of the existing stand basal area would be removed through selective thinning. Trees to be thinned/harvested would include trees from all diameter classes and all species. The vast majority of trees thinned/harvested would come from the lower and middle diameter classes. One goal of the silvicultural prescription would be to promote late seral stand characteristics. This means that the larger diameter trees would be retained and promoted where possible. In addition, large (20 to 30+ inches DBH), high resource value trees, such as old-growth ponderosa pine, sugar pine, and Douglas-fir would be retained and thinned around where feasible (see Appendix B - Harvest Prescription).

Although concern about cutting any large/late seral trees was expressed in some public comments, the Resource Area Interdisciplinary Team (IDT) felt that some of the larger trees should be harvested for the following reasons: 1) to manage stand densities, in some areas no thinning would be accomplished without removal of some larger trees, 2) to manage overall stand health by removing some larger insect and disease infested trees, 3) to maintain an uneven aged stand structure, 4) to manipulate species to more accurately reflect historic species composition, 5) to provide a sustainable supply of timber to provide jobs and contribute to community stability.

Tree species would be retained in the following order; sugar pine, ponderosa pine, Douglas-fir, incense cedar, white fir. One of the objectives of the proposed treatments is to increase the species composition of sugar pine, ponderosa pine, Douglas fir, and incense cedar and reduce the percentage of white fir to reflect historic species proportions and to improve overall stand resiliency.

Approximately 2.4 snags per acre would be retained with a minimum diameter at breast height (DBH) of 16", or largest available if less than 16" DBH (KFRA/RMP, Page 26-27). The only existing snags that would be marked for cutting would be those posing safety hazards. However, some trees proposed for harvest are currently in very poor condition and are likely to die before harvest activities are completed. Approximately one hundred and twenty (120) linear feet of down logs per acre would be retained where available. Logs would be greater than or equal to sixteen (16) inches in diameter at the large end and sixteen (16) feet long (KFRA/RMP, Page 23).

Riparian Reserves

Approximately 25 acres of riparian reserves exist within the proposed project area but outside the proposed treatment units (see Appendix D - Units, Roads, Streams Map). The forested stands in the riparian areas already exhibit stand resiliency and are properly functioning. Due to the present condition of riparian reserves no ground disturbing activities from harvesting or slashbusting are proposed for these areas. The no-entry buffers for riparian reserves would be marked, as unit boundaries, on the ground with flagging, posters and paint.

Volume Harvested

In the Matrix lands of the proposed sale area, approximately 1.9 million board feet (MMBF) of timber would be harvested from approximately 575 acres. Appendix B of this EA includes the harvest prescription, project design features, and best management practices for treatment of forested areas.

Fuels Treatment

Harvest operations would include whole tree yarding and/or lopping and scattering of residual slash in order to reduce fire hazard. Upon completion of harvesting, up to 670 acres could be slash-busted if fuel

levels and arrangement are such that treatment is required to further reduce the fire hazards. The 670 acres is an estimate of the highest amount of acres that could be slashbusted. It is likely that following harvest activities, some areas would have low enough fuel hazards that slashbusting would not be required.

Roads and Transportation System

Approximately 3.4 miles of roads would be renovated/maintained, including brushing, grading, and drainage improvement in Sections 15 and 21. The roads would be renovated and maintained to prevent resource damage and to facilitate treatment activities.

Eight roads would be blocked, reducing open road density by approximately 1.2 miles. Roads to be blocked in Section 15 include the 39-6E-15.0, 39-6E-15.1(two blockages), Spur 1 and Spur 2. Roads to be blocked in Section 21 include portions of the 39-6E-21.1, 39-6E-21.2, 39-6E-21.3 and 39-6E-21.4

Roads to be fully decommissioned total approximately .5 miles. Roads to be fully decommissioned in Section 15 include approximately .2 miles of the 39-6E-15.1. Roads to be fully decommissioned in Section 21 include approximately .1 miles of the 39-6E-21.1 road and .2 miles of the 39-6E-21.2 road. All of the fully decommissioned roads (approximately .5 miles) would be considered for ripping and replanting with native vegetation and conifer seedlings. Portions of roads that are currently supporting seedlings and native vegetation would not be planted.

Approximately .25 miles of temporary spur roads would be constructed in order to log portions of Section 15. Approximately 100 feet of Spur 1 would be constructed across private land owned by the Inland Fiber Group (IFG). Both spur roads, including the private portion, would be blocked and seeded with native grass species after completion of logging activities. The two temporary spur roads would be needed for the following reasons; 1) to keep logging distances from exceeding 1,500 feet, 2) to prevent the use of the 39-6E-15.0 road and associated landings that are located within the riparian reserves, 3) to allow full decommissioning of the -15.0 road. The ID Team concluded that the temporary spur roads would be preferable to using and maintaining the 39-6E-15.0 road and landings within the riparian reserves in Section 15.

Approximately 250 feet of new permanent road would be constructed in Section 15 to connect the 39-6E-15.1 and the 39-6E-18.0 roads. The 250 feet of new road would be constructed to allow for the full decommissioning of approximately 1,000 feet of parallel road in Section 15. The result would be a net reduction of approximately 750 feet of existing roads.

Best Management Practices and Project Design Features

A complete list of Best Management Practices (BMPs) is described in Appendix D of the KFRA/RMP. The KFRA Interdisciplinary Team has identified specific BMPs from that list and has developed additional Project Design Features (PDFs) which would be implemented as part of the proposed action. The list of pertinent BMPs and PDFs is in Appendix B of this EA. Both BMPs and PDFs are designed to minimize adverse effects on the natural and human environment, including effects on: vegetation, soils, roads, wildlife, hydrology, cultural, visual, and recreation resources.

Table 1 – Detailed Description of the Proposed Action

Project Element	Units Proposed
Westside Matrix Forest Lands	
Total Amount Of Commercial Timber Harvest	Approximately 575 acres
Volume Harvested Density Management (million board feet)	Approximately 1.9 MMBF
Silvicultural Prescription DM=Density Management/Variable Density Thinning BA=Square Feet Basal Area	DM-100 BA, Approximately 510 acres DM-120 BA, Approximately 65 acres
Fuel Reduction	
Whole Tree Yarding/Lop and Scatter Slash Busting	Approximately 575 acres* Approximately 670 acres*
Riparian Reserves	
No Treatment Planned	Approximately 25 acres
Road Treatments and Transportation Management	
Total Existing Roads	Approximately 5.2 miles
Road improvement (resurfacing)	0 miles
Renovation (grading, brushing, drainage improvement)	Approximately 3.4 miles
Road Closure/Blocking	Approximately 1.2 miles
Road Fully Decommissioned	Approximately .5 miles
Road Rehabilitation (planting road surface)	Approximately .5 miles
Spur Road Construction (temporary roads)	Approximately .25 miles
Permanent Road Construction (new connection)	Approximately .05 miles (250 feet)
Net Change In Open Roads	Minus 1.4 miles

* Note: Whole Tree Yarding/Lop and Scatter and Slash busting would occur on the same acres in some instances

No Action Alternative

The National Environmental Policy Act (NEPA) requires analysis of a No Action alternative. This alternative proposes no new management activities in the project area. Activities proposed in and adjacent to the analysis area and analyzed and approved in other NEPA documents would still occur, such as fuel reduction treatments, routine road maintenance, forest inventory and surveys, grazing and fire suppression. The selection of the No Action alternative would not change land allocations or the direction that the BLM has to manage these lands as Matrix. These lands will likely be considered for similar management in the future with or without the current proposed action.

Other Alternatives and Actions Considered But Dropped From Analysis

Salvage Only Alternative

An alternative was considered that would have analyzed for Salvage Harvest Only in the proposed project area. This would involve the harvesting and removal of only scattered dead and dying trees throughout the proposed Walter's Cabin treatment area. No new roads would be constructed. Salvage is discussed in the KFRA/RMP (pages 55 and E-4). Annual mortality and blowdown has occurred in the resource area since initiation of the KFRA/RMP in June of 1995. Moderate amounts of mortality are anticipated to

continue, especially in white fir areas from overcrowded conditions and from *Scolytus ventrailis* (fir engraver beetle). A portion of the Allowable Sale Quantity for the KFRA has come from the salvage of dead and dying trees on almost a yearly basis. A separate EA (Roaming Salvage II EA #OR-014-03-06) has been prepared to analyze the impacts of continuing to salvage scattered dead and dying trees from the entire Resource Area, including the proposed project area. A Salvage Only Alternative would contribute only minor amounts of timber volume to help maintain a stable timber supply as required in the KFRA/RMP. In addition, a Salvage Only Alternative would not address the need (See Purpose and Need) to reduce the density of the forest areas to improve forest health, stand resiliency, and growth. Therefore, this alternative was dropped from further consideration.

Restoration Treatments Only Alternative (including prescribed fire only)

Another alternative considered was one that would analyze the effects of implementing only restoration treatments, primarily hazardous fuel treatments (slashbusting and underburning) in the Matrix and Riparian Reserves with no commercial harvest and no new road construction. Prescribed fire was considered as an alternative that would have thinned the stands and treated fuels. However, this alternative was dropped from further analysis based on the understanding that a "Restoration Only" (including prescribed fire only) alternative would not provide timber to local communities and therefore would not fully meet the land use plan objectives or the purposes and needs for the proposed action. In addition, many of the forested areas containing trees in the mid-size diameter range 6"-16" are in need of thinning to reduce density. These stands have developed as a result of past timber management and fire suppression for over 50 years. Using fire only to thin forested stands at the present time is often not feasible due to the mortality risk to the desirable reserve trees.

Prescribed Fire After Harvest Treatments

An action was considered that would have analyzed introducing prescribed fire across the entire proposed project area following the harvest activities described in the proposed action. This action was dropped from further analysis based on concerns regarding potential impacts to future timber production including prescribed fire impacts to plantations and second-growth white fir stands. In addition, potential impacts to wildlife habitat from further reductions of canopy closure were considered. Finally, not using prescribed fire as part of the proposed action does not preclude the use of fire in other federal actions considered for the analysis area. It is probable that fire will be eventually be reintroduced to the forested stands in the project area. This would likely occur when stand conditions are such that the risk to the residual stand and habitat is low and multiple objectives can be met with prescribed fire.

CHAPTER 3 – AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

Introduction

This chapter summarizes the physical, biological, and socioeconomic environment of the Walter's Cabin Forest Treatments project area and the consequences of the proposed actions. A detailed discussion on the affected environment and environmental consequences can also be found in the KFRA/FEIS (pages 3-3 to 3-79). The affected environment reflects the existing condition that has developed from all past natural events and management actions within the project area (and/or fifth field watershed). It is a combination of natural and human caused fires, fire suppression, road building, timber harvesting, grazing, fuel reduction treatments, and the effects of recreational use. The current condition assessed for each affected resource is a result of all past natural events and management actions. It is therefore unnecessary to individually catalog all past actions in this EA. Such detail would be irrelevant to making a rational decision among the alternatives. The important value of this EA is to assess and display for the deciding official and the public, the impacts of the alternatives on those resources as they exist today, to allow a determination if the proposed project effects and/or cumulative effects are either significant or are greater than those analyzed in the KFRA/FEIS.

Resource values that are either not present in the project area, or would not be affected by any of the proposed alternatives are: floodplains, wilderness study areas (WSAs), areas of critical environmental concern (ACECs), research natural areas (RNAs), paleontological resources, prime or unique farmlands, wild and scenic rivers, aquatic species, air quality, and minerals. There are no known hazardous waste sites in the analysis area. For either alternative, no direct or indirect disproportionately high or adverse human health or environmental effects to minority or low income populations are expected to result from implementation of the proposed action or the alternatives.

Project/Analysis Area(s)

The purpose of this section is to clarify the proposed project area and the different landscape scales that were used for analysis. The proposed project area is the actual boundary of BLM lands in Sections 15 and 21 (approximately 800 acres). For the proposed timber sale, the analysis area is the cutting unit boundaries as shown on the Units, Roads, Streams map in Appendix D (approximately 575 acres). For fuels treatments (slash busting) the analysis area includes the proposed timber sale units and other BLM administered lands in Sections 15 and 21 totaling about 670 acres (see map of proposed Slash Treatment in Appendix D). In describing the affected environment and environmental consequences, analysis was generally discussed at two different landscape scales. One scale, most frequently referred to as the analysis area, is the environment within or adjacent to the immediate vicinity of the proposed project area. The other scale that is often used is the fifth field watershed scale (Figure 1). This includes all lands, private and agency lands, that fall within a fifth field watershed. When describing cumulative impacts to hydrology, vegetation, and wildlife, the fifth field watershed scale is often used and will be used in this case. The Walter's Cabin Forest Treatments project area is within the Klamath River-John C. Boyle Reservoir Fifth Field Watershed.

Design of This Chapter

This chapter is designed to first describe the affected environment of a particular resource in its existing condition. There will then be a discussion of the Environmental Consequences of each alternative. The No Action Alternative is discussed first and includes a discussion of cumulative impacts anticipated whether or not the Walter's Cabin Timber Sale and associated fuel reduction treatments occur. A number of other treatments (not part of the proposed project) are proposed or planned in the fifth field watershed and are analyzed as part of the impacts.

Cumulative Actions Considered

There are approximately 100,252 acres of BLM administered lands within the Klamath River-John C. Boyle Reservoir Fifth Field Watershed. Timber management in the last decade on BLM land has included approximately 4,200 acres of density management and thinning in this fifth field watershed. Stands throughout the Matrix allocation are expected to be selectively harvested approximately every 15-30 years, according to Klamath Falls Resource Area plans. Current timber management on the surrounding private land is more intensive and occurs on a larger scale. This management regime is expected to continue in the future. On many private lands, it is anticipated that residual vegetation will be reflective of early seral conditions and will meet pertinent state laws governing forest management practices.

Table 2 lists treatments proposed for the foreseeable future on BLM lands in the watershed that are needed to implement the KFRA/RMP. These treatments will be considered in the following resource-specific cumulative impact discussions.

Table 2 – Additional Treatments Currently Proposed on BLM lands within the Klamath River-John C. Boyle Fifth Field Watershed

Treatment	Approximate Volume	Approximate Acres	Anticipated Year
Chew Timber Sale	2.9MMBF	1,100	2006
Gerber Stew Stewardship Thinnings	0.500MMBF	800	2006, 2007
Big Bend Prescribed Burn	None	892	2007
Big Bend Seeding	None	274	2007
Canyon Oak Handpile / Burn	None	210	2006, 2007
Chicken Hills DDR Pile/Burn	None	40	2007
Fried Chicken Pile/Burn	None	142	2006
Pleasant Valley Prescribed Burn	None	2463	2007, 2008
Slim Chicken Prescribed Burn	None	2000	2009
Muddy Tom Prescribed Burn	None	2000	2010
Slashbusting	None	800	2006, 2007

Vegetation - Affected Environment

Upland Forest

Forests occurring in the proposed treatment area can be generally described as multi-aged, multiple canopy forested stands of ponderosa pine, Douglas-fir, sugar pine, incense cedar, and white fir. In Sections 15 and 21 the larger trees tend to occur in dense clumps or groups and many of the clumps are intermixed with sapling to pole sized plantations of ponderosa pine and Douglas-fir and brushy openings. From precruise data, the clumps that are proposed to be treated have basal areas (BA) ranging from 60 to 400 square feet per acre. The average BA for Sections 15 and 21 is approximately 182. Again from precruise data, current stocking of all diameters (7 inches DBH and larger) averages about 225 trees per acre (TPA). Many of the stands have been selectively cut in the past leaving an array of tree sizes and ages. Tree sizes range from 1"DBH to over 30"DBH. Tree ages range from seedlings to over 200 years old. From the 1950's through the 1990's, most of these stands were entered once or more for selective thinning and overstory removals. There are some stands within the project area where most of the larger and older overstory trees have been harvested and the residual stands consist primarily of dense stands of small sapling, pole-sized and second growth timber ranging in size from 4 - 20 inches DBH.

All lands within the proposed project area have been classified as being in Fire Regime 1, Condition Class III. Forested areas within this condition are classified as most vulnerable to severe effects from wildfire. The primary stand characteristics for this classification are the high existing fuel loads and densely stocked trees. In addition to the fire risk, existing overcrowded stand conditions and competition for limited moisture continues to affect the individual tree resiliency in these stands. Crowded growing conditions stress the trees, suppress growth, and increase vulnerability to insect and disease-caused mortality.

Present in the forested stands of the proposed project areas are western pine beetle, mountain pine beetle and fir engraver beetle that can infest and kill different species of pine and true fir trees. Small (less than one acre) patches of ponderosa pine have been killed and are currently being attacked by bark beetles. In addition, on-going mortality from fir engraver beetles is occurring throughout all of the white fir stands in the proposed project area.

Plant communities in the EA analysis area are generally within those plant associations described by Hopkins (1979) for the Klamath Ranger District, Winema National Forest or by Atzet and McCrimmon (1990) for the Southern Oregon Cascade Mountain Province.

Special Status Plant Species (Survey and Manage, Bureau Sensitive, Assessment and Tracking)

The proposed timber sale area was surveyed for vascular botanical resources in August 2004 (Sections 15 and 21). No populations of special status plant species were found within the any of the proposed timber sale units. No surveys are required for Survey and Manage fungi on the Klamath Falls Resource Area under the 2001 ROD and the 2003 ASR. There are no known sites of fungi within the project area. No suitable habitat is present in the project area for Survey and Manage nonvascular bryophytes or lichens. See the attached compliance table in Appendix C (Table A: 2001 ROD Compliance Review: Survey and Manage Wildlife and Botany Species) for more information on specific survey protocols and species).

Noxious Weeds

The proposed treatment areas were surveyed for botanical resources in August 2004 (Sections 15 and 21). Populations of Dalmatian toadflax (*Linaria genistifolia* ssp. *dalmatica*) and St. John's wort (*Hypericum perforatum*) were found along roadsides and in other disturbed sites in Section 15. St. John's wort was also found along roadsides in Section 21.

Vegetation - Environmental Consequences

Upland Forest

No Action

This alternative would result in no immediate timber harvesting in the proposed project area, although other timber harvests are proposed in the fifth field watershed in 2006-2008 (Table 2 above). An EA (#OR-014-02-03) was completed in 2002 which analyzed the effects of fuel treatments on the westside of the KFRA (including the proposed project area). A combination of slash busting and prescribed burning could occur in the proposed project area within the next five (5) years, resulting in some fuel reduction. However, overstocked trees in the 8 to 20 inch diameter range are too large for slashbusting and would not be consumed in a low-intensity underburn prescription. Fire intensity sufficient to consume or kill trees of this size would not likely be prescribed and hand cutting and removal would be cost prohibitive. Without some means to thin these trees, fuels treatments are not expected to be fully effective in reducing potential fire severity, creating a more resilient ecological condition, or initiating the increased growth response that results from thinning forested stands. Given the current successional trajectory, continued tree mortality from insects, disease, and competition for water and nutrients would occur. The resulting accumulation of dead material would create higher fuel loads and continued susceptibility to high intensity wildfires. In addition, there would be little change in the species composition levels resulting in continuing encroachment by understory white fir and reduced tree resiliency to on-going natural disturbances.

Cumulative Effects

At the fifth field watershed scale, the greatest change in vegetation would likely occur on private lands. Industrial forest management objectives normally result in shorter rotations and generally a higher percentage of early seral habitat. Oregon Forest Practices law requires prompt reforestation which, in the general analysis area, results in primarily ponderosa pine plantations fully stocked within 5 years. On BLM lands, barring a major insect, disease or wildfire event, there would be relatively indiscernible vegetation changes at the watershed scale. Canopy closure from the dominant and co-dominant trees would be retained. Snag recruitment would continue. Most of the change would occur to the vegetation and residual slash near or on the ground from the slashbusting and prescribed fire activities proposed in other projects.

Proposed Action

Variable Density Management (thinning) in combination with follow-up fuel treatments (slash busting) as proposed, would continue to maintain connectivity and late successional habitat over time by retaining a high percentage of the healthier older/larger trees. On average, approximately 50 TPA of all sizes (7

inches DBH and larger) would be harvested reducing the current stocking of approximately 225 TPA to approximately 175 TPA. Basal areas would be reduced from an average of approximately 182 square feet per acre to approximately 100. The actual TPA and BA per acre would vary above and below the average figures. The proposed thinning would increase resiliency of the remaining trees by reducing the competition for limited water, nutrients and light, restore desired species composition to more closely resemble historic conditions as described in the KFRA/RMP (page E-10) and also reduce the risk of stand replacing wildfires. Canopy closure in the more densely stocked stands would be reduced, but it is estimated (based on past similar BLM treatment prescriptions, 1999 to 2005) that 50 to 60 percent canopy closure would be retained after treatment. Some larger (20+ inches DBH) trees would be harvested; however, late seral structure and function would be maintained. The silvicultural prescription directs thinning around high value, large old growth trees, particularly older pine and Douglas-fir trees. In some instances, these trees can be 30"- 40" in diameter or larger. The Resource Area has for a number of years thinned around these high value trees to improve vigor. In many cases, the trees marked for cutting around these large, old trees are the more shade-tolerant white fir and range in diameter from 8-24 inches DBH.

Forest health would be improved in the treated areas resulting in a decreased risk of mortality due to disease, insects, wildfire, and competition. Effects to forest vegetation from implementation of this alternative would not exceed those analyzed in the KFRA/FEIS.

The proposed harvest slash treatments (lop and scatter and whole tree yarding) and follow-up fuel reduction treatments (slash busting) are expected to reduce the risk of a stand replacing fire, thereby providing greater assurance of maintaining desired habitat.

Timber harvest treatments would be designed to primarily reduce stand densities. The variable density management thinning is proposed to maintain structural and functional late-successional and uneven-aged stand characteristics. As a result, the proposed treatments are expected to result in little to no reduction of late-successional habitat within the proposed project area.

Assessment of 15% Standard and Guide

The Northwest Forest Plan and the KFRA/RMP state that federal agencies must retain on federal lands a minimum of 15 percent of the late successional forests within a fifth field watershed (KFRA/RMP page 23). Guidance from the Regional Ecosystem Office (Feb. 3, 1998) indicates that the 15 percent standard and guide applies only to commercial forest lands. At a minimum, agencies should implement the 15 percent standard and guide on the lands they manage within the watershed until further guidance is adopted. The proposed treatments would meet this criterion.

Cumulative Effects

In the last decade, since the signing of the RMP in June of 1995, the KFRA has thinned, using a density management prescription, approximately 6,000 acres south of Highway 66. Approximately 4,200 acres of this thinning has been in the Klamath River- John C.Boyle Fifth field watershed which includes the proposed Walter's Cabin Forest Treatments. The general prescription of the thinning operations has been to harvest approximately 25-35% of the basal area in a given timber stand. The trees harvested consisted primarily of the understory, poorer growing, suppressed, and intermediate trees. A much lower percentage of co-dominant and dominant trees have been harvested. The effects of these harvest treatments have been monitored and documented in the Annual Program Summary and Monitoring Reports (BLM 1999-2005). In summary, density management is effective in creating the desired future conditions stated above at both the project level and the landscape level. Monitoring has further indicated that fire severity has been reduced on treated areas. The proposed treatments would continue to meet the desired future conditions.

The effect of the proposed action on BLM lands, combined with future actions on private lands would result in no change in age or seral classification of stands on BLM lands within the watershed. Generally,

the seral classification of BLM lands would remain mid to late seral as the structural and functional composition of the stands would continue after treatment. As stated above, the greatest change in vegetation would likely occur on private lands with an increased percentage of early seral habitat.

Special Status Plant Species (Survey and Manage, Bureau Sensitive, Assessment and Tracking)

No Action

Since no populations of special status plant species are known to occur in the project area, no effects on these species are expected.

Proposed Action

No populations of special status plant species are documented to occur within the proposed project area. Therefore, special status plant species are not expected to be affected by timber harvest, slashbusting or road construction activities under the proposed action.

Cumulative Effects

At the project level, no cumulative effects to special status vascular or nonvascular plant species are expected from either alternative because none of these species were located within the project area. At the watershed level, the cumulative actions (thinning and slashbusting) may indirectly have a positive affect on some species by creating habitat to which these species may be adapted.

Noxious Weeds

No Action

Although the activities described in the proposed action would not occur, effects resulting from other proposed activities (including fuel treatments, road maintenance, etc.) would occur as described in other NEPA documents pertinent to those projects. These actions would result in some ground disturbance, creating conditions that favor the invasion of noxious weeds from outside the project area and contributing to the spread of noxious weed populations already present within the project area. BMPs and PDFs similar to those described for the proposed action would be implemented for any BLM project and would serve to reduce the potential for these impacts. A notable exception would occur in the event of a large-scale, high intensity wildfire. Under such circumstances, there may not be time to implement certain precautions to avoid spreading weed seeds (washing machinery before entering an area, etc.) and large areas may be stripped of vegetation creating a suitable environment for weed establishment.

Proposed Action

The use of the mechanical equipment may create disturbed ground conditions under which many noxious weeds have a competitive advantage. The vehicles and machinery entering the project area to implement the proposed treatments would increase the potential for the introduction of noxious weeds into the area from sources outside the project area. Project design features for the prevention of the introduction of noxious weed seeds and plant parts would be implemented to reduce the potential for the dispersal of these species into the project area (see Appendix B).

The potential exists to spread known populations of noxious weeds as a result of proposed project activities. Flagging and avoidance of these populations would reduce the potential to spread these noxious weeds. Alternatively, PDFs to mow noxious weed plants to the ground and wash vehicles before entering or leaving these areas would also reduce the potential to spread noxious weeds (see Appendix B).

Cumulative Effects

The cumulative effects of past, present and, future treatments in the watershed include disturbance of the soil and existing vegetation and increased potential for the introduction and spread of noxious weeds, whether or not the proposed action is implemented. The potential cumulative effect of any combination

of treatments would be to increase the number of noxious weeds species and the areas occupied by noxious weed species. However, since the KFRA has developed and implemented PDFs and BMPs for weed prevention and soil protection, monitoring has shown these measures to be effective in reducing the introduction and spread of weeds. These measures (see Appendix B) will continue to be implemented; therefore, noxious weeds are not expected to increase in distribution as a direct result from the implementation of planned activities. Unplanned actions (i.e., large-scale, high intensity wildfire) could increase weed distribution.

Terrestrial Wildlife Species – Affected Environment

This section focuses on those species considered special status species that may be affected by the proposed management activities including: those species listed under the Endangered Species Act (ESA - listed, proposed and candidate species), those listed under the BLM special status species policy and considered to be Bureau Sensitive or Bureau Assessment species, those Survey and Manage species listed under the 2001 ROD and subsequent 2003 ASR, and land birds listed on the U.S. Fish and Wildlife's "Birds of Conservation Concern 2002". All of these species are considered in this EA process. For a list of other species and a description of their habitat that may occur in the proposed project area, refer to the KFRA/FEIS (pages 3-37 to 3-41).

Threatened and Endangered Species

The northern spotted owl (NSO) is the only species under the Endangered Species Act (ESA) that may be affected by the proposed project. The project is within the home range of a spotted owl territory and there is suitable habitat (foraging and dispersal) within the proposed project area that would be managed. All other ESA species considered for this EA are not present and would not be affected by the proposed project (Refer to Table 3). Those species not affected by the proposed project will not be addressed further in this document.

Table 3 – ESA Listed, Proposed and Candidate Terrestrial Wildlife Species considered for this Analysis

Species	Scientific Name	Status	Designated Critical Habitat within project area	Species or habitat occur within the project area	Species or habitat may be affected by project
Canada Lynx	*Lynx canadensis*	Threatened	N/A	NO	NO
Bald Eagle	*Haliaeetus leucocephalus*	Threatened	N/A	NO	NO
Northern Spotted Owl	*Strix occidenatlis caurina*	Threatened	NO	YES	YES
Pacific Fisher	*Martes pennanti pacifica*	Candidate	N/A	NO	NO
Yellow-Billed Cuckoo	*Coccyzus americanus*	Candidate	N/A	NO	NO
Oregon Spotted Frog	*Rana pretiosa*	Candidate	N/A	NO	NO
Mardon Skipper Butterfly	*Polites mardon*	Candidate	N/A	NO	NO

Northern Spotted Owl (*Strix occidenatlis caurina*) - Federally Threatened

There are no known spotted owl nests in the proposed project area and current habitat structure within the proposed project would likely not support nesting spotted owls. The closest known nest with a pair of owls is approximately 0.6 miles away from the edge of the proposed project area. It is occupied by a pair

of spotted owls and a 100 acre late-successional reserve (LSR), located outside of the proposed project area, is designated for this site. The territory (MSNO 1306) for this nest site extends 1.2 miles from the nest and does overlap portions of the proposed project area. The habitat in the overlap area is categorized as dispersal habitat.

The Klamath Falls Resource Area is part of a five-year spotted owl telemetry study that was initiated in March of 2002. The emphasis of the study is to evaluate foraging habitat and management activities for spotted owls. The owl territory adjacent to the proposed project is part of the study and currently the male and female spotted owl are radioed and monitored year round. As of October of 2005, the local spotted owls (through telemetry) have been detected just four times in Section 15 of the project area. All of those detections were outside the nesting season. No detections via telemetry have occurred in Section 21. Table 4 is a summary of the occupancy and nesting status of this territory since 1996.

Table 4 – Spotted Owl Territory MSNO 1306 10-year summary

Year	Territory Status		Year	Territory Status
1996	Single		2002	Pair – non-nesting
1997	Single		2003	Pair – nesting unknown
1998	Unknown		2004	Pair – fledged 2 young
1999	Unknown		2005	Pair – non-nesting
2000	Single		2006	Pair – not determined yet
2001	Pair – non-nesting			

The project area does contain approximately 144 acres categorized as spotted owl NRF Category 2 foraging habitat and the remainder of the proposed project area, approximately 660 acres, is considered dispersal habitat (see Table 5, including definitions, below). No Designated Critical Habitat occurs within the proposed project area.

Table 5 – Northern Spotted Owl Suitable Habitat within Project Area.

Habitat within Project Area	NRF Category 1 – Nesting Acres	NRF Category 2 – Foraging Acres	Dispersal Habitat Acres	Total Acres
Section 15	0	144	343	487
Section 21	0	0	317	317
Habitat within Timber Sale Units				
Section 15	0	100	205	305
Section 21	0	0	264	264

Summary of Spotted Owl Suitable Habitat Components (KFRA/FEIS pages 4-71 - 4-76)

Nesting, Roosting, and Foraging Category 1 – Nesting Habitat

NRF Category 1 habitat is generally comprised of coniferous forests stands that satisfy the full complement of daily and annual needs of the owl for nesting, roosting and foraging. Canopy closure usually exceeds 70 percent.

Nesting, Roosting, and Foraging Category 2 – Foraging Habitat

NRF Category 2 habitat is generally comprised of coniferous forest stands that provide roosting and foraging opportunities for northern spotted owls, but may lack the necessary structure for consistent nesting or roosting. Canopy closure may not exceed 70 percent.

Dispersal Habitat

Dispersal Habitat generally consists of coniferous forest stands that permit movements of owls between nesting, roosting and foraging habitat. Canopy closure is generally at or above 40%.

Non-Listed Special Status Species (Survey and Manage, Bureau Sensitive and Bureau Assessment)

Survey and Manage Species
(For information on Survey and Manage species and list of Survey protocols, refer to Appendix C – 2001 ROD Compliance Review.)

Terrestrial and Aquatic Mollusks
This EA will consider those species under the Special Status Species category of Survey and Manage that are listed as potentially occurring (S&M Protocol 2003) on the BLM Lakeview District, Klamath Falls Resource Area. This includes those species from the 2001 ROD and subsequent 2003 ASR (IM 2004-034) that require pre-disturbance surveys.

The following is a summary of habitats for the Survey and Manage Mollusks listed below. The habitats are as described in the Survey Protocol for Survey and Manage Terrestrial Mollusk Species (2003) and Conservation Assessment for the Siskiyou Sideband (2005). Attached is a Survey and Manage compliance table for species status, protocol and survey information (see Appendix C).

Siskiyou Sideband (*Monadenia chaceana*) – is a terrestrial snail usually found within 30 meters of rocky areas, talus deposits and in associated riparian areas. Areas of herbaceous vegetation in these rocky landscapes adjacent to forested habitats are preferred (S&M Protocol Version 3.0, 2003). It can, however, be associated with large wood in forested habitats where little rock is located (Conservation Assessment 2005).

Crater Lake Tightcoil (*Pristiloma arcticum crateris*) – is a terrestrial snail usually found in perennial wet situations in mature conifer forests, among rushes, mosses, and other surface vegetation or under rocks and woody debris within 10 meters of open water in wetlands, springs, seeps, and riparian areas, generally in areas which remain under snow for long periods in the winter (S&M Protocol Version 3.0, 2003).

Evening Field Slug (*Deroceras hesperium*) – is a terrestrial slug that has been reported to be associated with wet meadows in forested habitat in a variety of low vegetation, litter, debris and rocks. Surveys may be limited to moist surface vegetation and cover objects within 30 meters of perennial wetlands, springs, seeps, and riparian areas (S&M Protocol Version 3.0, 2003).

Klamath Rim Pebblesnail (*Fluminicola* no. 3) – is found in small cold flows emanating from springs (Aquatic Mollusk Survey Protocol Version 2.0, 1997).

Shasta Springs Pebblesnail (*Fluminicola* no. 16) – only occurs in springs and is usually found in the lower portions of larger springs among water cress mostly on pebbles and cobbles (Aquatic Mollusk Survey Protocol Version 2.0, 1997).

The proposed project area does not have high priority habitat for any of the Survey and Manage Mollusk species. Therefore, no pre-disturbance mollusk surveys were conducted for the proposed project. There are no springs or perennial water within the proposed project area. There is one intermittent stream that runs seasonally through Section 15 and the rest of the drainages are considered ephemeral. The riparian reserve for the intermittent stream (approximately 160 feet each side of channel) is also outside of the proposed treatment unit. The only rocky outcrop and talus area within the proposed project area is in the south west portion of Section 15 and is outside of the proposed treatment unit. A no entry buffer of 50 to 100 feet of forested ground has been proposed for this rocky out crop and talus area. Since no priority habitat occurs within the proposed project area, these mollusk species will not be analyzed further in this document.

Great Gray Owl
Surveys for great gray owls were not required under the great gray owl Survey Protocol (USDA, USDI 2004). Suitable nesting habitat as described in the protocols is available but no natural meadows greater than 10 acres are present within or adjacent to the proposed project area. Since there is no natural foraging habitat in the proposed project area protocol surveys were not required (USDA, USDI 2004, pp 5). Under this scenario no pre-disturbance surveys are required for a reasonable assurance of persistence of the species. One year of surveys (6 visits) was completed in 2003 because of the amount of recently harvested private lands that could be used by great gray owls for foraging habitat. No great gray owls were detected during those surveys. The great gray owl will not be analyzed further in this document.

Special Status Species (Bureau Sensitive and Bureau Assessment)

The BLM Special Status Species Policy designates special status species as Bureau Sensitive, Bureau Assessment, or Bureau Tracking. A brief description of these categories follows;
Bureau Sensitive – Generally these are species which are restricted in their range and have natural or human-caused threats to their survival.
Bureau Assessment – Species which are not presently eligible for official federal or state status but are of concern.
Bureau Tracking – This list is designed as an early warning system for species that may become threatened in the future.

It is the policy of BLM Districts to protect, manage, and conserve these species and their habitats such that any Bureau action will not contribute to the need to list any of these species. This EA will consider those Bureau Assessment and Bureau Sensitive Species that may be affected by the project. Bureau Tracking Species are not considered special status species for management purposes and will not be addressed in this EA. (A complete list of special status species documented or suspected in the KFRA is available in the Klamath Falls Field Office.)

White-headed (*Picoides albolavartus*) and **Black-Backed Woodpeckers** (*Picoides arcticus*) – Bureau Sensitive
The white-headed woodpecker is generally associated with ponderosa pine stands or mixed conifer stands with ponderosa pine as a dominant component. These woodpeckers forage predominately on pine seeds and insects. They have been documented on BLM lands in the vicinity of the proposed action. Black-backed Woodpeckers have been found in most types of mixed conifer stands, although rare on this Resource Area and across their range. Black-backed woodpeckers forage on insects, mostly on larvae of wood-boring beetles. They are generally found at higher densities after a wildfire has occurred and snags and associated beetles are abundant. Both species are associated with snags and need tree cavities for nesting. Both species could be present within the proposed project boundaries.

Northern Goshawk (*Accipiter gentilis*) - Bureau Sensitive
Northern Goshawks are widely distributed in most forest types. The Klamath Falls Resource Area has twelve documented territories, none within the proposed project area. One year of surveys were conducted within the project boundaries in potential habitat in 2003. No goshawks were detected.

Flammulated Owl (*Otus flammeolus*) - Bureau Sensitive
This species is considered rare on the Klamath Falls Resource Area with only one confirmed nest site in the RA. No nests are known within the proposed project area but one nest was documented within the fifth field watershed. This species is a cavity nester and highly associated with Ponderosa Pine forests but is also found in mixed conifer stands with Ponderosa Pine as a component (Marshall et al 2003).

Bats - Townsend's Big-eared Bat (*Corynorhinus townsendii*) Bureau Sensitive, Fringed Myotis (*Myotis thysanodes*) and Pallid Bat (*Antrozous pallidus pallidus*) Bureau Assessment
Roosting habitat for all three bat species is typically associated with caves, old buildings, and rock structure (Verts and Carraway 1998). Surveys (Cross and Kerwin 1995) on the west-side of the resource

area have documented the fringed myotis and pallid bats in similar habitat to that of the proposed project area. Limited radio–tracking studies in southwestern Oregon have shown the fringed myotis to roost in trees, particularly snags (Cross and Kerwin 1995). Pallid bats have been captured in areas that have large conifers, including ponderosa pines. Radio-tracking in Jackson County has shown that the species uses such trees for roost sites (Cross and Kerwin1995). No Townsend's big-eared Bats were located during this study. This species is highly associated with caves and old buildings and would be rare in areas without that habitat structure. There is a documented population in the Klamath River Canyon, approximately 10 miles south of the proposed project area. Because of the lack of suitable habitat in the proposed project area for the Townsend's Big-eared bat, it will not be analyzed further.

Landbirds – Birds of Conservation Concern
For this analysis the BLM considers those land birds from the U.S. Fish and Wildlife Service (FWS) "Birds of Conservation Concern 2002" (FWS 2002). This is the latest list from FWS of bird species of concern. Not all bird species on this list will be considered for the proposed action. The only species considered are those that are within the Birds of Conservation Region 5 (Northern Pacific Forests), are found within the Resource Area, and may be affected by the proposed action. Those species include the northern goshawk, white-headed woodpecker, flammulated owl, and olive-sided fly catcher. The goshawk, white-headed woodpecker and flammulated owl were covered previously in the Bureau Special Status Species section. The olive-sided fly catcher (bureau tracking species) breeding habitat is associated with conifer forests often near streams, lakes, rivers marshes, wet meadows or ponds (Marshall et al 2003). The proposed project area has no perennial water so the flycatcher would not likely be associated with the proposed treatment areas and therefore would not be affected by the proposed project.

Other Species

Sharp-shinned hawk
One active sharp-shinned hawk nest was located in the proposed project area. The KFRA/RMP provides "up to a 15 acre buffer for some management activities around know and future activity centers" (KFRA/RMP page 34). The nest tree will be retained along with a small buffer (approximately 1/10 acre) of trees around the nest to protect the structure and integrity of the immediate nest stand. A larger buffer is not necessary to maintain habitat for sharp-shinned hawks. Past management similar to the proposed action has shown that density management continues to provide suitable habitat for sharp-shinned hawks.

Terrestrial Wildlife Species – Environmental Consequences

Threatened and Endangered Species

No Action
Northern Spotted Owl
There would be no immediate effects to the foraging or dispersal habitat. For the area considered foraging habitat, canopy closure would remain relatively high in the short-term, snag density would continue to increase overtime and nesting opportunities may increase within this stand over time. In dispersal habitat these stands would continue to provide connectivity between those stands of nesting, roosting and foraging (NRF) habitat and continue to grow towards NRF. Owl habitat however would continue to be at risk of wildfire, insects and disease, which in the long-term may result in the degradation or even loss of owl habitat.

Proposed Action
Northern Spotted Owl
No spotted owl nest territories or Designated Critical Habitat occur within the project boundary. The closest nest is approximately 0.6 miles away. The nest territory (a circle using the nest at the center, with a radius of approximately 1.2 miles from nest) of this pair does overlap the proposed project area. The portion of this territory that is within the proposed project area is considered dispersal habitat due to the

current canopy closure and current structure of the stand. Data from the ongoing telemetry study suggests that the spotted owl use from the closest pair is minimal in the project area. There have been only four detections in Section 15 of the project area since 2002 and no detections in Section 21. There would likely be no direct effects on spotted owls under the proposed action.

Within the proposed project area, there are approximately 144 acres classified as foraging habitat and approximately 660 acres classified as dispersal habitat. Retention of habitat elements such as snags (2.4/acre, > 16") and coarse woody debris (CWD) (120 linear ft/acre, >16") are designed as part of the project to maintain those structures needed for spotted owls and other species dependant upon those elements. Under the proposed action, approximately 100 of the 144 acres of foraging habitat would be variably thinned to an average of 120 BA. This modification (thinning) would degrade the habitat in the short-term (reduce canopy closure, lower snag recruitment, reduce CWD recruitment, and reduce understory vegetation). Canopy closure would likely be reduced to 50-60% in the short-term measured at the stand level. This estimation is based on similar past density management thinning treatments (BLM 1999-2005). This would degrade, but not eliminate, foraging habitat in the short term while still maintaining the green-tree multi-structure stand and foraging habitat for the long-term. The remaining 44 acres of foraging habitat would not be treated and would maintain current canopy closure and stand structure immediately after the proposed project.

Approximately 470 acres of dispersal habitat would be variably thinned to an average of 100 BA. This modification (thinning) would degrade the habitat in the short-term (reduce canopy closure, lower snag recruitment, reduce course woody debris recruitment or CWD, and reduce understory vegetation). Canopy closure would likely be reduced to 50% plus in the short-term measured at the stand level. This estimation is based on similar past density management thinning treatments (BLM 1999-2005). This would degrade the dispersal habitat but still maintain the green-tree multi-structure stand to maintain dispersal habitat over the long term. Overall the proposed project would degrade, but not eliminate, the spotted owl habitat features that are currently present. Foraging and dispersal habitat would still be maintained for the long-term.

The proposed harvest may provide for some long-term benefits by promoting and accelerating growth of larger green trees, larger snags and CWD needed for owls as well as reducing the risk of a stand replacing wildfire and insect and disease outbreaks.

Fuels treatment (slashbusting) immediately after the proposed density management thinning may further reduce components necessary for owl habitat. Stand structure (multistory stand, CWD and snags) is an important characteristic within owl habitat to maintain foraging and dispersal habitat. Removing or modifying these features of the stand structure may limit habitat suitability for owls. Project Design Features for fuels reduction that maintain a diversity of snags, CWD, understory trees and shrubs would minimize impacts and maintain the habitat as suitable (See Appendix B).

Cumulative Effects

Northern Spotted Owl

Assessing cumulative effects to wildlife is difficult due to the scale, range of the species, distribution, life history and habitat. For this assessment the extent of the analysis considered is primarily focused on known projects within the same fifth field watershed, including private lands. There are several new publications with information available in respect to population trends and habitat across the range of the species. A summary and review of the key findings is attached to this document to provide context of the current status and trends of the NSO throughout its range (see Appendix E). The Klamath Falls Resource Area conducted an RMP review and found that the key findings from the current information on spotted owl habitat and populations are still consistent with those assumptions and projections in the KFRA/RMP.

As noted above, spotted owl telemetry studies show that the local pair of spotted owls rarely use the proposed treatment areas. In addition, monitoring of Northern spotted owl density and telemetry studies in the KFRA indicate post harvested stands, where similar Density Management thinnings have been implemented, are continuing to be utilized by northern spotted owls. Effects from previously harvested sales on the west side of the resource area have been monitored and reveal that in many post harvest stands, sufficient late seral habitat remains to provide connectivity habitat and to sustain species dependent on late seral habitat components (KFRA Annual Program Summary and Monitoring Reports BLM, 1999-2005).

Overall the cumulative effects to spotted owls from this and other activities on public lands in the watershed would be minimal. The proposed activities would not result in loss of suitable habitat or direct impacts to the species. Another similar treatment planned in the same fifth field watershed, the Chew Timber sale, was consulted on with the FWS and it was determined that no suitable habitat would be lost from that action.

The principal change in habitat for owls in the watershed has occurred on private lands. The majority of the private land in the watershed has been harvested and is now considered early seral habitat. This management regime on private lands will likely continue. These private lands would not be considered suitable nesting habitat or often even dispersal habitat. The overall affect of this type of harvest practice on private lands on spotted owls within the watershed is unknown at this time.

Special Status Species

No Action

The status quo would maintain current habitat in the short-term for the special status woodpeckers, bats and flammulated owls by continuing to provide snags and green trees. No action would continue to provide habitat but would lack the benefit of thinning to promote and protect larger trees. Also there would be a continuing risk of habitat loss from wildfire, insects and disease. Wildfire would be detrimental to all the special status species assessed in this document except the black-backed woodpecker. The black-backed woodpecker is often associated with snags created from wildfires and the insects that are generated from this type of disturbance. Insect outbreaks can be beneficial to both of the woodpecker species.

Proposed Action

White-headed and Black-Backed Woodpeckers

The two special status woodpeckers that may occur within the project area are associated with ponderosa pine and mixed conifer stands. The proposed treatment would remove some trees that add to the suitable habitat for these species, primarily dead-top trees. However, snag retention guidelines (2.4 snags/acre >16") that are based upon the KFRA/RMP (page 33), NWFP Standards and Guidelines and subsequent 2001 ROD (page 34) would maintain foraging and nesting habitat for both of these species. Green tree retention would also provide foraging habitat and future nesting structure for both species. The majority of snags are retained from the proposed project. Typically only those snags thought to be a safety concern are removed as part of the project. This would protect and maintain the majority of snag habitat that is currently available. Thinning would continue to promote larger trees in the stand which would also benefit both woodpeckers. Both use larger (>16") snags, dead-top and heart rotted live trees for their nesting structure.

Flammulated Owl

The flammulated owl is associated with pine dominated and open mixed conifer stands. No surveys were conducted for this species but it may occur within the project area. There would likely be some short-term disturbance from the proposed action and some potential nesting structure may be removed. The proposed action would have some long-term benefit to flammulated owl habitat by providing more openings and providing more foraging opportunities (flammulated owls forage primarily on moths) while

still maintaining nesting structure. Flammulated owls are cavity nesters and the snag retention guidelines would assure that snags are maintained to provide for current nesting habitat. Green tree retention would also provide future nesting habitat.

Fringed Myotis and Pallid Bat
These species are often associated with caves, mines or rock crevices and buildings. The fringed myotis and pallid bat are sometimes found using cavities in snags or larger ponderosa pines as roosts. Although some cavity roost areas may be lost during harvest and slash treatment activities, the snag retention guidelines would maintain sufficient snags and green trees to provide for roosting structure. Overall, the planned thinning would continue to promote and maintain large ponderosa pine which should benefit the pallid bat. There would likely be some short-term disturbance to these species from logging and equipment operation within the proposed project but this would end at the completion of project activities.

Cumulative Effects – Both Alternatives
It is the policy of the BLM to protect, manage, and conserve special status species and their habitats such that any Bureau action would not contribute to the need to list any of these species. For special status species such as the previously mentioned woodpeckers, owls, and bats the primary habitat components needed are large snags, large green trees and CWD. The standards and guidelines in the Northwest Forest Plan and 2001 ROD, additional guidelines in the KFRA/RMP, and BMPs and PDFs (Appendix B) provide for these habitat components and ensure that these actions do not contribute to the need to list these species. The cumulative effects for the proposed project and others listed on BLM lands within the watershed would not adversely affect the populations of special status species on public lands within the resource area and would not contribute to the need to list these species. PDFs, BMPs and Standards and Guidelines ensure that habitat components necessary for these species would be maintained during implementation of the proposed projects.

Soils - Affected Environment

The main soil type in Walter's Cabin project area is the Woodcock-Pokegama complex. Soils within the project area are rated as having low to moderate surface erosion and compaction susceptibility. The analysis area contains slopes ranging from 0 to 55 percent. Most (82 percent) of the area has slopes between 1 to 12 percent. Approximately two percent of the area is steep with slopes ranging from 35 to 55 percent (Refer to Table 6 below). Areas with slopes averaging 35 percent (as identified on the ground) would not be logged or slashbusted. Past soil disturbance has occurred in the project area as evidenced by old landings and skid trails. Many of the older skid trails are presently covered with brush and trees indicating amelioration of past soil disturbance. Winter snow logging would be an option if conditions permit. Additional discussion of soil issues and concerns for the affected environment are addressed in the KFRA/RMP.

Table 6 – Soil Types, Slopes, and Acres for BLM Land within the Analysis Area

Acres	Soil Type	Percent Slope
473.2	Pokegama-Woodcock Complex	1 to12
11.3	Woodcock Stony Loam	35-55
56.1	Woodcock-Pokegama Complex North Slopes	12 to35
36.5	Woodcock-Pokegama Complex South Slopes	12 to 35
Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions available: URL: "http://soils.usda.gov/technical/classification/osd/index.html" [Accessed 2/10/04)		

Soils - Environmental Consequences

No Action

Soil disturbing treatments, such as slashbusting, implemented under the No Action alternative would include those described in other NEPA documents (see Table 2). Soil amelioration of previous soil disturbances would continue to occur on old skid trails and landings in the project area. As previously described, the No Action Alternative could result in higher vulnerability to stand replacing wildfires. The subsequent soil effects from a stand replacing wildfire could result in a greater potential for surface erosion and loss of soil nutrients.

Proposed Action

Implementing the proposed action would result in some detrimental soil effects from the ground based operations. These effects were analyzed in the KFRA/FEIS (pages 4-11 to 4-18). Detrimental soil effects could include soil displacement, creation of adverse cover conditions, and detrimental soil compaction (defined as 15% increase in soil bulk density). Based upon past monitoring on the Klamath Falls Resource Area (see pages 96-101 of the 2004 Annual Program Summary and Monitoring Report), these effects would occur primarily on the landings and the main skid trails into the landings.

Most harvesting operations on the resource area are done using mechanized ground based equipment, in particular when harvesting small diameter trees (<20"DBH). This involves grapple skidders and a mechanical harvester that has a saw head at the end of a hydraulic arm. The use of a mechanical harvester normally results in a greater area of ground disturbance since it is not confined to skid roads. The mechanical harvester generally leaves the skid trails to cut and bunch trees designated for cutting. Most mechanical harvesters have a 20 foot radial arm that is able reach into stands and extract trees without having to drive up to every tree. Since use of a mechanical harvester is becoming the industry standard and is the most economical choice for small diameter density-management thinning of forest stands, the KFRA is continuing to implement monitoring in representative ground disturbing projects to evaluate soil health and determine the areal extent of soil disturbance and changes in soil structure (compaction) as it relates to plant growth.

Slashbusting is implemented to restructure fuel loadings by reducing the amount of ladder fuels. Slashbusting is done with a mechanical harvester fitted with a head attachment that breaks up smaller material. Soil impacts from slashbusting are similar to those of a mechanical harvester. The resource area has established studies to monitor the effects on soils and vegetation of projects where timber harvest is combined with slashbusting. The same soil disturbance and compaction standards apply to slashbusting operations as to timber sale operations. When a timber sale and slashbusting take place on the same piece of ground the additive detrimental disturbance must still meet KFRA/RMP standards (defined below). Soil disturbance and compaction and vegetative response are being monitored to ensure that RMP standards are being met (Annual Program Summary 2005 pages 97-102).

Mitigation

The KFRA/RMP Best Management Practices are designed to limit detrimental soil disturbance to less than 20% of the total acreage within an activity area (KFRA/RMP, Page D-11). To minimize soil disturbance, common BMPs and PDFs required include:

- Use of existing designated skid trails, marked in advance for logging operators to confine soil disturbance.
- Seasonal restrictions to limit logging operations to the dry season to prevent compaction, puddling, and erosion.
- Winter logging when feasible, that requires operations when snow depths exceed twenty (20) inches in depth.
- Leave slash when feasible (where fuel loads are not unacceptable) on the project area from harvest treatments to reduce surface soil erosion and sedimentation.

Should conditions suitable for logging over frozen ground or snow occur (the snow pack persists and the area remains accessible), soil disturbance in treatment areas would be further minimized. Two timber sales have been completed on the KFRA, Clover Hookup (2002) & Saddled Again (2004/2005), where the sales were logged over 20 inches of snow. Implementation monitoring observations indicated almost no disturbance to the surface organic layer.

If implementation monitoring shows detrimental soil effects in excess of 20 percent of the total acreage within an activity area, the BMP guidelines (KFRA/RMP, page D11) state that impacts will be mitigated with treatments such as ripping, backblading, or seeding.

Cumulative Effects – Both Alternatives

The monitoring information collected to date regarding the effectiveness of BMPs on minimizing soil compaction and disturbance (BLM 1999-2004) indicates that cumulative effects to soil resources would not exceed the RMP standards for detrimental soil conditions (KFRA/RMP, page D-11). Treatments (logging and slashbusting) would continue to be implemented during the summer months (June-October) when soils are least susceptible to compaction. Snow logging would be used when possible. Logging on snow or frozen ground has been shown to reduce compaction to soils (Smith and Wass 1976, Mcleod 1988, Krzic et al 2004). Ongoing monitoring to measure soil compaction and recovery would assure that effects on soils are within the RMP standards and are mitigated by appropriate measures when needed. The proposed action would result in a reduced vulnerability to stand replacing wildfires (that could damage soils), but an increased potential of soil compaction and potential runoff from the proposed skid trails.

Roads - Affected Environment

Current road densities on BLM land and adjacent private land in the project area are approximately 3.8 miles of road per square mile for Section 15 and 4.7 miles of road per square mile for Section 21 (Table 7). The average road density within the entire fifth field watershed area is 3.9 miles of open road per square mile of BLM ownership (BLM GIS analysis 2006). All roads within the proposed treatment area in Sections 15 and 21 are either surfaced with cinders or are natural surface roads. All roads in the proposed project area are seasonally closed by snow and/or wet road conditions. Some roads are contributing to resource damage. For example, the 39-6E-15.0 road parallels and crosses the main intermittent drainage in Section 15 within the riparian reserve and has altered the flow of the stream and created sediment and drainage problems.

Table 7 - Road Density in Walter's Cabin Project Area (BLM ownership)

	Section 15		Section 21	
	Intermittent	Ephemeral	Intermittent	Ephemeral
Total Miles of Stream (GIS measurements)	0.7	0.6	0.02	1.9
Drainage Density (miles of stream per square mile)	0.9	0.8	0.04	3.8
Road Density (miles of road per square mile)	3.8		4.7	
Number of Stream Crossings (per mile of road)	0.7	0.4	0	2.9
Miles of Road within 100 feet of streams	0.3 (closed) 0.02 (open)	0.2 (open)	0.02 (open)	1.5 (open)

Roads - Environmental Consequences

No Action

Road maintenance would continue periodically. This would involve grading, spot rocking, ditch cleaning and brushing depending upon annual road maintenance needs, funding and other nearby projects that would require road use and maintenance. The blocking of about 1.0 miles of road and the

decommissioning of another approximately .5 miles of road as described in the proposed action would not occur. This alternative would not accomplish the RMP objective of reducing road density. There would be no or minimal improvement of existing road surfaces and drainage features and little change to current potential for input of sediment into adjacent streams.

Proposed Action

The proposed action would construct approximately 250 feet of new permanent road in order to shorten the 39-6E-15.1 road by approximately 1,000 feet. The 1,000 foot segment of the -15.1 road would be fully decommissioned, planted with native vegetation and tree seedlings and removed from the road base.

Two temporary spur roads, Spur 1 and Spur 2, would also be constructed and would add about 1,300 feet of temporary roads. Approximately 100 feet of Spur 1 would be constructed across private land owned by IFG and managed by Timber Resource Services LLC (TRS). Both spur roads, including the private portion, would be blocked and seeded with native grass species after completion of logging activities. The new spur roads are necessary to replace the 39-6E-15.0 road that is causing resource damage. The 39-6E-15.0 road, that parallels and crosses the main intermittent drainage in Section 15, would not be used for the proposed projects and approximately 1,900 feet of it would be fully decommissioned. "Fully Decommissioned" in the case of the 39-6E-15.0 road would include blocking, drainage improvements, seeding portions with native vegetation, and planting portions with conifer seedlings. The 39-6E-15.0 road would be removed from the active road base.

Approximately 650 feet of the 39-6E-21.1 road and another 950 feet of the 39-6E-21.2 road would be fully decommissioned and removed from the road base. Both of these roads are longer than needed for current and future logging activities and can be shortened. A portion of the 39-6E -21.2 road shows evidence of being used as a primitive camp site and would be retained as such.

Fully Decommissioning roads could include the following actions:

- ripping road surface and associated landings (except where adequate natural vegetation exists)
- recontouring road bed/surface
- construction of waterbars or other drainage features (e.g., dips that follow the surrounding contours to mimic natural flow paths) as needed
- seeding with native vegetation
- planting of conifer seedlings
- blocking vehicular access

An additional 2,600 feet of the 39-6E-15.1 road and 500 feet of the 39-6E-21.4 road would be closed after completion of proposed project activities by blocking access. Road blocks would be created with logs and slash and/or large earthen barriers.

Up to three points on the 40-6E-4.0 road in Section 21 would have new drainage features installed to improve drainage and prevent erosion associated with stream crossings and culverts. The new drainage features could include culverts and drainage dips that follow the natural contour of the surrounding land and mimic the flow paths that would occur on the land.

There would be a decrease of approximately 1.1 miles of open road in Section 15 leaving a post treatment road density in Section 15 of about of 2.7 miles per square mile. There would be a decrease of approximately 0.6 miles of open roads in Section 21 leaving a post treatment road density in Section 21 of about 4.1 miles per square mile (see Table 8 below). The open road density on the proposed project area would decrease overall (through road blocking and decommissioning) by approximately 1.7 miles. This would contribute towards meeting RMP objectives to decrease road density. Improvements in road drainage and the blocking/decommissioning of 1.7 miles of roads would provide a benefit to hydrologic

function by reducing potential inputs of sediments from roads into streams. Effects from the proposed action in regard to roads would not exceed those addressed in the KFRA/FEIS.

Table 8 – Walter's Cabin Proposed Road Actions

Road Identification	New Construction	Closure	Fully Decommissioned
39-6E-15.0			~1,900 feet
39-6E-15.1	~250 feet	~2,600 feet	~1,000 feet
39-6E-21.1			~650 feet
39-6E-21.2			~950 feet
39-6E-21.3			
39-6E-21.4		~500 feet	
Spur 1	~500 feet *	~500 feet	
Spur 2	~800 feet	~800 feet	

* Approximately 100 feet of Spur 1 would be constructed on private land owned by IFG

Cumulative Effects – Both Alternatives
The KFRA continues to strive to reduce open road density and environmental effects associated with roads during implementation of projects proposed in the foreseeable future. A combination of BLM and private checkerboard ownership and subsequent access agreements with adjacent landowners reduces BLM's flexibility in managing road densities. At the landscape level, the proposed action would provide an incremental improvement over the status quo. Over time, the expected cumulative effect of incremental improvements from each project is to reduce road density in the watershed. At the project area level, year round closure/decommissioning of 1.4 miles of roads reduces the amount of existing roads by over 25 percent.

Hydrology - Affected Environment

The proposed Walter's Cabin Forest Treatments analysis area is located in the Klamath River-John C. Boyle Reservoir Fifth Field Watershed in the Upper Klamath River Sub-basin. There are approximately 3.2 total miles of stream in the analysis area, 0.7 miles of intermittent streams and 2.5 miles of ephemeral streams (see Appendix D, Map of Units, Roads, Streams) according to KFRA/RMP definitions (page D-43). The drainage density is 5.5 miles of stream per square mile of analysis area. There are no perennial streams in the proposed project area. Riparian reserves would be established along intermittent streams following RMP guidelines (see Appendix B). Riparian reserve widths would be one site potential tree, or approximately 160 feet.

The intermittent stream in the analysis area (Section 15) appears to be functioning, as indicated by connectivity, channel characteristics, and riparian vegetation. There is connectivity between the stream channel, riparian area, floodplains, and upslope areas. In addition, the channel shape and gradient appear to be appropriate for the landform. The vegetation in the riparian reserve for the intermittent stream is comprised of riparian and upland plant communities. The riparian areas are adjacent to the stream and are functioning, with a variety of riparian vegetation present, including willows, rushes, and spirea. The streamside vegetation appears to be providing adequate shade to the stream. In areas where effects from the most recent past logging activities (approximately 1982) are evident, the stream and associated riparian area and floodplain are recovering. At these sites, signs of recovery include widening of the riparian area, gravel bar formation and revegetation, and stream bank stabilization. The upland vegetation surrounding the riparian area is comprised of a multi-aged, multiple canopy conifer forest plant community.

The ephemeral streams in the analysis area are located in draws and have water flow only during high precipitation events. Vegetation adjacent to ephemeral streams is similar to the surrounding upland forest types, with sparse to no riparian vegetation.

Most of the streams that are near roads on BLM land in the analysis area are ephemeral drainages. In Section 15 of the analysis area, the intermittent stream has 0.7 stream crossings per mile of road, and the ephemeral stream has 0.4 stream crossings per mile of road. In Section 21 there are no intermittent streams and there are 2.9 stream crossings per mile of road for the ephemeral streams. There are 1.86 miles of road within 100 feet of all streams (intermittent and ephemeral) on BLM land in the analysis area, however, 0.3 mile of this road length near the intermittent stream is closed. There is 0.04 mile of open road within 100 feet of the intermittent stream and 1.52 miles within 100 feet of the ephemeral streams (see Appendix D, Map of Units, Roads, Streams). Further details on roads in the analysis area are included in the "Roads" section of this document.

Hydrology - Environmental Consequences

No Action

The effects from the "no action" alternative would include the impacts resulting from the combination of fuel treatments and road maintenance activities that are expected to occur in the proposed project area in the next five years. These activities would be likely to occur as part of other currently proposed or future management projects. Since no immediate timber harvesting would occur, there would be no soil disturbance from ground-based logging equipment. However, as part of the expected future fuels treatment projects, minimal soil compaction and erosion could be expected from slashbusting and prescribed burning. Vegetation that has become established on some existing roads and skid trails would not be disturbed by mechanized equipment and would continue to contribute to the capture of sediment and infiltration of water. Routine road maintenance (grading, spot rocking and brushing) would occur periodically and be designed to minimize effects on sediment inputs into stream channels. Road blocks, decommissioning, rehabilitation, and drainage improvements described in the proposed action would not occur and current potential for input of sediment into streams would not be addressed.

The composition and character of forest stands adjacent to streams (within and outside of riparian reserves) would not be altered due to timber harvesting. Stream shade would remain effectively unchanged. In addition, in overstocked stands the risk of a stand replacing wildfire would remain unchanged. If a stand replacement wildfire occurred, there could be extensive mortality within riparian reserves. This would reduce stream shade and could trigger erosion and increase sediment inputs to stream channels. Further, extensive mortality from fire would reduce the future supply of large woody debris (LWD) to stream channels in the long term. However, there could be an increase in the amount of LWD in the stream channel in the short term, depending on the severity to which trees are burned.

Proposed Action

Potential effects on water resources resulting from proposed management activities would include compaction and erosion from ground-based logging equipment. Soil compaction could result in reduced water storage and capacity, decreased infiltration, and increased overland flow. The effects on the intermittent stream are expected to be minimal because there are no ground disturbing activities proposed within the riparian reserves. Little if any soil disturbance would be expected if snow logging occurs.

Soil compaction and displacement, if not mitigated, could cause erosion and increase sediment inputs to stream channels. Areas especially susceptible to erosion are sites where slopes are 35% or greater. According to the Natural Resource Conservation Service soil mapping data, approximately six percent, or 48.9 acres, of the analysis area has slopes between 35% and 55%. Of this six percent, approximately two percent, or 11.3 acres, is in the proposed project area (See Soils Section of this document). A portion of the ephemeral drainage in Section 15 (Southwest quarter) is located on these steep slopes where the potential exists for erosion from timber harvest and slashbusting and transport of eroded material to the drainage. Therefore, areas with slopes averaging greater than 35% (as identified on the ground) will not be logged or slashbusted, thus reducing the potential for accelerated erosion to occur. The overall risk of erosion causing sediment inputs to the streams is minor, since the majority of the proposed project area

has gentle slopes and slow runoff. Implementing BMPs and PDFs (e.g. avoiding placement of skid trails and landings in areas that may collect and divert surface runoff and placement and distance between crossings) would also aid in minimizing negative effects from compaction and erosion (see Appendix B).

No measurable effect from the proposed action is expected on the hydrologic regime of the intermittent stream because proposed treatments are limited to thinning and slashbusting and no treatments are proposed for the riparian reserves. Thus, the proposed action is not expected to affect peak or base flows and existing flows are expected to remain unchanged.

There could be a negative effect on water quality if sediment enters streams due to soil disturbance on roads. The streams where roads cross or are near streams are especially susceptible. Sediment could also enter streams from road maintenance activities and from hauling activities adjacent to streams. The probability of adverse effects on water quality from sediment entering the streams would be minimized by following BMPs and PDFs (see Appendix B), including not treating areas with slopes averaging 35% or more.

Road renovation, decommissioning, and blocking could result in beneficial effects to water quality in stream channels. For example, in the east half of Section 21 road maintenance and renovation would occur to reduce the effects of sediment from the roads being delivered to the ephemeral drainages. In accordance with BMPs and PDFs, drainage dips would be installed and a small culvert would be replaced at the stream crossing to reduce sediment inputs from the road to the drainage. Improving water drainage off roads and eliminating traffic would aid in reducing sediment inputs from roads into stream channels. Further, since there would be a minimal amount of new road construction (approximately .05 miles of permanent roads and .25 miles of temporary spurs), there would be a low potential to adversely affect ground water recharge and aquifer function due to additional roads. The risk of eroded material being transported to the intermittent stream channel or ephemeral drainage is low because the new roads would not be located near these streams. Permanent road construction is limited to approximately 250 feet to shorten the existing 39-6E-15.1 road by approximately 1,000 feet and to connect it to the 39-6E-18.0 road. Again, decreased road miles results in a decrease in potential for negative impacts on water quality.

The proposed action is consistent with the objectives for riparian reserves and the Aquatic Conservation Strategy (ACS) in the KFRA/RMP and would not prevent or retard attainment of any of the ACS objectives (KFRA/RMP, pages 7-8). The proposed action would:

- maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations, and communities are uniquely adapted
- maintain and restore the existing spatial and temporal connectivity within and between the Spencer Creek and Klamath River-Copco Reservoir Watersheds
- maintain and restore the physical integrity of the aquatic system
- maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.
- maintain and restore the sediment regime under which this aquatic ecosystem evolved
- maintain in-stream flows
- maintain the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands
- maintain and restore species composition and structural diversity of plant communities in riparian areas and wetlands

Cumulative Effects

Cumulative watershed effects from the proposed action are expected to be minimal because the analysis area comprises a very small percentage of the watershed. The proposed project treatment areas comprise

less than 1% (0.67%) of the 100,252 acres in the Klamath River-John C. Boyle Reservoir Fifth Field Watershed (See Figure 1, Watershed and Location Map). Although the Klamath River is included in the watershed, the treatments proposed would not produce downstream impacts that would affect this system.

Timber management in the last decade on BLM land has included approximately 4,200 acres of thinning in the watershed. Stands throughout the Matrix allocation are expected to be selectively harvested approximately every 20-30 years, according to Klamath Falls Resource Area plans. Current timber management on the surrounding private land is more intensive and occurs on a larger scale than on BLM land. Most of the private lands are managed on a shorter harvest rotation, perpetuating early seral habitat. This management regime is expected to continue in the future.

In the long term, the treatments proposed under the proposed action would aid in reducing the likelihood of a future stand replacement fire event at the watershed scale. These management actions would contribute to establishing a more stable and resilient ecological condition in the watershed.

No incremental increase in negative cumulative effects from new road construction in the current road network would occur. Although there are approximately 250 feet of new permanent road and approximately 1,300 feet of temporary spur roads proposed, 4,500 feet of existing road is planned to be fully decommissioned and another 4,400 feet of existing road is proposed to be blocked, resulting in a net decrease of approximately 1.4 miles of road in the analysis area. There are additional positive effects from the proposed road renovation, decommissioning and blocking.

Measurable cumulative effects from the proposed action are not expected at the watershed scale. The analysis area consists of a small proportion of the Klamath River-John C. Boyle Reservoir Fifth Field watershed. The effects of timber management on BLM lands in the analysis area is minimal compared to the effects of overall timber management when combined with management activities on surrounding private lands. Even so, at the watershed scale, management on BLM would aid in reducing stand replacement fire events and improving ecological conditions.

Aquatic Wildlife Species – Affected Environment

Fish are not known to occupy the one intermittent stream within the project area. The lack of continuous connectivity and low relative water quantity limits the ability of these streams to provide habitat for aquatic species. Amphibian species known to occur are those generally associated with intermittent and ephemeral water sources. These include Pacific chorus frog, the long-toed salamander, and the Western toad. The Klamath River, which is the closest connected perennial water body to the project area, is outside the area of effect for this proposal, so fish and other aquatic species that occur in the Klamath River are not considered in this analysis.

Aquatic Wildlife Species – Environmental Consequences

No Action

Limited ground disturbance and changes to vegetation resulting from fuel treatments planned outside of this proposed project and routine road maintenance would have minimal effect on aquatic species and habitats. Riparian reserves would remain at risk for stand replacing wildfire and the resulting negative effects on aquatic species from erosion, higher than normal nutrient concentration and sedimentation.

Proposed Action

No harvest would occur in the Riparian Reserve area and therefore, no direct impacts to riparian and aquatic habitat would occur. Hydrologic regimes of streams in the project area are not expected to be affected by this project because ground disturbing activities are restricted to thinning forest stands. Since thinning activities are not expected to increase peak flow or reduce base flows, no effects on aquatic species and their habitats are anticipated. Short-term sedimentation could occur due to increases in roads

in locations where roads have drainage connectivity to ephemeral drainages and intermittent streams. Implementing the project design features in Appendix B is expected to reduce or eliminate any short-term effects on aquatic species to levels analyzed in the KFRA/RMP. Road improvements (grading and drainage improvements) are expected to reduce long-term sedimentation potential by reducing the potential for roads to route sediment to streams. Additionally, the 0.5 miles of road proposed to be fully decommissioned would reduce overall road density thus reducing the length of the road network and the potential to capture and route surface water to stream systems.

Cumulative Effects

Due to the limited aquatic habitat and lack of continuous connectivity in the project area, cumulative effects to aquatic species or their habitat from either alternative are not anticipated to occur at the project or watershed scale.

Grazing Management - Affected Environment

Livestock

Two BLM cattle grazing allotments encompass the analysis area. They are listed below, along with the maximum number of livestock grazed via the BLM lease and season of use.

Grubb Spring Allotment (#0147) – This is the allotment that includes the lands in Section 15. The permitted use is for 26 cattle from 5/1 to 9/30 for a lease held by Lester Hinton. An additional 150 head are leased via an exchange of use for the allotment due to the livestock lease with Inland Fiber Group (aka U. S. Timberlands) which owns a large majority of the lands that comprise this grazing allotment.

Buck Mountain Allotment (#0103) – This allotment includes the lands in Section 21. Even though this section is in another allotment which is generally grazed by a different lessee (Mark Holliday), the same grazing lessee noted above actually grazes in Section 21 due to Inland Fiber Group leasing the lands immediately around Section 21 to Mr. Hinton. This allows an additional 20 head for the same period noted above.

For a complete description of the grazing allotments, including historic use levels, allotment boundaries, and range conditions, refer to the Spencer Creek Pilot Watershed Analysis (Grubb Spring Allotment) and Jenny Creek Pilot Watershed Analysis (Buck Mountain allotment). Additional information is also found in the Klamath Falls Resource Area FEIS, Resource Management Plan, Record of Decision and Rangeland Program Summary. Both allotments also have had *Rangeland Health Standards Assessments* (RHSA) completed in 2000. Both RHSA's determined that the current grazing management was appropriate for the meeting of all 5 Standards for Rangeland Health, but did find other land management activities to be contributing to some minor non-attainment. The primary non-attainment factors were past timber harvest activities and declining forest health.

Wild Horses

The proposed project area does not lie within an area recognized as a Herd Management Area (HMA) under the Wild & Free Roaming Horse & Burro Act of 1971. Though, historically, wild horses have occasionally roamed into the two allotments that encompass the project area from the neighboring Pokegama HMA which lies directly to the south.

Grazing Management - Environmental Consequences

Livestock

No Action and Proposed Action

In general, neither alternative would have any measurable effects on cattle grazing. Specifically, the effect of the proposed action would not be measurable though theoretically could be positive since the

opening up of the forest canopy usually allows for a temporary increased abundance of the herbaceous plants favored by grazing herbivores including cattle and elk. However, forage isn't currently known to be a limiting factor in this allotment for either of these animals and the area to be impacted is a very small percentage (<1%) of the combined total allotment areas (public and private). The No Action Alternative would conceptually be a neutral effect since herbaceous forage levels would not change one way or the other.

Cumulative Effects

Seven different grazing allotments are affected by management actions in and adjacent to the proposed project analysis area. Cumulative effects in the short term (less than 2 years), include a conceivable – though not measurable – slight decrease in available forage for livestock and elk due to the ground disturbing activities of timber harvest. The long-term cumulative effects of vegetation treatments would be to improve ecological conditions and provide an increase in palatable herbaceous plant species (at least temporarily) - especially in areas with little understory now due to the thick, light inhibiting overstory of trees.

Wild Horses

There would be no impacts to wild horses from either alternative since horses are rarely present and the area is not a recognized HMA.

Cultural Resources - Affected Environment

Native American use of the area spans many millennia. The area is within a larger territory ceded to the United States in 1864 by The Klamath Tribes. Along with the Klamath and Modoc, Shasta and Takelma peoples likely utilized this area as well. The Klamath River Canyon, although not considered within the analysis area, lies 3 to 4 miles south and east of the Walter's Cabin Forest Treatment area. The Klamath River Canyon is extremely rich in archaeological and historical resources and presumably served as one corridor for entry into the analysis area by both prehistoric and historic inhabitants. To date, archaeological and ethnographic research has demonstrated a significant and apparently year-round use of the Klamath River Canyon by prehistoric groups. Upland use, which corresponds more closely with the Walter's Cabin Forest Treatments area of analysis, was apparently only associated with seasonal rounds conducted for subsistence needs.

Historically (post-1846), after the establishment of the Applegate Trail, the project area was used primarily for logging and ranching. Logging began in the1860s with a few small enterprising sawmills. The industry boomed in the early twentieth century both in and around the project area after the introduction of railroads. Weyerhaeuser arrived in 1923 and began constructing logging roads. Early historic towns and mills in the region include Snow, Pokegama, and Dixie. This region was also crossed by numerous early and important travel routes including the Applegate Trail, Southern Oregon Wagon Road, Topsy Road, and Ward Road. Today logging and ranching continue to be significant in the area.

Additional information about cultural resources in the analysis area may be found in various overviews of the history and prehistory of the region (Beckham 2005, Follansbee and Pollack 1978, Mack 1991, and Spier 1930).

Cultural Resources - Environmental Consequences

No Action

Under the no action alternative, the three known archaeological sites in the proposed treatment area would continue to be protected from ground disturbing activities. Fuels treatments proposed in the future would be reviewed for cultural resources on a case by case basis and adverse effects would be avoided.

Proposed Action
All proposed treatment areas have been surveyed for cultural resources using BLM Class III survey methods. Three archaeological sites are known within areas proposed for treatment. Site forms for these sites have been forwarded to the Oregon State Historic Preservation Office (SHPO). Each of the known sites would be avoided by creating a buffered area encompassing the identified resource, and the stands will not be treated within the buffer. Thus, no adverse effects to cultural resources are anticipated as a result of this alternative.

Cumulative Effects
Under all action alternatives, the potential to encounter, or disturb, subsurface archaeological deposits appears limited based on regional survey results and the nature of disturbances anticipated. Protection measures (flagging and avoidance, buffers, and boundary adjustments) implemented for past actions have been effective in preventing adverse effects on cultural resources and will continue to be used to avoid effects for current and future activities.

Recreation Resources - Affected Environment

The analysis area provides opportunities for dispersed recreation such as hunting, fishing, off-highway vehicle driving, camping, mushroom picking, sightseeing and mountain biking. Nearby recreation facilities with some level of development include Topsy and Surveyor campgrounds and a network of forest roads. Topsy campground is a 15 unit campground located on John C. Boyle Reservoir. Surveyor campground is a small four unit campground adjacent to Keno Access Road. The analysis area currently receives light dispersed recreation use during most times of the year, with the highest use likely during the fall for big game hunting. No new recreation facilities are proposed within the analysis area. For general information about recreation in the area, refer to the KFRA/RMP pages 47-53, and KFRA/FEIS maps 2-8 and 2-10.

Recreation Resources - Environmental Consequences

No Action
Opportunities to pursue recreation resources are expected to continue unchanged under this alternative. The only exception would be in the event of a large scale wildfire. Such an event could have profound effects upon recreation uses of the area.

Proposed Action
Only temporary, minor disruptions to recreational users would occur during treatment activities. Short-term disturbances to recreationists from truck traffic, equipment noise, dust and smoke associated with treatment activities would be expected. A positive recreation benefit of treatment activities could occur through the increased availability of firewood and enhanced mushroom gathering opportunities. In addition, there would be a positive impact to recreational uses as a result of implementing the proposed action by reducing the risk of high intensity wildfire.

The impacts associated with the proposed selective harvest and fuel reduction as described in the proposed action would not approach or exceed those described in the KFRA/FEIS (pages 4-104-108). Closing short spur roads would most likely affect big game hunters, availability of dispersed camp sites and retrieval of game in particular. However, closed roads would still be available for hiking or mountain biking and the dispersed camp site on the 39-6E-21.2 road would remain available. Overall access to the project area would not be substantially reduced. Closing short spur roads would have minimal effect on recreationists; some positive and some negative depending on the nature of the activities in which they participate.

No additional Project Design Features and Mitigation related to recreation resources have been identified for the project area.

Cumulative Effects – Both Alternatives
Cumulative effects from either alternative are expected to be negligible, except in the event of a large scale wildfire.

Visual Resources - Affected Environment

The BLM has a basic stewardship responsibility to identify and protect scenic values on public lands. This is accomplished through the Visual Resource Management (VRM) program. Through this program, all BLM lands are inventoried and managed in specific VRM classes. BLM lands within the analysis area contain a variety of landforms and scenic/aesthetic qualities. The analysis area is comprised of VRM Class III lands. Management objectives for VRM Class III are to allow only moderate levels of change to the characteristic landscape. Management activities may attract attention but should not dominate the view of the casual observer.

For additional information about scenic resources in the analysis area, refer to the KFRA/RMP, pages 43-44, and maps 2-5.

Visual Resources - Environmental Consequences

No Action
Current scenery would remain unchanged except for gradual changes as the stands age and additional trees die from insects and disease. No short term effects on visual resources would be expected, however there is a greater likelihood of widespread insect mortality and catastrophic fire, which would greatly affect long term scenic resources.

Proposed Action
Proposed treatment activities would have minimal short-term negative effects on visual resources. Maintaining an uneven-aged, multi-strata stand structure and reducing competition and stress to reserve trees, would reduce the long-term impacts to visual resources.

Long-term management of visual resources within the analysis area would likely be positively affected by the proposed treatments, variable density management thinning and follow-up slashbusting activities. These treatments would greatly reduce the opportunity for catastrophic wildfire and insect mortality due to drought within the treated areas.

No additional project design features have been proposed to reduce the visual effect of harvesting as no major roads or recreation sites are located within the project area. All treatments would meet appropriate Visual Class III objectives specified in the KFRA/RMP (page 44).

Cumulative Effects
Cumulative effects from either alternative are expected to be negligible, except in the event of a large scale wildfire.

Socioeconomics – Affected Environment

The proposed action lies within an area that is used by a variety of the public for recreation, hunting, fishing, mushroom gathering, as well as other uses. In the past, the project area has provided a sustained supply of timber for processing in the surrounding communities including; Klamath Falls, Yreka, and Medford. Some timber has gone as far as Redding or Glide for processing. For every million board feet of timber harvested and processed in Oregon, approximately 10 jobs are generated, 8 in the lumber and plywood industry and 2 in the logging industry (Charnley, S., ed. – In press).

In addition to the timber value, the Klamath County Economic Development Association (KCEDA) has recently completed a biomass study to determine the feasibility of constructing a small log sawmill and wood residue biomass plant in Klamath County (Continental Resource Solutions, Inc. 2004). The objectives would be to increase the utilization of smaller diameter material and logging residue typically burned in the forest. Additional benefits as indicated in the study would be employment opportunities within the county associated with biomass utilization as well as hazardous fuel reduction on thousands of acres of forest land. The proposed project would make available for utilization biomass material that typically is not processed for lumber or veneer. This could result in additional employment.

Socioeconomics – Environmental Consequences

No Action

The No Action Alternative would not meet the RMP objective of producing a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability affect local businesses primarily dependent upon forest products. The No Action Alternative should not result in any detectable socioeconomic change in regards to recreational uses. Hunting, fishing, and other recreational uses are expected to continue at the present level regardless of the No Action or Proposed Action.

Proposed Action

The proposed action would result in the harvest of approximately1.9 million board feet of timber (1.9MMBF). Based upon the assumption above that for every 1 million feet of timber harvested, 10 jobs are generated, approximately 20 jobs either locally or within the community that process the timber could be created or maintained. Although there could be increased opportunity for recreational pursuits (elk hunting, mushroom picking, etc.), economic effects would likely not be measurable.

The Oregon and California Railroad and Coos Bay Wagon Road Grant Lands Act (O&C Act) (43 U.S.C. § 1181a, et seq.) provides the legal authority for the management of O&C lands by the Secretary of the Interior. The O&C Act requires that the O&C lands be managed "…*for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal of sustained yield for the purposed of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, providing recreational facilities*…" The proposed action helps meet the objectives of the act by providing for needs identified above.

Cumulative Effects

The local area processes a considerable amount of timber and the proposed action represents only a small percentage of what is processed annually. Although private timberlands supply much of the present demand for timber, some of the present forest industrial infrastructure is dependent upon a sustainable supply of timber from federal lands. The RMP states that the annual sale quantity for the Klamath Falls Resource Area from Westside Matrix lands is approximately six million board feet (6MMBF). Processing facilities are dependent upon a stable, sustainable, and reliable supply of timber. Continual litigation of timber sales on federal lands has decreased the ability of Federal agencies to provide that timber supply. Timber Harvest from public lands in Klamath County has dropped from 312.149 MMBF in 1986 to 37.745 MMBF in 2002 (Continental Resource Solutions, Inc. 2004). The cumulative effect of this instability in supply has resulted in closures of processing facilities and the corresponding loss of jobs.

CHAPTER 4 – CONSULTATION

Endangered Species Act Consultation

Consultation with the FWS has been initiated and will be completed for the proposed variable density thinning and fuels reduction. A determination of "May Affect, Not Likely to Adversely Affect" will be made by the BLM for the northern spotted owl. A "No Effect" determination will be made for all other listed species. No designated critical habitat occurs within the project area.

CHAPTER 5 – LIST OF PREPARERS

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Appendix B – Summary of Best Management Practices and Project Design Features

Appendix D of the KFRA/RMP (pages D1-D46) describes the Best Management Practices (BMPs) that are "designed to achieve the objectives of maintaining or improving water quality and soil productivity and the protection of riparian-wetland areas". Best management practices are defined as methods, measures, or practices selected on the basis of site-specific conditions to ensure that water quality will be maintained at its highest practicable level. In addition to BMPs that focus on water quality and soil production, the interdisciplinary team has developed Project Design Features (PDF) with the objective of meeting other resource goals. The list below is a list of the BMPs and PDFs that the interdisciplinary team found to be most pertinent for the proposed action. All of the BMPs in Appendix D (KFRA/RMP) as well as information from past Annual Program Summaries and Monitoring Reports were considered when developing the final operational specifications for the proposed treatments.

Upland Forest Vegetation - Harvest Prescription

Density Management Harvests

- For uneven-aged stands, maintain a multi-strata stand structure.
- Thin around large, high resource value trees (sugar pines, ponderosa pines and Douglas-firs) to improve vigor and reduce hazardous fuels risk.
- For Spotted Owl NRF habitat, thin to a minimum of 120 square feet of basal area.
- For stands with a basal area over 200 square feet per acre, thin to an average of 120 square feet per acre.
- For stands with a basal area less than 200 square feet per acre, thin to an average of 90 square feet per acre.
- In selected areas, thin to variable densities ranging from 40 to 200 square feet of basal area to provide additional variation in stand structure.
- Generally retain the most dominant or co-dominant tree that is full crowned, vigorous, and disease free.

Species selection priority (to retain):

- Sugar pine (highest)
- Douglas-fir
- Ponderosa pine
- Incense cedar
- White fir (lowest)
- Retain (no thinning) isolated thermal clumps to provide variability in spacing and structure.

Roads

The BMPs listed in Appendix D of the RMP provide standard management practices that are to be implemented including:

- Seasonally restricting road renovation activities is recommended to eliminate sediment transportation to streams.
- Installing drainage dips in accordance with BMPs to reduce surface and ditchline run-off is recommended.
- Apply mulch and seeding or other methods of soil stabilization to any exposed soil surfaces prior to the wet season to reduce surface erosion.

- Direction from the KFRA/RMP for Key Watersheds includes reducing road mileage and a no net increase in road mileage.
- Restoration of forest productivity including full decommissioning of roads within the riparian reserves upon completion of the project is recommended.
- Minimal or no grading of the existing dirt roads will be done to maintain the existing ground cover and vegetation and to decrease sediment movement.
- Re-block roads that were previously blocked but are opened for treatments.
- When fully decommissioning roads, remove road drainage features and fill in ditches, place slash and woody material on the road surface subsequent to ripping, and ensure that the road closure is adequate to ensure that vehicle access is eliminated.
- When fully decommissioning roads within riparian reserves, plant native trees subsequent to road removal.

Soil Resources

- Limit detrimental soil conditions to less than 20 percent of the total acreage within the activity area. Use current soil quality indicators to monitor soil impacts. Sites where the 20 percent standard is exceeded will require treatment, such as ripping, backblading or seeding.
- To protect riparian areas, soil resources, and water quality while limiting erosion and sedimentation to nearby streams and drainages, do not allow logging operations during the wet season (October 15 to May 1).
- Limit mechanical cutting and yarding operations to periods when the soil moistures is below 20 percent at a six inch depth. Even lower soil moisture levels are preferable on fragile soils.
- Allow logging activities during periods of sufficient snow. This is normally when snow depths are in excess of twenty (20) inches in depth.
- To protect soil resources and water quality, close unsurfaced roads during the wet season (October 30 to June 1) unless waived by authorized personnel.
- Residual slash will be placed upon skid trails upon completion of yarding.
- Avoid placement of skid trails in areas with potential to collect and divert surface runoff, such as the bottom of draws and ephemeral drainages.
- Retain and establish adequate vegetative cover in accordance with BMPs to reduce erosion.
- Retain enough small woody (dead and down) material to sustain soil nutrients. See KFRA/RMP BMPs for specifications. In ponderosa pine forest land, 9 tons per acre of duff and litter (approximately ½ inch deep).
- Seed and/or mulch exposed and disturbed soil surfaces with native seed when seed is available.
- Cable yarding and restricted use of mechanized equipment is required on slopes that are greater than 35 percent.
- Construct fireline by hand on slopes greater than 35 percent.
- Hand pile and burn within 100 feet of riparian reserves.

Hydrology & Riparian Reserve Buffers

Timber Harvest

Delineate Riparian Reserve widths as described in the KFRA/RMP (pg F-8, pgs C-30 to 31).

Riparian reserve type	Reserve width
Seasonal non-fish-bearing streams and wetlands less than 1 acre and unstable or potentially unstable areas	At a minimum, the reserve will include: ▪The stream channel and the area extending to the top of the inner gorge; ▪The wetland and the area extending to the outer edges of riparian vegetation; ▪The area extending from the stream channel to a distance equal to the height of one site potential tree* (160 feet), or 100 feet slope distance, whichever is greatest; and, ▪The extent of stable or potentially unstable areas.
*A site-potential tree is defined as the average maximum height of the tallest dominant trees (200 years old or more) for a given site class. In the Walter's Cabin Forest Treatments area, the site potential tree height was determined to be 160 feet.	

- Existing landings and roads within riparian reserves would be used only if replacing them with landings and roads outside the riparian reserves would result in greater overall disturbance to the riparian reserve or water quality.
- Avoid placement of skid trails, landings and roads in areas with potential to collect and divert surface runoff such as the bottom of draws and ephemeral drainages.
- Consider retaining some downed logs for instream structural enhancement projects.
- No new permanent roads will be constructed within riparian reserves (except where construction or re-alignment of short road segments allows full decommission of longer or more resource damaging road segments within riparian reserves).
- Yarding/skidding corridors that pass through riparian reserves will be designated prior to project implementation, will have a minimum spacing of 300 feet and be oriented perpendicular to streams, will have minimal relative slope, and will be revegetated following project implementation (as needed).
- Stream crossings will be selected at stable, naturally armored locations or will be armored with slash before being used as a corridor.
- Use of existing roads and landings within riparian reserves will be reviewed and approved by the Klamath Falls Resource Area interdisciplinary team.

Wildlife Terrestrial Species

Snag Retention

Approximately 2.4 snags per acre will be retained with a minimum diameter at breast height (DBH) of 16", or largest available if less than 16" (KFRA/RMP, pages 26-27 and 2001 ROD).

Coarse Woody Debris (CWD)

Approximately one hundred and twenty (120) linear feet of down logs per acre will be retained. Logs shall be greater than or equal to sixteen (16) inches in diameter and sixteen (16) feet long (KFRA/RMP, page 23).

Nesting Areas

Protect nesting areas as describe on pages 34 and 38 of KFRA/RMP.

Units adjacent to or containing northern spotted owls or NRF habitat

- General objective for fuel treatments would be to create a mosaic of treated and untreated habitat in the unit to maintain some habitat for prey production.
- In NRF habitat, maintain visual screening along open roadways to minimize disturbance.
- In NRF habitat, maintain the understory structure by retaining a diversity of the sub-merchantable understory conifer trees (Douglas -fir, white-fir, sugar pine, cedar, ponderosa pine).
- Retain untreated areas ranging from ¼ acre to 5 acres (thermal clumps) within the treatment units to provide diversity for wildlife.
- Maintain habitat connectivity and corridors.

Noxious Weeds

- Require cleaning of all equipment and vehicles prior to moving on-site to prevent spread of noxious weeds.
- Also, if the job site includes a noxious weed infestation, require cleaning of all logging and construction equipment and vehicles prior to leaving the job site.
- Removal of all dirt, grease, and plant parts that may carry noxious weed seeds or vegetative parts could be accomplished by using a pressure hose to clean the equipment.
- Mow noxious weeds in the immediate area of yarding operations to ground level prior to seed development.
- Conduct monitoring activities related to proposed treatments as described in the KFRA/RMP
- Road graders used for road construction or maintenance would grade towards any known noxious weed infestations. If no good turn around area exists within one half mile that would allow the operator to grade towards the noxious weed infestation, then the operator would leave the material that is being moved within the boundaries of the noxious weed infestation.

Special Status Species

Provide snag mitigation measures for White-headed Woodpecker and Black-backed Woodpecker. Increase snag retention requirements from 1.9 to 2.4 snags per acre. This increase is thought to also provide sufficient habitat for pygmy nuthatches and flammulated owls (2001 ROD, page 35)

Cultural Resources

- Follow procedures for cultural protection and management outlined in the KFRA/RMP (page 43), and protect identified sites by buffering.
- In accordance with guidelines and directives in the KFRA/ RMP, BLM regulations, and the National Historic Preservation Act, areas not included in previous archaeological surveys will be surveyed before any ground-disturbing action is undertaken.

Appendix C – 2001 ROD Compliance Review

2001 ROD Compliance Review: Survey & Manage Wildlife and Botany Species

Environmental Analysis File - Lakeview District BLM, Klamath Falls Field Office

Project Name: Walter's Cabin
Project Type: Timber Harvest
Location: T39S R6E Sec15 and 21
Prepared By: Molly Juillerat and Steve Hayner
Date: March 22, 2006
S&M List Date: December 29, 2003

Table A. Survey & Manage Wildlife and Botany Species. Species listed in the following table were compiled from the 2003 Annual Species Review (IM 2004-034) and include those vertebrate and non vertebrate wildlife and non vascular and vascular botanical species whose known or suspected range includes the Klamath Falls Resource Area according to the protocols listed below.

- Survey Protocols for Survey and Manage Strategy 2 Vascular Plants Version 2.0 (December 1998)
- Management Recommendations for Survey and Manage Lichens Version 2.0 (March 2000)
- Natural History and Management Considerations for the Northwest Forest Plan Survey and Manage Lichens Based on Information as of the Year 2000 (USDA Forest Service R6-NR-S&M-TP-03-03 2003). Survey Protocols for Survey and Manage Category A & C Lichens in the Northwest Forest Plan Area Version 2.1 (2003)
- 2003 Amendment to the Survey Protocol for Survey and Manage Category A and C Lichens Version 2.1 (2003)
- Survey Protocols for Survey and Manage Component 2 Bryophytes Version 2.0 (1997),
- Survey and Manage Protocols Protection Buffer Bryophytes 2.0 (1999),
- Handbook to Strategy 1 Fungal Species in the Northwest Forest Plan (PNW-GTR-476 October 1999), and Handbook to Additional Fungal Species of Special Concern in the Northwest Forest Plan (PNW-GTR-572 January 2003)
- Survey Protocol for the Great Gray Owl within the Range of the Northwest Forest Plan v3.0 (Jan. 2004)
- Survey Protocol Aquatic Mollusk Species From the Northwest Forest Plan Version 2.0 (Oct. 1997)
- Draft Survey Protocol for Terrestrial Mollusk Species From the Northwest Forest Plan Version 2.0 (1997)
- Survey Protocol for S&M Terrestrial Mollusk Species v3.0 (Feb. 2003)

There are no known sites for Category B, D, E, and F species.

Statement of Compliance. Pre-disturbance surveys and management of known sites required by protocol standards to comply with the *2001 Record of Decision and Standard and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measure Standards and Guidelines* (as the 2001 ROD was amended or modified as of March 21, 2004) were completed for Walter's Cabin Timber Sale and Fuels Treatment. Walter's Cabin Timber Sale and Fuels Treatment also complies with any site management for any Category B, D, and E species as identified in the 2001 ROD (as modified): no sites of any of these species (B, D, E) is present in the planning area.

Based on the survey results, there are currently no known sites of Survey & Manage species that require management within the project area. Therefore, based on the preceding information (refer to Table A

below) regarding the status of surveys for Survey & Manage wildlife species and the results of those surveys, it is my determination that Walter's Cabin Timber Sale and Fuels Treatment complies with the provisions of the *2001 Record of Decision and Standard and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measure Standards and Guidelines* (as the 2001 ROD was amended or modified as of March 21, 2004). For the foregoing reasons, this EA is in compliance with the 2001 ROD as stated in Point (3) on page 14 of the January 9, 2006, Court order in Northwest Ecosystem Alliance et al. v. Rey et al.

DK Hoffheins (for) 6/15/06
Jon Raby, Field Manager Date
Klamath Falls Field Office

Table A – Survey and Manage Program Compliance

Species	S&M Category	Survey Triggers			Survey Results			
		Within Range of the Species?	Project Contains Suitable habitat?	Project may negatively affect species/ habitat?	Surveys Required?	Survey Date Month/year	Sites Known or Found?	Site Management
Vertebrates								
Great Gray Owl (Strix nebulosa)[1]	A	Yes	Yes	No	No	03/03-06/03	0	NA
Mollusks								
Siskiyou Sideband (Monadenia chaceana)[2]	B	Yes	Yes	No	No	NA	#	
Crater Lake Tightcoil (Pristiloma arcticum crateris)[3]	A	Yes	No	No	No	NA	#	
Evening Fieldslug (Deroceras hesperium)[4]	B[4]	Yes	No	No	No	NA	#	
Fluminicola no. 3 [5]	A	Yes	No	No	No	NA	#	
Fluminicola no. 16 [5]	A	Yes	No	No		NA	#	
Vascular Plants								
Cypripedium fasciculatum	C	Yes	Yes	Yes	Yes	Aug/2004	0	No
Cypripediium montanum	C	Yes	Yes	Yes	Yes	Aug/2004	0	No

[1] Pre-disturbance surveys for great gray owls are not required since there are no natural meadows greater than 10 acres within or adjacent to suitable nesting habitat within the project area ("Survey protocol for the Great Gray Owl within the Range of the Northwest Forest Plan 2004" pp.5). In these areas where natural openings are not found, pre-disturbance surveys are not required for reasonable assurance of persistence of the species because while there are known sites that have been found within these described habitats the inadvertent loss of these undiscovered sites would not substantially increase the concern for persistence (GGO protocol 2004 pp. 5).

[2] Equivalent-effort pre-disturbance surveys are not required for the Siskiyou Sideband (IM-OR-2004-034). (Survey Protocol for S&M Terrestrial Mollusk Species v3.0, 2003). Timber harvest that results in an average 40% canopy is usually considered detrimental to local populations (pg 11 Conservation Assessment for M. chaceana 2005). The planned action would maintain canopy closure at greater than 40% in potential habitat for M. chaceana. High priority habitat for M.chaceana on the KFRA are rocky outcrops, riparian and seepy areas. (Nancy Duncan per.comm 2005. There are not high priority habitat areas in the Walter's Cabin project area.

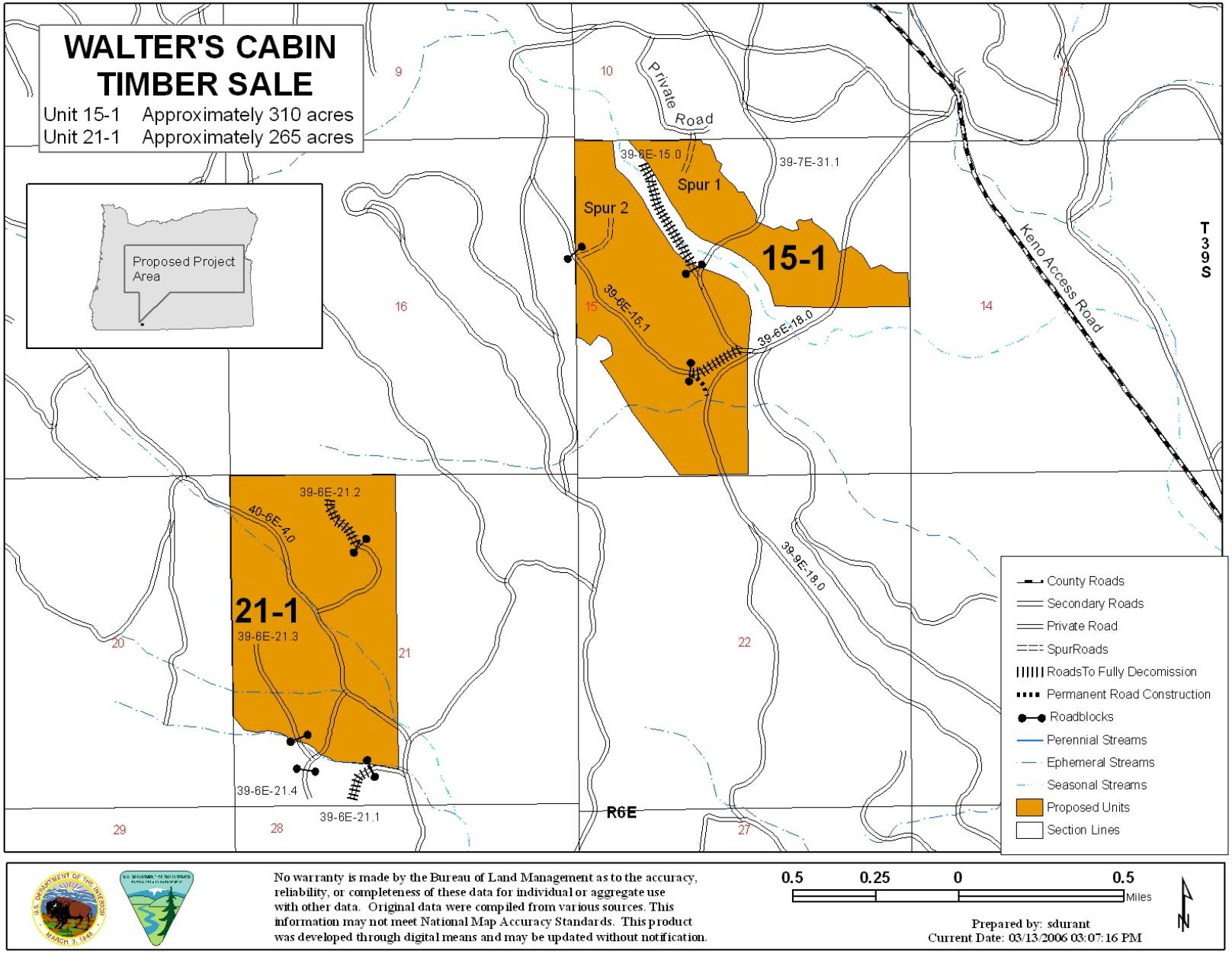
[3] Suitable habitat for the Crater Lake tightcoil is "perennially wet situations in mature conifer forests, among rushes, mosses and other surface vegetation or under rocks and woody debris within 10 meters of open water in wetlands, springs, seeps and riparian areas…" (pg. 43, Survey Protocol for S&M Terrestrial Mollusk Species v3.0, 2003). Within the project, suitable habitat is confined to the stream-side areas that are contained within riparian reserves. No priority habitat exists in the Walter's Cabin project area.

[4] The evening field slug's range was extended to include the KFRA in March 2003 (pg 2 and 3 2002 Annual Species Review and Appendix A pg32., Survey Protocol for S&M Terrestrial Mollusk Species v3.0, 2003). The evening field slug is "associated with perennially wet meadows in forest habitats, suitable habitat may be considered to be limited to moist surface vegetation and cover objects within 30m of perennial wetlands, springs, seeps and riparian areas." (pg. 8, Conservation Assessment for Deroceras hesparium, Evening field slug, September 2005 Nancy Duncan)

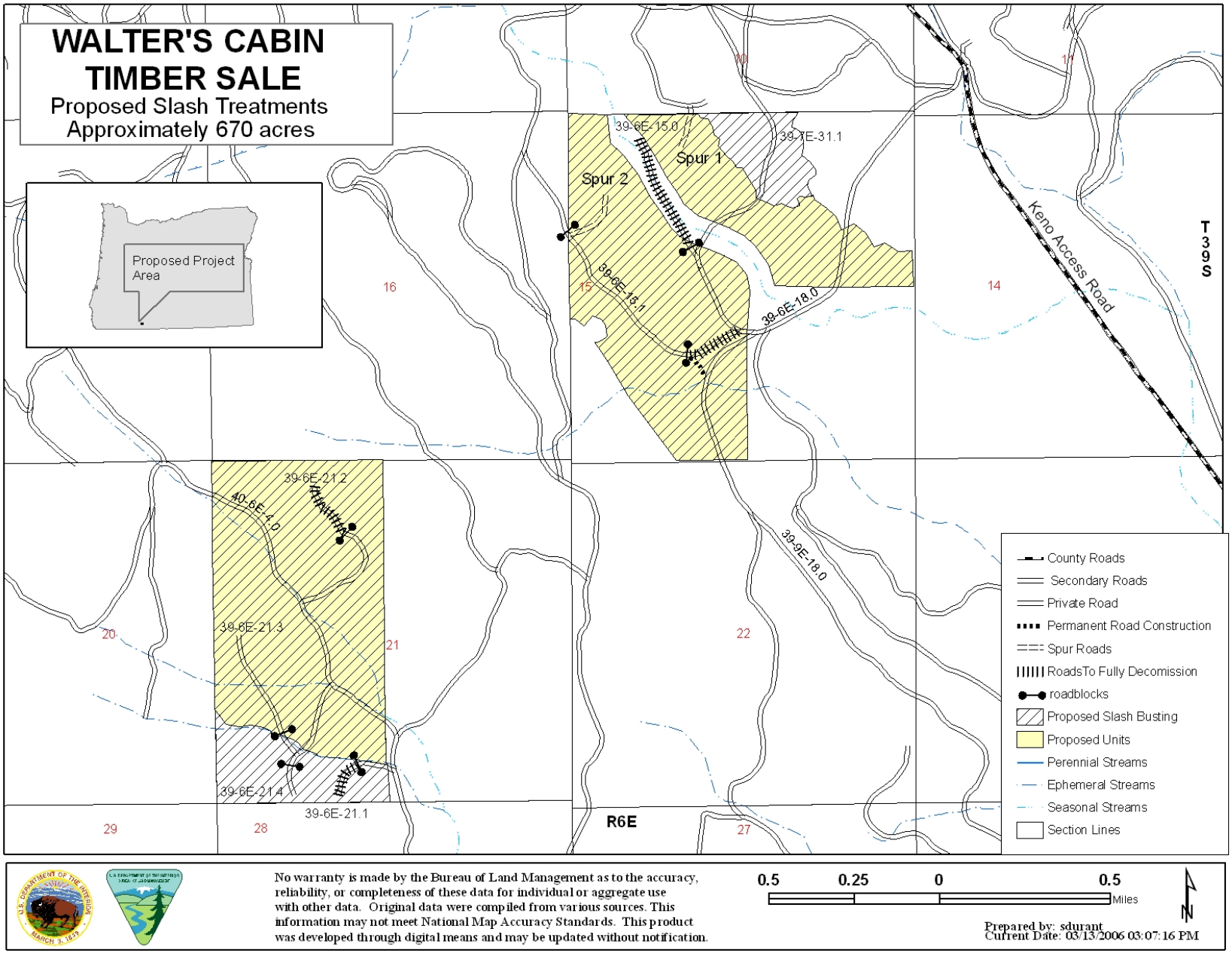
[5] Fluminicola sp no. 3 and no. 16 are found in cold seeps and springs (Aquatic Mollusk Survey Protocol Version 2.0 October 1997). No suitable habitat exists in the Walter's Cabin project area.

Appendix D – Project Maps

Map of Units, Roads, Streams



Map of Slash Treatments



Appendix E – Key Findings for the Northern spotted Owl

Review and Summary of Key Findings Regarding the Northern Spotted Owl

The most important conservation concerns addressed in the reports are: 1) the precipitous NSO population declines in Washington, and declining trends in the three northern Oregon demographic areas, as described by Anthony et al. 2004; and 2) the three major current threats identified by Courtney et al. (2004), i.e., lag effects from prior harvest of suitable habitat, habitat loss due to wildfire in portions of the range, and competition from Barred Owls.

Anthony et al. (2004) indicated that NSO populations were doing poorest in Washington, with precipitous declines on all four study areas. The number of populations that declined, and the rate at which they declined, were noteworthy (Anthony et al. 2004). In northern Oregon, NSO population declines were noted in all three study areas. The declines in northern Oregon were less than those in Washington, except in the Warm Springs study area, where the decline was comparable to those in Washington (Anthony et al. 2004). The NSO has continued to decline in the northern portion of its range, despite the presence of a high proportion of protected habitat on federal lands in that area. Although Courtney et al. (2004) indicated that population declines of the NSO over the past 14 years were expected; they concluded that the accelerating downward trends on some study areas in Washington where little timber harvest was taking place suggest that something other than timber harvest is responsible for the decline. Anthony et al. (2004) stated that determining the cause of this decline was beyond the scope of their study, and that they could only speculate among the numerous possibilities, including competition from Barred Owls, loss of habitat from wildfire, timber harvest including lag effects from prior harvest, poor weather conditions, and defoliation from insect infestations. Considering the fact that the NSO is a predator species, Anthony et al. (2004) also noted the complexities of relationships of prey abundance on predator populations, and identified declines in prey abundance as another possible reason for declines in apparent survival of NSO.

In southern Oregon and northern California, NSO populations were more stationary than in Washington (Anthony et al. 2004). The fact that NSO populations in some portions of the range were stationary was not expected within the first ten years, given the general prediction of continued declines in the population over the first several decades of Northwest Forest Plan (NWFP) implementation (Lint 2005). The cause of the better demographic performance on the southern Oregon and northern California study areas, and the cause of greater than expected declines on the Washington study areas are both unknown (Anthony et al. 2004). Courtney et al. (2004) noted that a rangewide population decline was not unexpected during the first decade, nor was it a reason to doubt the effectiveness of the core NWFP conservation strategy.

Lint (2005) indicated that loss of NSO habitat did not exceed the rate expected under the NWFP, and that habitat conditions are no worse, and perhaps better than expected. In particular, the percent of existing NSO habitat removed by harvest during the first decade was less than expected. Courtney et al. (2004) indicated that models of habitat growth suggest that there is significant ingrowth and development of habitat throughout the federal landscape. Courtney et al. (2004) also noted that management of matrix habitat has had a lower impact on NSO populations than predicted. Owls are breeding in substantial numbers in some matrix areas. The Riparian Reserve strategy and other habitat management guidelines for the matrix area appear to preserve more, better, and better-distributed dispersal habitat than earlier strategies, and there is no evidence to suggest that dispersal habitat is currently limiting to the species in general (Courtney et al. 2004). Anthony et al. (2004) noted declining NSO populations on some study areas with little harvest, and stationary populations on other areas with consistent harvest of mature forest. No simple correlation was found between population declines and timber harvest patterns (Courtney et al. 2004). Because it was not clear if additional protection of NSO habitat would reverse the population trends, and because the results of their study

did not identify the causes of those trends, Anthony et al. (2004) declined to make any recommendations to alter the current NWFP management strategy.

Reductions of NSO habitat on federal lands are lower than those originally anticipated by the Service and the NWFP (Courtney et al. 2004). The threat posed by current and ongoing timber harvest on federal lands has been greatly reduced since 1990, primarily because of the NWFP (Courtney et al. 2004). The effects of past habitat loss due to timber harvest may persist due to time-lag effects. Although noting that it is probably having a reduced effect now as compared to 1990, Courtney et al. (2004) identified past habitat loss due to timber harvest as a current threat. The primary current source of habitat loss is catastrophic wildfire (Courtney et al. 2004). Although the total amount of habitat affected by wildfires has been small, there is concern for potential losses associated with uncharacteristic wildfire in a portion of the species range. Lint (2005) indicated that the NWFP recognized wildfire as an inherent part of managing NSO habitat in certain portions of the range. Courtney et al. (2004) stated that the risk to NSO habitat due to uncharacteristic stand replacement fires is sub-regional, confined to the dry eastern and to a lesser extent the southern fringes of the NSO range. Wildfires accounted for 75 percent of the natural disturbance loss of habitat estimated for the first decade of NWFP implementation (Courtney et al. 2004). Lint (2005) cautioned against relying solely on the repetitive design of the conservation strategy to mitigate effects of catastrophic wildfire events, and highlighted the potential to influence fire and fire effects through active management.

Anthony et al. (2004) indicated that there is some evidence that Barred Owls may have had a negative effect on NSO survival in the northern portion of the NSO range. They found little evidence for such effects in Oregon or California. The threat from Barred Owl competition has not yet been studied to determine whether it is a cause or a symptom of NSO population declines, and the reports indicate a need to examine threats from Barred Owl competition.

The synergistic effects of past threats and new threats are unknown. Though the science behind the NWFP appears valid, new threats from Barred Owls, and potential threats* from West Nile Virus and Sudden Oak Death may result in NSO populations in reserves falling to lower levels (and at a faster rate) than originally anticipated. Courtney et al. (2004) distinguish between operational threats (perceived as currently negatively influencing the status of the NSO) and potential threats (factors that could become operational threats in 15-20 years, or factors that may be threatening the NSO currently and for which the extent of the threat is uncertain). If they occur, such declines could affect NSO recovery (Courtney et al. 2004). According to Courtney et al. (2004), there exists a potential for habitat loss due to Sudden Oak Death in the southern portion of the range, however the threat is of uncertain proportions. In addition, Courtney et al. (2004) indicated there is no way to predict the impact of West Nile Virus, which is also identified as a potential threat. The reports do not provide supporting analysis or recommendations regarding how to deal with these potential threats. Courtney et al. (2004) concluded that the risks currently faced by the NSO are significant, and their qualitative evaluation is that the risks are comparable in magnitude to those faced by the species in 1990.

According to the USFWS (November 2004), the current scientific information, including information showing declines in Washington, northern Oregon, and Canada, indicates that the NSO continues to meet the definition of a threatened species. Populations are still relatively numerous over most of the species' historic range, which suggests that the threat of extinction is not imminent, and that the subspecies is not endangered even in the northern part of its range where greater than expected population declines were documented (USFWS, November 2004). The USFWS (November 2004) did not consider the increased risk to NSO populations due to the uncertainties surrounding Barred Owls and other factors sufficient to reclassify the species to endangered at this time.

In summary, 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. The status of the NSO population, and increased risk to NSO populations due to uncertainties surrounding Barred Owls and other factors, were reported as not sufficient to reclassify the species to endangered at this time. The reports did not include recommendations regarding potential changes to the basic conservation strategy underlying the NWFP; however they did identify opportunities for further study.

The full reports are accessible on the internet at the following addresses:
Courtney et al. 2004: http://www.sei.org/owl/finalreport/finalreport.htm
Anthony et al. 2004: http://www.reo.gov/monitoring/trends/Compiled%20Report%20091404.pdf
USFWS, Nov. 2004: http://www.fws.gov/pacific/ecoservices/endangered/recovery/5yearcomplete.html
Lint, Technical Coordinator, 2005: http://www.reo.gov/monitoring/10yr-report/northern-spotted-owl/documents/owl_text%20and%20tables.pdf

- Courtney et al. (2004) distinguish between operational threats (perceived as currently negatively influencing the status of the NSO) and potential threats (factors that could become operational threats in 15-20 years, or factors that may be threatening the NSO currently and for which the extent of the threat is uncertain).