U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT
BUTTE FALLS RESOURCE AREA

ENVIRONMENTAL ASSESSMENT
for
FLOUNCE AROUND

Flounce Around OR-115 -03 - 01

Project Location: T. 33 S., R. 1 E. Sections 1, 11, 12, 13, 14, 15, 22, 23, 27, & 35
T. 33 S., R. 2 E. Sections 3, 4, 5, 7, 8, 9, 17, 18, 19, 29, & 31
T. 32 S., R. 1 E. Sections 35
T. 32 S., R. 2 E. Sections 32, & 33

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This Environmental Assessment for Flounce Around was prepared utilizing a systematic interdisciplinary approach integrating the natural and social sciences and the environmental design arts with planning and decision making.

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Butte Falls Field Manager

Date:

The Environmental Assessment was made available for public review on October 2, 2003

BUTTE FALLS RESOURCE AREA
FLOUNCE AROUND PROJECT

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INTRODUCTION

The Butte Falls Resource Area (BFRA) proposes to implement forest management activities and restoration projects in the Lost Creek and Lower Big Butte Watersheds. The proposed projects include timber harvest, hazardous fuels reduction, and road projects (ie road surfacing, decommissioning etc.). The total analysis area is 21,380 acres in size. BLM manages 7,952 acres (37%) of the analysis area; private industry manages 8,070 acres (38%); Corps of Engineers 2,965 (14%), with the remaining 2,393 acres (11%) being a mix of State and private non-industrial lands and National Forest. Timber harvesting would occur within matrix lands and the fuel hazard reduction and road projects, would occur within Administratively Withdrawn, Matrix and Riparian Reserves as designated in the Record of Decision for the Northwest Forest Plan Environmental Impact Statement (SEIS/ROD) p 7. All projects are located on public lands administered by the BLM. (See map 1 for project location.)

I. PURPOSE OF AND NEED FOR ACTION

The purpose of this Environmental Assessment (EA) is to analyze the effects of harvesting timber, reducing existing high stand densities and hazardous fuels within forested stands, and improving water quality through road related projects (e.g., road upgrades, road closures) from this analysis area. The proposed actions would meet the goals and objectives of the Medford District Resource Management Plan (RMP) by contributing to the District's decadal Probable Sale Quantity while providing a healthy forest ecosystem with habitat that supports populations of native species and includes protection for riparian areas and water bodies. In addition, the proposed action is designed to meet objectives addressed in the Lost Creek and Lower Big Butte Watershed Analyses such as timber stand improvement, forest health, fire hazard reduction and maintenance and restoration of water quality. These recommendations have been incorporated into project proposals presented in this EA.

Forest Condition

In the proposed project area, many forest stands are overstocked with more trees than the site has water, nutrients and growing space to sustain. With treatment, the number of trees per acre would be reduced towards levels that would provide for a productive, diverse, and resilient forest. In forest stands that are overstocked the largest trees typically experience increased stress during drought periods due to competition with smaller trees for limited amounts of water and nutrients. This environmental stress can reduce tree vigor and increase the potential for tree mortality. Where stand conditions allow, management actions would be targeted at developing and maintaining large healthy trees to insure that structural diversity and the biological benefits for dependent species are maintained. Forest stands that have declining growth rates or are deteriorating due to disease or other factors would have treatments prescribed to insure the reestablishment of conifer and hardwood species and the retention of structural and habitat niches.

Hazardous Fuels Reduction and Restoration of Low Elevation Plant Communities

The objectives of the proposed projects are to treat natural or previously managed stands that are currently in an overstocked condition, which occur naturally or are due to the exclusion of fire. Forest stands will also be treated for fuels reduction from harvest activities. The project goals are to utilize fire or simulate fire effects in the ecosystem as a disturbance agent to thin the understory, eliminating ladder fuels and reducing crown fire potential. These combined actions, would reduce the risk and consequences of unwanted wildfire in the Wildland Urban Interface (WUI). WUI areas within the project are identified as high risk communities and high use recreation areas. Treatments would increase wildland fire fighter and public safety if a wildfire does occur in these areas. Treatments with multiple entries would be designed to reduce existing fuel loadings over time to levels that would approximate natural levels that occurred prior to pre-settlement and fire exclusion, these natural levels are considered a Condition Class 1. Currently, 15% of the project area is classified as Condition Class 1, 30% is Condition Class 2, and the remaining 55% is Condition Class 3, refer to Appendix G for Condition Class definitions.

In order to accomplish the objectives of hazardous fuels reduction and restore the area to natural levels found in a Condition Class 1, initial treatments such as understory thinning, mechanical treatments

(slashbuster), hand piling and hand pile burning of the existing hazardous fuels will allow for the utilization and reintroduction of fire through controlled prescribed burns. Hazardous fuels reduction treatments will focus on areas that are in need of:

- Reduction of hazardous fuels in the Wildland Urban Interface that have been identified as Communities at Risk and those areas of high recreation use.

- Reduction in understory densities and ladder fuels to decrease fuel continuity which decreases the fire spread potential between lowland and upland areas, leading to stand destroying fires and creating areas where wildland fire fighters can safely monitor and fight wildland fires.

- Treatment of slash resulting from harvest activities.

Road Related Sediment

The Lost Creek watershed analysis has identified the predominant non-point source (NPS) of sediment in creeks within this project area as coming from roads, landings, and skid roads. This NPS of sediment reduces water quality and subsequently degrades aquatic habitat in the local streams affected by these roads. To reduce this road related sedimentation and improve water quality, this project proposes to implement design features that will improve road drainage, stabilize road prisms, and protect road surfaces. Among the specific projects proposed are road improvements, road renovation, road decommissioning, road closures, and skid road ripping and waterbarring.

Summary

The combination of these treatments would begin to develop a landscape that has the ability to buffer and absorb disturbances, such as fire, insects, disease, drought, floods and potential climate change, rather than to magnify those disturbances. Throughout the project area, healthy plant communities with a diversity of trees sizes and species would provide habitat and connectivity for native plant and animal species.

Four action alternatives were developed for this project. A description of these alternatives can be found in Chapter II of this document.

Project Objectives

Improve forest ecosystem health, diversity, and resiliency. (Lost Creek Watershed Analysis, pgs 75-77)

Produce a sustainable supply of timber and other forest commodities that provide jobs and contribute to community stability. (Medford Record of Decision and Resource Management Plan (RMP) pg. 38)

Provide connectivity (along with other allocations such as riparian reserves) between late-successional reserves. (RMP pg. 38)

Provide habitat for a variety of organisms associated with both late-successional and younger forests. (RMP pg. 38)

Provide 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.

Reduce the risk of road generated sediment (Lost Creek Watershed analysis, pg 85).

Decrease ground fuels, ladder fuels and canopy closures to reduce risk of running crown fires and increased fire growth potential. (Lost Creek Watershed Analysis pg 4-5, 4-6)

Control existing infestations and discourage the spread of non-native and noxious weeds throughout the watershed. (Lost Creek Watershed Analysis pg 4-6)

In those portions of the watershed that fall into the Increased Resource Area (IRA) zone, opportunities for fuel treatments, such as modified fuels profile zones exist. Underburning in brushfields and white oak stands will modify fuel profiles. The object of these treatments would be to reduce large fire size. (Lost Creek Watershed Analysis, pg 79).

Upgrade selected stream crossings to meet 100-year flood standards. (Lost Creek Watershed Analysis pg 4-8)

Consider decommissioning roads to improve hydrologic and riparian function. (Lost Creek Watershed Analysis pg 4-9)

Manage the transportation system to minimize sediment delivery to streams. (Lost Creek Watershed Analysis pg 4-12, 13)

Maintain and protect BLM Sensitive, Survey and Manage, and Threatened and Endangered Species. (RMP pg 50-51, S&M ROD)

A. Conformance With Existing Land Use Plans

The proposed timber harvest and restoration projects are in conformance with the BLM land use plans for the subject areas. The proposed projects are consistent with management objectives for public lands identified in the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (SEIS), approved April 13, 1994, the Record of Decision and Resource Management Plan for the Medford District (RMP), approved June 1995, and the Record of Decision and Standard and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standard and Guidelines, (S&M ROD), approved January 2001.

Approximately 3,128 acres are proposed for management activities. All of the acreage has been identified as Matrix, Riparian Reserve, or Administratively Withdrawn lands.

The timber harvest areas (503 acres) are on lands designated as Matrix. As defined in the SEIS (page C-39) and the RMP (pages 38 – 40), Matrix lands consist of those federal lands outside of the six categories of designated reserve areas in which most timber harvest would be conducted according to standards and guidelines.

The fuel hazard reduction treatments would occur on a combination of lands designated as Matrix (200 acres), Riparian Reserve (529 acres) or Administratively Withdrawn (1896 Acres). Riparian Reserve lands as defined in the SEIS (pg C-30) and the RMP (pg 26 – 32) are those lands used to maintain and restore riparian structures and functions of intermittent streams, confer benefits to riparian dependent and associated species other than fish, enhance habitat conservation for organisms that are dependent on the transition zone between upslope and riparian areas, improve travel and corridors for many terrestrial animals and plants, and provide for greater connectivity of the watershed. The riparian reserves will also serve as connectivity corridors among late-successional reserves. Administratively Withdrawn lands as defined in the SEIS (pg C-29) and the RMP(pg 38 & 72) are those lands withdrawn from scheduled timber harvest and include such areas as timber production capability classification withdrawals (woodlands, non-forested lands), recreation sites and rights-of-way corridors.

B. Relationship to Statutes, Regulations, and Other Plans

The proposed action and alternatives are in conformance with the direction given for the management of public lands in the Medford District by the Oregon and California Lands Act of 1937 (O&C Act) and the Federal Land Policy and Management Act of 1976 (FLPMA). The BLM is directed to manage the lands covered under the O&C Act for permanent forest production under the principles of sustained yield. BLM is also required to comply with other environmental and conservation laws, such as the Endangered Species Act of 1973 and the Water Pollution Prevention and Control Act, while implementing the mandates given by FLPMA and the O&C Act. The proposed action and alternatives are in conformance with these laws.

This environmental assessment (EA) is being prepared to determine if the proposed action and any of the alternatives would have a significant effect on the human environment, thus requiring the preparation of an Environmental Impact Statement (EIS) as prescribed in the National Environmental Policy Act of 1969. It is also being used to inform interested parties of the anticipated impacts and provide them with an opportunity to comment on the various alternatives. Further, the EA is being used to arrive at a final project design to meet a variety of resource issues.

The EA is being used to provide the decision maker, the Butte Falls Resource Area Field Manager the most current information relating to these projects upon which to base a decision.

C. Decisions to be Made Based on the Analysis

The Butte Falls Resource Area Field Manager must decide if the impacts of implementing the proposed action or the alternatives would result in significant effects to the human environment, thus requiring that an EIS be prepared before proceeding with the proposed action as prescribed in the National Environmental Policy Act of 1969.

The field manager must decide if the BLM would harvest trees, treat hazardous fuels and close roads.

If the decision maker should decide to select one of the action alternatives, the analysis in this EA would be used to help determine where harvesting and other landscape treatments could occur.

D. Summary of Scoping Activities

Scoping letters were sent to adjacent landowners and interested publics. The letter requested comments concerning issues that would be addressed in the EA. Seven responses were received, for further clarification see file in the Butte Falls Resource Area, Medford District BLM. Following is a list of issues/concerns that were received:

- ★ Harvesting large trees
- ★ Hiking trails
- ★ Bald eagles
- ★ General Environmental Assessment Format
- ★ Road construction, decommissioning, and road repair
- ★ Fuels reduction; acreage. location and soil type
- ★ Maps
- ★ Coarse woody material
- ★ Noxious weeds
- ★ Aquatic conservation
- ★ Fire Hazard
- ★ Cumulative effects

E. Issues Identified Through The Scoping Process To Be Analyzed In This EA

The issues identified through the initial scoping effort and through the interdisciplinary team process are listed below. Indicators or measurements that are suggested, are used to compare how the alternatives address the issues. Chapter II contains a comparison summary of the alternatives and their response to the issues.

Issue 1: Forest Condition - Dense and Declining Forest Stands

The forest stands proposed for density management and selective harvest have more trees than the site can sustain. Removal of competing and poor vigor trees would reduce competition and provide for additional site resources (water, nutrients, sunlight and growing space) for the remaining trees. Forest stands with high tree densities result in declining tree vigor and growth, tree mortality and an increased susceptibility to insect attack, root disease infection and stand replacing wildfires. The forest stands proposed for regeneration harvest have growth rates that have declined and/or are deteriorating with the integrity of the stand threatened.

Indicators for measuring this issue are:
- Acres receiving silvicultural treatment
- Change in the number/density of trees per acre
- Change in growth of timber stands after treatment

Issue 2: Fuels Hazard Reduction

There currently exists high fuels buildup within the Flounce Around Project area. Approximately 1550 acres of the project area is located in the Wildland Urban Interface (WUI). The WUI consist of those areas near and around the communities of Elk Creek and Crowfoot Road that meet the criteria for Communities at Risk as identified in the Federal Register. The area north of Lost Creek Reservoir has been identified as WUI by the Oregon Department of Forestry, due to the abundance of homes and the high recreation use in this area.

These areas are identified as “at risk” and are at an increased risk from uncharacteristically large scale and high intensity wildfires for this area and vegetation type. In most cases these risks are created by years of fire suppression and naturally increasing fuel loading (thick understory vegetation). These fires can threaten communities and damage key resources including timber, fish and wildlife habitat, soils, air quality, and drinking water quality.

All treatments that occur under this project would be designed to mitigate damage from unwanted wildland fire.

Indicators for measuring this issue are:
- Acres treated
- Acres treated within the Wildland Urban Interface
- Change in Fuel Model
- Change in Condition Class
- Reduction in flame lengths
- Reduction in Fire Intensities (Rate of Spread)

Issue 3: Road Related Sediment

The Lost Creek watershed analysis has identified the predominant non-point source (NPS) of sediment in creeks within this project area as coming from roads, landings, and skid roads. This NPS of sediment reduces water quality and subsequently degrades aquatic habitat in the local streams affected by these roads. To reduce this road related sedimentation and improve water quality, this project proposes to implement design features that will improve road drainage, stabilize road prisms, and protect road surfaces. Among the specific projects proposed are road improvements, road renovation, road decommissioning, road closures, and skid road ripping and waterbarring.

Sedimentation from roads
Indicators for measuring this issue are:
-Miles of roads improved
-Miles of roads partially decommissioned
-Miles of roads fully decommissioned

CHAPTER II
ALTERNATIVES

A. Introduction

This chapter describes the proposed four action alternatives. In addition, a "No Action" alternative is presented to form a base line for analysis. This chapter also outlines project mitigation which is designed into the alternatives. The mitigation or Project Design Features (PDFs) are included for the purpose of reducing or eliminating anticipated environmental impacts. Analysis supporting the inclusion of PDFs can be found in the appendices of this EA and Appendix D and E of the RMP.

The Butte Falls Resource Area has developed these action alternatives to achieve the project objectives identified in the Lost Creek and Lower Big Butte Watershed Analysis (refer to pages 4-1 to 4-25). After receiving comments from the public through the scoping process, the alternatives were developed by a team of resource specialists. The Lost and Lower Butte Creek Watershed Analysis provided information that was used in the development of these alternatives.

This chapter summarizes the consequences of the alternatives. The selected alternatives are described by the issue and how the alternative would affect the key issues.

B. Alternatives Considered But Eliminated

Approximately 645 acres were originally considered for harvest entry but eliminated from consideration due to current stand conditions, riparian reserves, deferred watersheds, environmental education areas or wildlife concerns. All or portions of the following operational inventory units were deferred from entry at this time.

Table 1 -- Deferred Units

Township-Range-Section	OI Unit	Acres	Remarks
32S-2E-33	003	22	Riparian reserves in northeast part of Operations Inventory (OI) and adjacent to east/west section line.
33S-1E-01	003	14	Riparian reserve divides OI in half,
33S-2E-4	002	13	Riparian reserve, complex of springs in center of OI, wind throw common, springs are also adjacen to north/south ownership line on the north end of OI.

33S-1E-1	004	153	Riparian reserves and an owl core, with small patches of healthy mature timber between these reserves, no treatment necessary.
33S-1E-11	011	8	Pre-commercial size stand, will be treated under fuel hazard reduction.
	013	8	The area below the spur road is predominantly pr commercial size class.
	001	32	Late successional reserve guidelines apply
	008	24	Late successional reserve guidelines apply
	010	21	Riparian reserve, two site potential tree width.
	015	37	Part of the 20% retention area for the deer and el winter range.
33S-2E-9	002	8	Environmental Education Area - Military Trail
33S-2E-17	001	16	Primarily riparian reserve & Environmental Education Area. A small area adjacent to southe east/west line will be treated under fuel hazard reduction.
33S-2E-18	002	24	Part of the 20% retention area for the deer and el winter range.
33S-2E-19	004	6	Reservoir buffer adjacent to Lost Creek Lake and hiking trail.
33S-1E-23	779	80	Reservoir buffer adjacent to Lost Creek Lake, portion is a pre-commercial size stand and will be treated under fuel hazard reduction.
33S-1E-23	005	8	Reservoir buffer adjacent to Lost Creek Lake, a portion and hiking trail.
33S-2E-31	007	53	Wildlife habitat area
33S-1E-35	005	17	Riparian reserve, meadow buffer and rock wall.
	006	11	Meadow buffer and riparian reserve.
	008	3	Meadow buffer
33S-2E-31	005	17	Wildlife habitat area
33S-1E-35	007	29	Meadow buffer
33S-2E-31	017	41	Wildlife habitat area and Deferred watershed.

	TOTAL	645	

Potential issues that were discussed but determined not to be important issues with this project can be found in the appendices. Discussions on wildlife, fisheries, cultural, visual resources, and botanical concerns can be found in the appendices.

C. ALTERNATIVE 1 -- NO ACTION

Analysis of this alternative provides a baseline against which the effects of the action alternatives can be compared. For this environmental assessment, the No Action Alternative is defined as no timber harvesting, no fuel hazard reduction, and no road renovation or closures.

D. ALTERNATIVE 2

The intent of this alternative is to achieve the goals, objectives, and desired future condition for the timber stands as specified in the Northwest Forest Plan and the Medford District Resource Plan. On matrix lands, emphasis is placed on maximizing commodity production of the timber resource and reducing fire hazard conditions. This alternative is also intended to reduce road related sedimentation by improving existing road conditions and decommissioning of roads no longer need for access. This alternative includes the projects described below.

Timber Harvest (Stand density reduction and regeneration of declining forest stands)
The overall scope of this action alternative covers approximately 500 acres of BLM managed lands designated as Matrix. Matrix lands include Southern General Forest Management Areas, Northern General Forest Management Areas and Connectivity Blocks. This alternative consists of five treatment methods.

1. Density management is proposed on 340 acres. This treatment targets the removal of individual trees to maintain or enhance forest diversity and growth. Removal of smaller trees and trees in direct competition with healthy co-dominant and dominant trees would redirect site resources towards the development and maintenance of large healthy trees. Canopy closure following treatment would be approximately 50-60%.

2. Structural retention regeneration harvesting is proposed on 69 acres. This Southern General Forest

Management Area (SGFMA), treatment would retain 16-25 trees per acre greater than 20 inches in diameter at breast height. Using tree crown ratio and form as the selection guide, retention trees, would be the most vigorous trees available. Spatial distribution of these trees would vary from individual trees to groups. Healthy understory ponderosa pine, sugar pine, incense cedar and Douglas-fir trees free of insects and disease or damage would be left. Wildlife snags and coarse woody debris would be designated for retention. All other trees would be removed leaving a canopy closure of 25-40%. Planting of conifer seedlings would occur following harvest.

3. Modified even-aged regeneration harvesting is proposed on 12 acres. This Northern General Forest Management Area (NGFMA), treatment would retain 6-8 trees per acre greater than 20 inches in diameter at breast height. Using tree crown ratio and form as a guide, retention trees, would be the most vigorous trees available. Spatial distribution of these trees would vary from individual trees to groups. Healthy understory ponderosa pine, sugar pine, incense cedar and Douglas-fir trees free of insects and disease or damage would be left. Wildlife snags and coarse woody debris would be designated for retention. All other trees would be removed leaving a canopy closure of 10-15%. Planting of conifer seedlings would occur following harvest.

4. Selection harvesting is proposed on 65 acres. This treatment removes poor vigor trees from all diameter classes. Stand densities would be reduced, freeing up site resources (water, nutrients, light and growing space) for the remaining trees. Tree crown ratio and form and desired basal area, not spacing, would be the primary factors in determining the trees to be left or removed. Canopy closure would range from approximately 50-60% with stand structure multi-aged and multi-layered.

5. Modified even-aged regeneration harvesting in a connectivity block is proposed on 17 acres. This Northern General Forest Management Area (NGFMA), treatment would retain 12-18 trees per acre greater than 20 inches in diameter at breast height. Using tree crown ratio and form as a guide, retention trees, would be the most vigorous trees available. Spatial distribution of these trees would vary from individual trees to groups. Healthy understory ponderosa pine, sugar pine, incense cedar and Douglas-fir trees free of insects and disease or damage would be left. Wildlife snags and coarse woody debris would be designated for retention. All other trees would be removed leaving a canopy closure of 15-25%. Planting of conifer seedlings would occur following harvest.

Fuel Hazard Reduction

Understory density reduction in low elevation conifer stands, oak woodlands and brush fields would reduce crown fire potential through the removal of ladder fuels as well as enhance growth in younger stands.

The treated areas would provide landscape-wide strategic areas where dense vegetation is reduced, the

likelihood of crown fires would be lowered, and the risk of catastrophic change to the ecosystem during wildfires would be lowered

The scope of this alternative covers 2625 acres of BLM managed lands, with approximately 529 acres located within Riparian Reserves. Of these, 2625 acres, 1550 acres are included in the Wildland Urban Interface (WUI). In conifer stands trees 1"-6" in diameter would be reduced through thinning. Spacing will normally range from 14'X14' to 45'X45' maintaining a canopy closure of approximately 60%-70%. In oak/pine savannahs and woodlands, hardwoods 1" to 6" in diameter would be reduced through thinning, where spacing will normally range from 15'X15' to 45'X45'. In brush fields, 30%-40% of the shrub species would be thinned were spacing will normally range from 20'X20' to 45'X45', creating a mosaic brush pattern over the project area. There are three secondary benefits associated with fuels treatment, the first is to re-introduce fire back into the ecosystem. The second benefit is to reduce moisture competition by reducing competition within the stand to produce healthier more vigorous trees that are more resilient to large scale disturbances. The third benefit is to increase wildlife forage.

Understory fuels reduction would be achieved by a combination of three treatment methods.

1. Hand treatment (thin, pile and burn)
2. Slash buster
3. Prescribed burning

1. Hand treatment – thin the understory, utilizing chainsaws to manually reduce hazardous fuels on approximately 1515 acres (excludes Riparian Reserves). This consists of manually slashing understory vegetation. Selected leave trees along road systems will be pruned to reduce potential for torching in the event of a fire. Hardwood and conifer tree spacing will normally range from 15'X15' to 45'X45' and 14'X 14' to 45'X45' respectfully. Where shrubs exist, 30%-40% of the shrub species would be thinned where spacing will normally range from 20'X20' to 45'X45'. The debris resulting from the action will be hand piled and burned during the wet season when the risk of an escaped fire is low. In these units, a low intensity ground fire would be implemented when fuel loading begins to increase shifting the area into a Condition Class 2. The re-entry is expected to occur between 5 to 7 years after the hand piles have been burned. All fuels reduction treatments within Riparian Reserves, would be accomplished under this method.

2. Slash buster – a slashbuster would be used for understory thinning of vegetation such as brush, small diameter conifers and hardwood species (7" DBH or less) on approximately 284 acres. In brush fields, 30%-40% of the shrub species would be thinned were spacing will normally range from 20'X20' to 45'X45', creating a mosaic brush pattern over the project area. The primary objective is to thin dense understory vegetation thereby reducing ladder fuels. The slashbuster treatment would occur within units where slopes are not greater then 35%. In these units, a low intensity ground fire would be implemented when fuel loading begins to increase shifting the area into a Condition Class 2. The re-entry is expected to occur between 5 to 7 years after the hand piles have been burned.

3. Prescribed fire- approximately 297 acres would be treated where fuel loadings are low enough over the majority of the areas. Prescribed fire will be used as the initial entry where fuel loadings allow for low fire activity. Prescribed fire will be used as a secondary treatment where the fuel loadings have been reduced to levels that allow for safe implementation. Some hand slashing of vegetation may occur in brush pockets prior to burning. In areas where the primary fuel bed is comprised of dead fuels (both natural and slash) burns will be implemented when fuel moistures are high. By burning when fuel moistures are high, larger fuels found within the primary fuel bed would contain more moisture thereby lessening the potential for coarse woody debris to be consumed. No active lighting would be allowed within riparian reserves, but fire would be allowed to back into riparian reserves. On occasion, handlines would be located within riparian reserves on logical locations where topography breaks occur. The main benefit of this treatment will be the re-introduction of fire back into a fire dependent ecosystem.

Fuel Hazard Reduction within Riparian Reserves

The goals and objectives of fuels reduction treatments within Riparian Reserves are similar to those stated above.

Fuel hazard reduction within Riparian Reserves is proposed on 529 acres within the project area.

The fuels reduction prescription would thin small-sized non-commercial conifer saplings and poles, hardwoods (7"dbh and less) and brush species maintaining a 70% canopy closure. These treatments would reduce the amount of ground fuels and ladder fuels that increase catastrophic fire conditions. Within Riparian Reserves all fuels reduction treatments would occur by hand or through controlled underburning. Under certain climatic and topographic conditions, stream draws on the lower and middle third of the mountain may act as fire pathways and channel wildfire up a mountain slope. Reducing fuels within the Riparian Reserves will lower that risk.

Fuels Reduction Treatment Prescriptions within Riparian Reserves

There are three distinct vegetative communities, or vegetative conditions within the proposed treatment area that are typical of the low elevation Cascades Range in southern Oregon that require distinct vegetative fuel reduction prescriptions. These include:

1. Overstocked conifer stands
2. Low elevation oak savannahs or woodlands where the brush species is the dominate vegetative component.
3. Low elevation oak savannahs or woodlands where white oak, black oak or mix with pacific madrone is the dominant vegetative component.

The first vegetative condition is characterized by overstocked conifer stands comprised of densely spaced sapling and pole size trees with dead limbs to the ground that create stand conditions with high fuel hazard. The brush and hardwood component is generally small to non-existent and the overstory may contain large diameter Douglas –fir (*Pseudotsuga menziesii)*, ponderosa pine (*Pinus ponderosa)* or sugar pine *(Pinus lambatina)*.

Conifer Community Treatment Prescription Summary

1. Riparian Reserve is 330 feet for non-fish bearing streams
2. No-treatment area of 100 feet along stream core
3. Target conifer sapling and pole size trees for removal in the understory that are suppressed and 7" dbh and under.
4. For conifer retention, blend a combination of dominant trees, tree diameter, crown size, and variable spacing of remaining trees.
5. Retain 70% canopy closure minimum
6. Hand treat area. No wheeled or track mounted equipment off existing roads within the riparian reserves.
7. Minimize the amount of hand piles within riparian reserve to meet fuel reduction objective

The second vegetative condition is characterized by the dominance of wedge leaf ceanothus or buck brush (Ceanothus cuneatus) as the main component of the vegetative community. Some areas of buck brush may be dense and impenetrable, while other areas may include open patches with grasses and forbs, or mixed with white oak *(Quercus garryana)*, black oak *(Quercus kelloggii)*, and Pacific madrone (*Arbutus menziesii)* hardwoods.

Shrub, Chaparral, or Meadow Communities Treatment Prescription Summary

1. Riparian Reserve is 200 feet for non-fish bearing streams
2. No-treatment area of 100 feet along stream core
3. Target buck brush for removal and retain oaks and madrones .
4. Hand treat area. No wheeled or track mounted equipment off existing roads within the riparian reserves.
5. Minimize the amount of hand piles within riparian reserve to meet fuel reduction objective

The third vegetative condition is characterized by the dominance of white oak, black oak or a mix of white oak/black oak and madrone hardwoods with wedgeleaf ceanothus as a brush component. Some areas of black oak and madrone may be dense while other areas may be open with patches of grasses and forbs, or mixed with varying density of buckbrush.

Black Oak and Madrone Community Treatment Prescription Summary

1. Riparian Reserve is 200 feet for non-fish bearing streams
2. No-treatment area of 100 feet along stream core
3. Target buck brush for removal. Some pockets of black oak and madrones would be thinned (8"dbh and less).
4. Hand treat area. No wheeled or track mounted equipment off existing roads within riparian reserves.
5. Minimize the amount of hand piles within riparian reserve to meet fuel reduction objective

Road Related Sediment

Road Renovation

This consists of work to be performed on the road prior to its use. The work includes, but is not limited to, blading the road surface, blading ditch-lines, cleaning or enlarging catch basins, flushing corrugated metal pipes (CMP), removing brush near the inlet or outlet of pipes, cleaning inlet and outlet end of pipes, and removing brush, limbs, and trees along the roadway to improve sight distance, and allow for proper road maintenance. All drainage structures, including CMP's, water dips, and ditch relief outlets, shall be inspected and required work performed so that water flow is not impeded. These actions would occur on approximately 25 miles of road.

Road Improvement

The objective of road improvement is to upgrade existing roads to reduce erosion and sediment deposits into streams. These actions would include improving drainage and/or surfacing on approximately 3 miles of road. There also would be 2 or 3 culvert upgrades in size to meet 100 year flood standards and approximately 11 new culverts installed on existing roads to improve drainage.

Full Road Decommissioning

Roads determined through an interdisciplinary process to have no future need would be sub-soiled (or ripped), seeded with native grasses or others as appropriate, mulched, and planted to reestablish vegetation. Cross drains, fills in stream channels, and potentially unstable fill areas would be removed to restore natural hydrologic flow. The road would be closed with a device similar to an earthen barrier or equivalent. The road would not require future maintenance. These actions would occur on approximately 1.5 miles of road.

Helicopter Landings

Approximately 10 landings have been identified to be used for the proposed harvest activities. These landings have been identified on BLM and private land. A number of these landings are in openings such as existing landings or road junctions and will require minimal construction or additional site disturbance to provide for safe landing activities. The remaining landings which are on BLM land will be constructed but would be decommissioned following completion of logging activities. Decommission would include ripping, seeding with native grasses and mulching. All landings would be less than 1 acre in size.

Operator Spur Construction

Approximately 17 operator spurs are needed for access, for a total of approximately 2.6 miles of length. After harvesting, the spurs would be fully decommissioned

E. ALTERNATIVE 3

The intent of this alternative is to achieve the goals, objectives, suggested actions and desired future condition for the timber stands as specified in the Northwest Forest Plan, the Medford District Resource Plan and the Lost Creek watershed analysis. Emphasis of this alternative is to provide a higher level of connectivity, stand structure and canopy closure within treated forest stands. Reduction of fire hazard within this area would also reduce the potential that connectivity, stand structure and canopy cover would be lost as the result of a catastrophic wildfire. This alternative is also intended to reduce road related sedimentation by improving existing road conditions and decommissioning of roads no longer need for access. This alternative includes the projects described below.

Timber Harvest (Stand density reduction and regeneration of declining forest stands)
This alternative consists of four treatment methods.
1. Density management is proposed on 346 acres.
2. Structural retention regeneration harvesting is proposed on 12 acres.
3. Modified even-aged regeneration harvesting is proposed on 6 acres.
4. Selection harvesting is proposed on 139 acres.

(The descriptions of each of the treatments are the same as under Alternative 2)

Fuel Hazard Reduction
The area of treatment, 2625 acres, is the same as Alternative 2. Under this alternative three treatment methods would be used. The description of each method is the same as in Alternative 2.

Understory fuels reduction would be achieved by a combination of three treatment methods.

1. Hand treatment (thin, pile and burn) --- 1515 acres
2. Slash buster --- 284 acres
3. Prescribed burning --- 297 acres

Fuel hazard reduction within Riparian Reserves is proposed on 529 acres. Fuel reduction prescriptions are the same as those described under Alternative 2.

Road Related Sediment

The same activities that are described in alternative 2 would be completed in this alternative.

F. ALTERNATIVE 4

Timber Harvest

The overall scope of this action alternative covers approximately 500 acres of BLM managed lands designated as Matrix. Matrix lands include Southern General Forest Management Areas, Northern General Forest Management Areas and Connectivity Blocks. This alternative consists of five treatment methods, this alternative is the same as Alternative 2.

Fuels Reduction

The area of treatment, 2625 acres, is the same as Alternative 2. Under this alternative two treatment methods would be used. The description of each method is the same as in Alternative 2.

1. Hand Treatment (thin, pile and burn) – 1628 acres
2. Prescribed Burning – 468 acres

Fuel hazard reduction within Riparian Reserves is proposed on 529 acres. Fuel reduction prescriptions are the same as those described under Alternative 2.

By implementing this alternative, 2625 acres of understory density reduction will be completed in conifer stands, oak woodlands and brush fields, using hand treatments and through prescribed burning. These treatments would reduce the likelihood of crown fires and lower the risk of catastrophic change to the ecosystem during wildfires. The major difference between this alternative and alternatives 2 and 3 is cost/acre

and acre accomplishments. By using the slashbuster the cost per acre would decrease allowing for more acres to be treated in less time.

Road Related Sediment

The same activities that are described in alternative 2 would be completed in this alternative.

G. ALTERNATIVE 5

Timber Harvest (Stand density reduction and regeneration of declining forest stands)

The overall scope of this action alternative covers approximately 500 acres of BLM managed lands designated as Matrix. Matrix lands include Southern General Forest Management Areas, Northern General Forest Management Areas and Connectivity Blocks. This alternative consists of four treatment methods, this alternative is the same as Alternative 3.

Fuels Reduction

The area of treatment, 2625 acres, is the same as Alternative 4. Under this alternative two treatment methods would be used. The description of each method is the same as in Alternative 4.

1. Hand Treatment (thin, pile and burn) – 1628 acres
2. Prescribed Burning - 468 acres

Fuel hazard reduction within Riparian Reserves is proposed on 529 acres. Fuel reduction prescriptions are the same as those described under Alternative 4.

Road Related Sediment

The same activities that are described in alternative 2 would be completed in this alternative.

Table 2 -- Description of Alternatives

Management Action	Alternative	Alternative	Alternative 3	Alternative 4	Alternative 5
	No Action	Timber Harvest ROD/RMF Hazardous fuels Mechanical hand & prescribed fi treatments	Timber Harve Canopy retention Hazardous Fuels Mechanical hand & prescribed fi treatments	Timber Harvest ROD/RMF HazardousF els Hand & prescribed f treatments	Timber Harve Canopy retention Hazardous Fuels Hand & prescribed fi treatments
Stand density reduction & regeneration of declining forest stands. Approximate treatment acres: 503.					
Acres by treatment type:					
• Density management	0	340	346	340	346
• Selective cut	0	65	139	65	139
• Regeneration harvest					
-- Modified Even Aged	0	12	6	12	6
-- Structural Retention	0	69	12	69	12
-- Modified Even-aged / Connectivity	0	17	0	17	0
Estimated Volume:		4-5 mmbf	3-4 mmbf	4 -5mmbf	3-4 mmbf
Acres by logging method					
• Tractor	0	379	379	379	379
• Cable	0	31	31	31	31
• Helicopter	0	93	93	93	93

Hazardous fuels reduction & restoration of low elevation pla communities. Approximate treatment acres: 2625. Acres by treatment type: • Slashbuster • Prescribed fire • Understory thinning (handpile and burn) • Riparian understory thinning	 0 0 0 0	 284 297 1515 529	 284 297 1515 529	 0 468 1628 529	 0 468 1628 529
Improving water quality by reducing sedimentation from roads • Miles of roads improved renovated • Operator Spur (Temporary) • Road closure Seasonal/Temporary Full Decommission Partial Decommission • Helicopter Service & Lo Landings • Pump chances	 0 0 0 0 0 0 0	 28 3 4 .5 1 10 1	 28 3 4 .5 1 10 1	 28 3 4 .5 1 10 1	 28 3 4 .5 1 10 1

H. MANAGEMENT ACTIONS COMMON TO ALL ACTION ALTERNATIVES (Project Design Features--PDF)

Wildlife

- No known bald eagle nest trees, perch trees, or roost trees would be cut. Suitable eagle habitat within ¼ mile of the nest would not be removed. Large snags within ½ mile of the nest would not be cut, except as needed to protect human safety.
- Seasonal restriction from January 1 to August 31 for work activities within ¼ mile (1/2 mile line-of-site) from occupied eagle nest.
- Seasonal restriction of March 1 to September 30 within ¼ mile of known spotted owl sites (within ½ mile for helicopter operations). This seasonal restriction may be waived if non-nesting is determined. If any new owls are discovered in harvest units following the sale date, the contract enables a halt to activities until mitigation options can be determined.
- Seasonal restriction February 1 to July 15 within ½ mile of known peregrine falcon nest sites, within 1 mile from February 1 to August 15 for blasting or helicopter operation.
- Protect osprey nests with 5 acre no harvest buffer and seasonal restriction for activities within ¼ mile of nest site from March 1 to August 31.
- Seasonal restriction within ¼ mile of northern goshawk nest from March 1 through August 30. If any new goshawks are discovered in harvest units following the sale date, the contract enables a halt to activities until mitigation options can be determined.
- Protect sharp shinned hawk nest with 10 acre no harvest buffer and seasonal restriction for activities within ¼ mile of nest tree from March 1 to July 15.
- Protect known great gray Owl nests with ¼ mile (125 acres) buffer. If any new great gray owl nest area discovered in harvest units following the sale date, the contract enables a halt to activities until mitigation options can be determined.
- Meadows and natural openings would be buffered with a 300 foot no commercial harvest buffer (pre-commercial thinning, hand piling and burning would be allowed).
- Protect additional raptor species if located and apply the appropriate buffers and seasonal restrictions.
- Maintain all snags except those which need to be felled for safety reasons. Those snags that must be felled for safety would be left on site.
- Seasonal restriction and road closure in designated Jackson County Cooperative Travel Management Area (JACTMA) from October 15 to April 30.
- Protect survey and manage mollusk sites and associated habitat. Buffer sizes would be determined by species and proposed treatment.
- Broadcast burning, and site preparation will not take place within ¼ mile of known active northern spotted owl nests between March 1 and July 15.
- Burning or helicopter operations will not take place within ½ mile of active bald eagle nests between January 1 and August 31.

Archeology

- Apply mitigating measures to areas where there are known archeological sites. Buffer sizes would be determined based upon, proposed treatment, site-specific environmental conditions, and protection recommendations.

Special Status and Survey and Manage Plants

- Protect Special Status and Survey and Manage vascular plant, lichen, bryophyte, and fungi sites. Buffer sizes would be determined based upon species, proposed treatment, site-specific environmental conditions, and protection recommendations.

Noxious Weeds

- Ensure that seed, feed grains, forage, straw, and mulch are free of weed reproductive plant parts, as per the North American Weed Free Forage Certification Standards.
- In regeneration harvests, where operationally feasible, maintain vegetation cover along a 30' strip adjacent to roads and located outside of the road prism to provide shading (at least 50% canopy cover), reducing the chances of sun-loving weeds from becoming established.
- In brush fields, if the overstory canopy cover is below 50%, retain a 5-10' strip of vegetation adjacent to roads and located outside of the road prism to provide shading, reducing the chances of sun-loving weeds from becoming established.
- Prior to entry onto BLM administered lands, all vehicles and equipment that will travel off of system roads, shall be inspected for noxious weed seeds and plant parts, and deemed free of said contaminants.
- Following fuel hazard reduction and timber harvesting activities, units will be monitored for noxious weed species. Under Medford District Integrated Weed Management Plan and EA # OR110-98-14, found sites of noxious weeds will be treated using one or several methods as listed in the EA. All PDF's as listed in EA # OR110-98-14 shall be adhered to during treatment.

Equipment Use

- A Spill Prevention, Control and Countermeasure Plan (SPCC) would be required prior to operation and would include, but not limited to, hazardous substances to be used in the project area and identification of purchaser's representatives responsible for supervising initial containment action for releases and subsequent cleanup.
- All hazardous materials and petroleum products would be stored outside of the Riparian Reserves, in durable containers and located so that any accidental spill would be contained and not drain into the stream system.
- Refueling of equipment would be outside of the Riparian Reserves.

Roads and Quarries

- Minimize the construction of new permanent or temporary roads through Riparian Reserves.

- All road renovation, closure, and/or improvement work would be restricted from October 15 to May 15 or when soil moisture exceeds 25 percent.
- Block or barricade identified roads after use and before beginning of rainy season (generally October 15).
- All roads identified for decommissioning would be seeded with native seed and mulched in the same operational season they are decommissioned, and would be planted with trees and shrubs as needed.
- No application of dust abatement materials such as lignin, Mag-Chloride, and/or approved petroleum based dust abatement products during or just before wet weather and at stream crossings or other locations that could result in direct delivery to a water body (typically not within 25' of a water body or stream channel.)
- Location of waste stockpile and borrow sites resulting from road construction or reconstruction should be at least one site potential tree length (165 feet) from a stream where sediment-laden runoff can be confined.
- When removing a culvert, pull back the slopes to the natural slope or at least 1:1 to minimize sloughing, erosion and potential for the stream to undercut streambanks during periods of high streamflows.
- Seasonally restrict all quarry development, rock crushing and rock hauling operations from Oct. 15 to May 15 or when soil moisture conditions or rainstorms could cause transport of sediments to nearby stream channels.
- Construct silt fences or other preventative structures (diversion ditches, settling ponds) to prevent the potential for runoff from quarry operations into nearby stream channels.
- Grass seed and/or plant native vegetation to stabilize all exposed soil areas including overburden from quarry operations.
- If explosives are necessary in the quarry development, then require a detailed blasting plan that addresses minimizing the amount of rock material the may enter any adjacent stream channels.
- Locate all waste disposal areas away from riparian reserves.

Fuel Hazard Reduction

- Selected areas of the chaparral vegetative community would be seeded with native grasses, as available on fuel treatment areas as appropriate.
- For all slash-buster treatment areas, minimize ground disturbance by walking equipment over slashed vegetation where possible, as a blanket to protect mineral soil.
- For heavy equipment operations, intermittent and ephemeral stream crossings would be pre-designated by an authorized officer to prevent stream bank degradation. Slash buster operations would be parallel to intermittent and ephemeral draws. All bare soils resulting from equipment crossing these streams would be grass seeded with an appropriate species mixture to reduce erosion.
- On occasion handlines would be located within the riparian reserve on logical locations and where topography breaks occur.

- No fire retardant chemicals would be used within Riparian Reserves under the proposed fuels treatment projects.
- No slash-buster treatments would occur within Riparian Reserves.
- All proposed management activities adjacent to non-fish bearing streams would have a minimum 50' no treatment core on each side of the stream channel.
- Locate all waste disposal areas away from riparian reserves.
- All intermittent and perennial streams that flow below the reservoir with an inner gorge slope that is 35% or greater will not have any treatments done within the full riparian buffer.
- Ephemeral streams that have an inner gorge slope that is 35% or greater will have a 50' no treatment buffer on each side of the channel.
- Adjacent to the hiking trail around Lost Creek Lake and the Viewpoint Mike trail a 25' no treatment buffer would be maintained where the slashbuster is used. In areas treated by hand no handpiling would be done within the 25' buffer.
- Fuel hazard reduction activities adjacent to designated recreational areas (Hiking trails and Four Corners and Fire Glen campgrounds) will be restricted during periods of high recreational use (April until after the July 4th weekend) After the July 4th weekend and until September 30, hours of operation will be limited to an 8 AM start-up time.
- No meadows larger than one acre in size will have slashbuster treatment except from the periphery where the machine can reach. Meadows are defined as shallow or rocky soil areas with forbs, or grasses as the primary vegetative component with scattered shrubs.
- Pre-existing coarse wood material greater than 8" diameter would be protected from shredding or damage to the greatest extent possible.
- The slash-buster would be restricted to designated access points from the main road. Post project, a combination of brush, logs, and other natural material would be placed across the equipment access point for rehabilitation and to discourage OHV use in the treatment areas.
- Within 150' of the 32S-1E-27 road, Highway 62 and the Lost Creek shoreline trail, all hand piles shall be spread after burning to decrease or eliminate visual contrasts of blackened burned piles.
- Underburn units adjacent to the Lost Creek shoreline trail will have a 25' buffer between the trail and ignition line. No fire line will be constructed at the ignition line. The fire may back down to the trails edge.

<u>Timber Harvest</u>

- Crossing of the Historic Military road in 33S-2E Sections 8 and 9 will be limited to one designated crossing. The crossing will be no wider than 20 feet, and following project completion the Historic Military road shall not be ripped or bladed.

- Minimize the total number of skid roads by designating skid roads with an average of 150' spacing. Avoid creating new skid roads and utilize existing roads where feasible in order to minimize ground disturbance, especially in thinning and selective cut units where no tillage is proposed.
- All tractor yarding, soil ripping, and excavator piling operations would be restricted from October 15 to May 15 or when soil moisture exceeds 25 percent.
- Lop and scatter, pile activity slash, or underburn activity slash as necessary to reduce or eliminate additional fuel loading. Burn piled slash during the fall and winter to reduce impacts on air quality. All burning would follow the guidelines of the Oregon Smoke Management Plan.
- Restrict tractor and/or mechanical operations to slopes generally less than 35 percent. In areas where it is necessary to exceed 35 percent, utilize ridge tops where possible.
- Waterbar all skid roads and firelines during the same operating season, as constructed.
- Skid roads would be located to minimize disturbance to coarse woody debris. Where skid roads encounter large, coarse woody debris (CWD) a section of the CWD is to be bucked out for equipment access. The remainder of the CWD is to be left in place and not disturbed.
- Areas identified to be ripped (skid roads, landings, decommissioned roads) would be ripped to a depth of 18 inches utilizing a sub-soiler or winged toothed rippers.
- Ripping of skid trails would occur in all tractor yarded regeneration units.
- No commercial timber harvesting would occur in Riparian Reserves.
- Locate all waste disposal areas away from riparian reserves.
- Adjacent to the hiking trail around Lost Creek Lake, the Viewpoint Mike trail, a 25' no treatment buffer would be maintained. Trees will be directionally felled away from the trail in Section 27.
- Harvest activities adjacent to designated recreational areas (Hiking trail and Four Corners and Fire Glen campgrounds) will be restricted during periods of high recreational use (April until after the July 4th weekend). After the July 4th weekend and until September 30, hours of operation will be limited to an 8 AM start-up time.

CHAPTER III
AFFECTED ENVIRONMENT

A. Introduction

This chapter describes the present condition of the environment within the proposed Flounce Around project area that would be affected by the alternatives. The information in this chapter would serve as a general baseline for determining the effects of the alternatives. No attempt has been made to describe every detail of every resource within the proposed project area. The information is organized around the major issues identified by the interdisciplinary team. Only enough detail has been given to determine if any of the alternatives would cause significant impacts to the human environment as defined in 40 CFR 1508.27. Surveys have been completed for cultural resources, threatened and endangered plants and animals, and special status plants

and all required survey and managed surveys have been completed.

The following critical elements are not known to be present within the proposed project areas, or would not be affected by any of the alternatives, and will not be discussed further: Areas of Critical Environmental Concern (ACEC), Cultural Resources, Prime or Unique Farmlands, Flood plains, Native American Religious Concerns, Water Quality, Wetlands, Wild and Scenic Rivers, and Wilderness.

B. General Description of the Proposed Project Area

A description of the land areas and resources in the Butte Falls Resource Area is presented in Chapter 3 of the Final Medford District Resource Management Plan/Environmental Impact Statement (RMP 1995).

For a detailed description of the watershed refer to the Lost Creek and Lower Big Butte Watershed Analyses, completed June 1999. These documents are available at the Butte Falls Resource Area, Medford District BLM Office.

C. Forest Condition - Dense and Declining Forest Stands

Elevation, slope, aspect and soil depth define the presence and abundance of vegetative species. Within the majority of the project area, these factors have combined to create a moisture limiting environment that restricts vegetative growth. The elevation range within the project area is between 1900 feet above sea level at the edge of Lost Creek Lake up to 4100 feet at the top of Flounce Rock, with most of the proposed management actions occurring below 3000 feet. These low elevation sites tend to have a wide fluctuation of night to daytime temperatures as well as high evapotranspirational demand by plants during periods of high summer temperatures. Low water availability, combined with the loss of the natural thinning effects of wildfire has created dense stagnant forest stands. Stands that are dense and overstocked have more trees that the site has moisture, nutrients and growing space to sustain. Without adequate resources, tree growth and vigor declines, increasing the probability of tree mortality from insects or disease. These conditions are common throughout the project area in most forest stands, independent of age or size class. Stand examinations and field reviews confirm this condition as many stands are at density levels above the carrying capacity of the site, resulting in stocking levels that are not ecologically sustainable.

There are four forested plant series present within the project area. They are Oregon white oak, ponderosa pine, Douglas-fir and white fir. These plant series generally follow an elevation gradient from lowest to highest. The Oregon White Oak series occupies low, hot, dry sites with shallow soils, and it is commonly found on southerly aspects. The ponderosa pine series occurs on sites with shallow droughty soils but generally is found at slightly higher elevations that the Oregon White Oak series. At higher elevations or on sites with a more northerly aspect the Douglas-fir series occurs. The white fir series occupies the highest elevation sites in the project area. These sites are the most productive as well as the coolest and wettest.

Two non-forested plant communities are also common with the project area. The first is a shrub or chaparral community, common shrub species include: buckbrush (*Ceanothus cuneatus*), deerbrush (*Ceonothus integerrimus*), poison oak (*Rhus diversiloba*), and whiteleaf manazanita (*Arctostaphylos viscida*). Tree species present may include black oak (*Quercus kelloggi*) and madrone (*Arbutus menziesii*) with conifer species generally lacking in the overstory. The second non-forested community is meadows.

Meadows are present throughout the area and typically can be found on very shallow soils that experience hot and dry temperatures during the summer. Meadows vary in vegetative composition and may include a variety of mosses, mat forming shrubs, grasses and herbs. Rock outcrops are also common.

D. Fuel Hazard Reduction

The Flounce Around project area consists of 21,380 acres located around the Lost Creek Lake area within the Lost Creek Watershed. Within the project area 7,952 acres are managed by BLM, of which 2,625 acres are proposed for fuel treatments.

Current fire hazard and fire history

Fire hazard is based upon the ability of wildfire to spread and the amount of firefighting resources required to suppress the fire once it has ignited. There are four categories to describe fire hazard; extreme, high, moderate, and low. The components that determine an areas fire hazard include, fuel model, fire regime, slope, aspect, elevation, and condition class. In the area proposed for fuel treatments, 1357 acres are considered at high to extreme fire hazard, 1235 acres are considered moderate to high fire hazard and 33 acres are considered at moderate to low fire hazard, see spreadsheet in Appendix G.

The table below describes the fire history in the Flounce Around area since 1960. Many of the human caused fires are started within recreation areas and or those areas designated as Wildland Urban Interface (WUI).

Table 4 - Fires by decade and acres, based on natural and human caused.

Decade	Natural Caused	Acres	Human Caused	Acres	Total Acres
1960	1	1.1	2	.2	1.3
1970	16	4.7	20	104.4	109.1
1980	11	320	28	3.2	323.7
1990	25	1.4	14	18.5	19.9
2000	5	.2	15	6.9	7.4

Fire Regimes and Condition Classes

Due to fire exclusion, fuel loadings and the continuity of fuels have increased, thereby increasing the risk of more severe wildfires. Within the Flounce Around project area, fire regime and condition class are used to describe how much the vegetative communities have changed from historic or “natural” levels. Fire regimes for vegetation communities are determined by species composition, stand dynamics, fire return interval, fire intensity, fire size, season of occurrence and fire severity (Agee, 1993). The varying combinations of these fire regime components determine how a wildfire will burn. Conditions classes define how much the vegetative community has changed within its fire regime by comparing current conditions to historic conditions.

Two fire regimes are present in the project area:

- Fire regime 1 - occurs in the lower elevations where the Oregon white oak, ponderosa pine and non-forested plant communities are present. Low intensity fires are common and typically occur every 0-35 years. Wildfires consume small

diameter woody debris, along with the leaf and needle layer. The duff surface may be charred and little or no soil heating occurs.

- Fire regime 3 - occurs in the upper elevations where Douglas-fir and white fir are the predominate forest plant communities, fires return on an interval of 35-100+ years. This vegetation type has fires that burn in a mosaic pattern with moderate severity. These fires would burn with low intensity in some areas and higher intensity in other areas, resulting in a mosaic of different stand structures and ages.

Three condition classes are present within the project area:

- Condition class 1 is defined as a fire regime that is within historical fire return interval. The species composition, stand structure, stand age, canopy closure, and fire frequency has been slightly altered. Thus the risk of losing key ecosystem components from the occurrence of fire remains relatively low. Appendix G, (USDA, DOI,2000. National Fire Plan)
- Condition class 2 is defined as those sites that have been moderately altered from their historical fire regimes by either increased (human caused) or decreased (suppression) fire frequency and there is a moderate risk of losing key ecosystem components. (USDA, DOI,2000. National Fire Plan)
- Condition class 3 is defined as those sites that have been significantly altered from their historical fire regimes because the fire return intervals have been extensively altered, the risk of losing key ecosystem components from fire is high (USDA, DOI,2000. National Fire Plan)

In areas classified as Condition Class 2 and 3, before fire can be re-introduced to manage fuels or obtain other desired benefits, these lands may require multiple treatments to reduce the fuel loadings and continuity of fuels. If an area is classified as a Condition Class 2 or 3 and a fire starts in or near the area, the existing fuel loadings will result in a more severe fire then historically occurred. To restore these areas to a Condition Class 1 within their fire regimes, these lands may require some level of treatment through prescribed fire, or mechanical treatments and the subsequent re-introduction of native plants. (Restoring Fire-Adapted Ecosystems on Federal Lands. A Cohesive Fuel Treatment Strategy for Protecting People and Sustaining Natural Resources; April, 2002 pg 30)

Table 5 shows the percent of each condition class for the two fire regimes found in the Flounce Around project area.

Condition Class	Fire Regime 1	Fire Regime 3
Condition Class 1	10%	20%
Condition Class 2	20%	35%
Condition Class 3	70%	45%

Overall the project area is considered to be in a Condition Class 3 based on the stand structure and species composition. In the absence of fire, the development of a dense, decadent brush understory and a closed canopy overstory consisting of conifers and hardwoods (fuel model 6) has occurred. Ladder fuels and the horizontal continuity of dead and down material have increased. In the event of a wildfire during fire season, the flame lengths are expected to be between 7 feet to 15 feet. The increased level of dead and down material increases the fire intensity, and with ladder fuels present, allows fire to easily reach the tree crowns.

Topography also contributes to flame length and fire intensity, the greater the slope the more intense the expected fire behavior and risk for a crown fire increases (please refer to Nexus runs in Appendix G).

The representative fuel model that reflects the fire behavior of the natural fire return interval or Condition Class 1 would be either a Fuel Model 2, 8, or 9 with a low to moderate fire hazard. Each of these fuel models have minimal ladder fuel components and low flame lengths ranging between 2 and 8 feet. The fire will be a surface fire, consuming only small diameter fuels, the litter layer and portions of the duff layer. The fire behavior will be of low severity and intensity as was found historically. In some portions of Fire Regime 3, some areas may experience high severity and intensity over patches across the landscape. This is acceptable since that is how fire burns historically in that fire regime creating a heterogeneous landscape.

With the removal of the ladder fuel component and decreased fire behavior, the ability to initiate a crown fire would be greatly reduced allowing fire fighters to safely initiate suppression tactics. The importance of flame length deals with fire fighter safety and the ability to contain fire spread.

Flame lengths less than 4 ft: Can be attacked by persons using hand tools. Hand line will generally hold the fire.

Flame lengths 4-8 ft: Cannot be attacked by hand, hand line generally will not hold. Equipment such as pumpers, dozers, and aircraft can be effective.

Flame lengths 8-11 ft: Fires in this range may present serious control problems such as torching.

Flame length greater than 11 ft: Crowning, spotting, and major runs are probable.

Air Quality

Fuels management activities generate particulate pollutants in the process of treating natural and activity related fields. Smoke from prescribed fire has the potential to effect air quality within the project area as well as the surrounding areas. The use of prescribed fire for ecosystem restoration can produce enough fine particulate matter to be a public health and/or welfare concern. Fire particulates in smoke can travel many miles downwind impacting air quality in local communities, causing a safety hazard on public roads, impairing visibility areas, and/or causing a general nuisance to the public. If properly managed, most negative effects of prescribed fire smoke can be minimized or eliminated.

Prescribed burns are conducted within the limits of a Burn Plan which describes prescription parameters so that acceptable and desired effects are obtained. Smoke produced from prescribed burning is the major air pollutant of concern.

In compliance with the Oregon Smoke Management Plan, prescribed burning activities on the Medford District require pre-burn registration of all prescribed burn locations with the Oregon State Forecaster. Registration includes specific location, size of burn, topographic and fuel characteristics. Advisories or restrictions are received from the Forecaster on a daily basis concerning smoke management and air quality conditions.

E. Road Related Sediment

Currently, there are approximately 163 miles of all road types (4.5mile/sq. mile) in this portion of the watershed. Of these, approximately 34 miles (21 %) are under BLM control. Most of the remaining roads are from private timber company lands, Corp of Engineer lands, county roads, and private land owners. Following is the breakdown of roads by surface types for all roads:

Road Surface Type	Miles
Natural Surface	41
Aggregate Base Course (ABC)	22
Aggregate Surface Course (ASC)	11
Bituminous (oil and rock surface)	23
Hard surface concrete (typically private driveways)	4
Pit Run (Grid Rolled)	2
Not Known	60*

*these are typically jeep trails, fire lines and approximately 25 miles are hiking trails

Many of these roads were previously closed or had little traffic but were opened up during the suppression effort of the Timbered Rock wildfire in the adjacent Elk Creek watershed in the summer of 2002. As a result, many of these high gradient access roads have not been re-blocked and winter traffic has destroyed much of the designed road drainage (i.e. water bars, water dips and culverts). This has caused damage to the road surfaces creating road related erosion (rills, gullies) and subsequent sedimentation of the nearby stream channel.

Road crossings on stream channels also pose a risk to increased sediment delivery if the crossing structure (e.g. culverts) are not adequately sized or installed. Inventories have been done to identify and prioritize where future projects can be implanted to reduce this risk on BLM controlled roads.

These road related issues are the dominant factor in determining the future condition of the streams and aquatic habitat in this portion of the watershed. It should also be reiterated that the BLM manages a small amount of road miles (21%) and can only effect change in a small part of what will be needed to meet the objective of moving sediment levels toward more reduced and less impactive levels. Co-operation with all land owners will ultimately need to be in place for these landscape objectives to be met.

CHAPTER IV ENVIRONMENTAL CONSEQUENCES

A. Introduction

This chapter is organized by issue to describe the anticipated environmental impacts of the alternatives on the affected environment. It provides the basis for comparing the alternatives presented in Chapter II. The detail and depth of impact analysis is generally limited to that which is necessary to determine if significant environmental impacts are anticipated.

B. Effects From Implementing Alternative 1 (No Action)

Forest Condition -- Dense and Declining Forest Stands

a)Direct and Indirect Effects

Stand densities would remain high, resulting in the continued demand and competition for moisture, sunlight, and nutrients. Current tree densities are resulting in increased competition and declining tree growth. The number of trees per acre is above the biologically sustainable level, in the stands proposed for treatment; the average relative density is 81%. Forest stands with relative densities above 65% have reduced tree vigor, mortality of suppressed trees and a higher susceptibility to insects, disease, and severe fire behavior (Perry 1994, Hann and Wang 1990, Curtis 1982). In the absence of disturbance events such as wildfire or density management, the number of trees per acre will remain at levels that are above the carrying capacity of the site (Oliver, 1996).

Landscape resiliency to disturbance events, including drought, insects, wildfire and climate change would remain low. Continued high stand densities, high surface and ladder fuels, and low tree vigor would tend to magnify rather than buffer the effects of disturbance events (Perry 1995). In the event of a wildfire, greater detrimental effects to soils, wildlife habitat, forest structure and watershed processes would potentially occur, resulting in a longer restoration and landscape recovery period (Brown 2000, USDA 2000).

Without regeneration harvests, forest stands that are deteriorating or have growth rates that are stagnant or declining would not realized their greatest growth potential and would remain at a higher risk to insect attack and tree mortality. Declining tree vigor and growth reduces a tree's ability to resist a variety of damaging agents (Franklin et al 1987). Crown closure would remain above 80%, with a dense multi-layer stand structure. Root disease pockets would continue to enlarge, with susceptible conifer species being infected, in larger trees the volume growth loss caused by root diseases may approach 50% (Thies et al 1995, Hadfield, 1985, Goheen and Otrosina, 1998).

Individual large healthy sugar and ponderosa pine would die at an accelerated rate due to intense competition

from smaller trees, moisture stress, and beetle infestation. The mortality of large pine species would result in the loss of a valuable genetic and structural legacy. Of particular importance, is ponderosa pine which is tolerant of wildfire and drought (Agee 1993, Habeck 1992). The deep root systems of pine species allow these species to access soil moisture deeper in the ground (Wenger 1984, Burns and Honkala 1990) . This ability to get to deeper water sources, increases drought tolerance and may also increase the probability of pine species persisting in the event of potential climate change.

b)Short-term Uses vs. Long-term Productivity

In the short-term (5-10 years) the No Action alternative would result in the continuation of the existing forest conditions. Due to dense stand conditions, tree stress increases and weakened trees may lose resistance to insects (ODF 1990, Powell 1999, Filip 1998,). Declining individual tree growth would continue with tree mortality expected to increase. In areas of root disease, the infection of susceptible tree species would continue causing an acceleration of tree mortality and stand decline. The integrity of stands exposed to root pathogens may deteriorate rapidly as susceptible species become infected. The number of snags and the amount of coarse woody debris would increase in these areas, with infected trees dying 5-10 years after crown symptoms appear (Theis and Sturrock1995). Stand crown closure would progressively decline as mortality occurs.

c) Irreversible or Irretrievable Commitments of Resources

No irreversible commitments of resources are anticipated. The loss of conifer growth potential, due to growth decline because of high stand densities or root disease, would be an irretrievable loss.

d) Cumulative Effects

An increase risk of insects, diseases, and higher wildfire risk due to high stand densities would be expected. A decline of large conifers and hardwoods within stands would occur as mortality caused by high tree density would result in the loss of individual and groups of large trees.

Fuel Hazard Reduction

a) Direct & Indirect Effects

Under this alternative vegetation conditions would remain unchanged. The resulting trend for vegetation such as dense stand conditions, thick decadent brush, shifts in species dominance and loss of mature seral pine and hardwoods would continue. The project area is currently considered to be in a Condition Class 3 within its

own Fire Regime (please refer to Affected Environment). Continuing this trend will provide for an increase in the development of aerial (ladder) fuels, maintenance of closed canopy conditions and increases in surface fuels and amount of fuel available for consumption in future wildfires. As a result, the project area would remain in a Condition Class 3. Fire hazard will continue to increase. High flame lengths would prevent direct attack.

Impacts to air quality relate directly to the amount of fuel (biomass) available for consumption in future fires. By leaving existing biomass on site, fuel loadings would increase over time.

Particulate matter (PM) is the pollutant of primary concern in smoke from both wildland and prescribed fires. The long-term risk from toxic air pollutants from forest fire smoke is very low. Other pollutants are included in smoke but they are found in much lower concentrations. (Wildfire Smoke, a Guide for Public Officials) Carbon monoxide exposure has been studied extensively by the US Forest Service. These findings show concentrations can be a concern for fireline workers but concentrations dilute readily and drop rapidly as the smoke leaves the fire. (Smoke Exposure at Prescribed Burns) Particulate matter stays suspended in the atmosphere for long periods of time and moves great distances off site. Particles may also act as carriers of toxic substances. Health hazards are related directly to duration and intensity of smoke. Under the No Action Alternative, if a wildfire were to occur, emissions would be similar to those produced by the Timbered Rock Fire. This fire produced 11,975 tons of PM 10 and 10,778 tons of PM 2.5 for a total of 22,754 tons of particulate matter. These totals do not include emissions from other fires. If a wildfire were to occur the emissions would present health concerns to those individuals living downwind in the receptor areas. Under this alternative, no projects would be proposed to reduce fuels, and impacts to air quality from future wildfires would not be reduced.

The above conditions will remain until a disturbance occurs.

b) Short Term Uses vs Long-term Productivity

If no action were taken then the fuel loadings, ladder fuels and stand densities in the area are expected to increase. As a result, the potential for large destructive fire would increase until some action occurs to change existing stand dynamics. If this pattern were to continue, the encroachment of the shade tolerant species into lower elevations will continue and the shade intolerant species will die out until there has been a shift in the dominate species. The oak/pine savannahs and meadows would be lost, transforming the savanna into a woodland by increasing the density of shrubs and tree species. The community diversity that is found in the project area would be lost.

The chance of large scale fires happening in this area increases over time as the species communities change and stand densities increase. If a large fire does ignite in or near the project area it would have detrimental

impacts to long term stand and site productivity. The flame lengths off the fire would be too great to safely attack from the ground. This would also affect the chance and success to defend the WUI.

c) Irreversible or Irretrievable commitment of resources.

None Anticipated

d) Cumulative Effects

Based on the cumulative trend for all vegetative communities, the long term prognosis is for an increase potential for large destructive fires that produce high smoke emissions. When weather conditions are favorable for multiple large fires in adjacent watersheds, such as occurred in 1987 and 2002 this alternative would do nothing to lessen those impacts. Health hazards are a function of total fire emissions, this alternative would have no impact on future emissions. At the landscape level, the increase potential for large wildfires would have long term effects on existing plant communities, wildlife, as well as public and fire fighters safety and the WUI.

Road Related Sediment

a) Direct and Indirect Effects

There would be no directs effect of implementing the no action alternative. Indirectly, roads that are currently actively eroding and proposed for improvement would continue to be at risk for sediment delivery into nearby stream channels.

b) Short Term Uses vs. Long Term Productivity

None Anticipated

c) Irreversible or Irretrievable Commitment of Resources

Soil material lost from the actively eroding roads that are not improved would be irreversible.

d) Cumulative Effects

Same as indirect effects above. This would not help move the landscape objective of reducing road related

sediments toward more reduced and less impactive levels.

C. Effects of Implementing Alternative 2

Forest Condition -- Dense and Declining Forest Stands

a)Direct and Indirect Effects

In stands identified for density management, smaller and less vigorous trees would be harvested, accelerating the development of larger diameter and taller trees so that the characteristics of a mature stand are developed faster (Bennett and Maguire 1995, Duncan 2002, Emmingham and Elwood 2002). Maintaining larger trees with fuller crowns would provide sufficient tree canopies to reduce vegetative competition from brush and hardwoods. Stand vigor and individual tree size would be increased with density levels at full site occupancy.

In selectively cut stands, the number of trees would be reduced towards the carrying capacity of the site. Full site occupancy would be maintained with tree vigor and growth increased. Stand structure would be multi-layered, with high stand heterogeneity and a low effect on edge and fragmentation (McComb and Hansen 1992). Canopy closure in density management and selective cut stands would be decreased from 80-100 percent to approximately 50-60 percent.

In both, the density management and selectively harvested stands, the number of trees per acre would be reduced towards levels that the site has water and nutrients to sustain. The healthiest large conifers and hardwoods would be maintained by reducing adjacent competing vegetation, insuring that the long term ecological benefits of large trees are present within the landscape for the foreseeable future. Forest canopy connectivity would remain and would continue to provide migration and movement corridors for a variety of plant and animal species. Conifer and hardwood species diversity would be present with drought and fire tolerant species favored for retention. Additionally, the potential for a high intensity wildfire would be reduced as average tree size would increase, total vegetative biomass would decrease and surface fuels would be treated (Graham et al. 1999, Agee 1996, Pollet and Omi 2002).

In stands identified for regeneration harvests, variable levels of healthy large green trees greater than 20 inches diameter at breast height would be left. Canopy closure would be reduced to 10-40 percent, depending on the level of green tree retention. Herbaceous, shrub, and tree species composition would be shifted towards shade intolerant and drought tolerant species. Conifer growth and productivity would increase, particularly in stands affected by root diseases that would be planted with non-susceptible conifer species (Theis and Sturrock 1995). Snags and coarse woody debris would remain to provide habitat for wildlife, invertebrate, microbial and fungal species, as well as providing for important ecological functions such as moisture retention, soil stabilization, and nutrient recycling (Harmon and Hua 1991, Franklin et al. 1987). Surface fuels created during management activities would be treated to minimize wildfire risk.

In all treatments, large healthy sugar and ponderosa pine would be favored by removing competing trees; this would result in a decreased rate of mortality and the conservation of a declining genetic and structural legacy (Latham and Tappeiner, 2002).

b)Short-term Uses vs. Long-term Productivity

In the short-term, the vigor of trees in thinned and selectively cut stands would be increased. Long-term productivity would be expected to increase due to increased tree vigor and species diversity being maintained or increased. An increase in tree growth would be expected once the root systems of the residual trees expand (approximately 5-10 years) and are able to utilize the moisture, nutrients and additional growing space. Tree crowns would increase in size and photosynthetic area, with stand crown

closure increasing approximately 10% every five years (based upon Organon growth and yield projections) until full canopy closure is reached. Carbon uptake, pollen production and the production of viable seeds would also increase as tree vigor increases (DOE 1999, Kramer and Kozlowski 1979).

In the regeneration harvests, retained overstory trees and down logs would provide for structural and biological legacies (Franklin 1992, Hansen et al 1991, Hunter 1995). The species mix and density level of planted trees would trend towards the plant communities and stocking levels that historically would have been present. Late-successional characteristics would be expected to redevelop in approximately 80 years.

c) Irreversible or Irretrievable Commitments of Resources

No irreversible commitments of resources are anticipated. Irretrievable commitments of resources would be the loss of large diameter trees, multiple canopy layers and the loss of canopy closure in stands designated for a northern general forest management regeneration harvest for a period of approximately 60-80 years.

d) Cumulative Effects

Treatment under this alternative would result in stands which are more vigorous, healthy, and resilient to environmental changes. Individual tree growth and health would increase. Forest stand susceptibility to insect attack, disease infection, and fire would be expected to be reduced (Oliver et al 1996). Species composition would shift towards the most drought and fire tolerant species.

Fuel Hazard Reduction

a) Direct & Indirect Effects

Under this alternative approximately 2625 acres of treatment would occur across a variety of vegetation types using various methods that include slashing/handpile/ handpile burn, slashbuster and underburning. These treatments would have a direct and indirect effect to existing fuels and associated fire hazard found in the project area.

In all vegetative communities targeted for understory thinning, treatments would reduce current high or very high fuel hazard conditions. These treatments include: slash/hand pile/ handpile burn for 1515 acres, and 284 acres of slashbuster. The removal of trees with a diameter at breast height (DBH) of 6" will occur in the understory and overstory. Spacing will normally range from 14'X14' to 45'X45' maintaining a 60%-70% canopy closure. A direct effect of reducing the understory will eliminate the ladder fuels and reduce the continuous fuel loadings over the project area that lead to high fire intensities. Indirect effects of these treatments will reduce the potential of crown fire initiation and continuity since a stand with a canopy closure of 70% or greater will maintain a crown fire (Rothermel 1991).

In areas dominated by oak/pine savannahs/woodlands, brush fields and grasslands, hardwoods with a DBH of 6" or less and brush species, including wedgeleaf ceanothus *(Ceanothus cuneatus)* and manzanita (*(Arctostaphylos viscida)*, will be targeted for thinning. Brush species and small diameter trees make up 90%-100% of the understory and fuel continuity of these vegetative communities. In these areas, 50%-60% of the brush and trees species will be retained to a spacing ranging from 15'X15' to 45'X45', in a mosaic pattern across the unit. A direct effect of the treatments to these vegetative communities will be breaking up fuel continuity in the understory and brush fields. Indirect effects of these treatments include a reduction of fire intensities if a wildfire were to occur, allowing safe implementation of fire suppression tactics.

Approximately 529 acres are found in riparian reserves. The riparian reserves will be treated using

slashing/ handpile/ handpile and underburning. As stated in the Affected Environment there is little or no change in vegetation structure and density inside the riparian reserve as compared to the rest of the project area. Treatments in the riparian reserves will be the same as those in the understory thinning treatments. Small- sized non-commercial conifer saplings and poles, hardwoods (7" dbh) and brush species would be targeted for thinning. Within the riparian reserves, approximately 70% canopy closure would be maintained. A direct effect of reducing the understory will eliminate the ladder fuels and reduce the continuous fuel loadings. Indirect effects of these treatments include decreasing the chance of these areas acting as chimneys to funnel fire upslope during large fires. Treatments will also increase natural fire breaks where fire fighters can safely implement suppression tactics.

297 acres are targeted for understory burning in all vegetative communities. In these areas fuel loadings are at levels where a prescribed burn can safely be implemented, re-introducing fire back into a fire dependent ecosystem.

In timber sale units, treatments would reduce canopy fuels through density management and selectively cut stands, increasing and decreasing fire hazard simultaneously. After thinning and prior to slash treatment, there is a period of increased fire hazard as untreated thinning debris makes additional fuel available to wildfire. The hazard would be treated via mechanical, hand piling, lop and scattering, and underburning.

Reducing understory density will lower the Condition Class of the project area within its fire regime, bringing the project area closer to historic fuel loadings. Reducing ladder and surface fuels, canopy closure, understory density and breaking up continuous brush fields, will allow for a cool underburn, if a fire enters the area. Reduction of the fuel loads would reduce the amount of material consumed lessening the smoke emissions produced from wildfire.

Southwest Oregon has a long history of air quality problems. The weather pattern is dominated by the Pacific high pressure. This pattern often creates inversions during the summer and late winter months. The inversions often prompt air stagnation advisories. Air stagnation will trap pollutants at the lower elevations for extended periods of time. The topography of the valley contributes to this problem. The valley sets in a bowl creating the need for a moderately intense storm to break the inversion and to mix air layers. Summer wind patterns are generally from the North or Northwest. During the spring and fall winds tend to come from the South or the Southwest. During these periods the atmosphere is generally unstable which creates good atmospheric mixing and transport to move pollutants off site. Spring and fall are the seasons that prescribed fires are conducted. All prescribed burning is conducted under the Oregon Smoke Management Plan. Dispersion, dilution and avoidance are the techniques that are used to minimize smoke impacts on local communities and direct smoke away from designated areas.

Particulate matter is a major health concern. Grants Pass and Klamath Falls are designated by the Environmental Protection Agency (EPA) as non-attainment areas for particulate matter (PM10). Medford has been designated for PM 10 non-attainment but has gone three years with no violations. Medford's status is currently being reviewed for change to an Air Quality Maintenance Area. The EPA has set health standards for PM 10 and PM 2.5 for both 24 hr. (daily) standards and annual standards. The PM 2.5 standards are based on a three year average. The sampling began in 2000 and was completed in 2002. Once this data is compiled those sites found to exceed standards will be designated as non-compliance sites. In addition to the legally mandated sites the fires impacted a large number of rural residences and smaller communities which have no official designation. Tests indicate that, on average, 90 percent of all smoke particles from wildland and prescribed fires are PM 10 and 70 percent of those are PM 2.5. The data on smoke is collected by DEQ and then analyzed at a later date.

A nephelometer is an instrument that measures air pollution from smoke. It does this by measuring aerosol light scattering from particulate matter. The key sites for this area of concern are located in Grants Pass, Klamath Falls, Crater Lake, and Shady Cove. These instruments are sited and set up according to Oregon Department of Environmental Quality (DEQ) standards. Particulate matter is a byproduct of the combustion

process.

The greatest potential for impacts from smoke intrusions is from underburning. These impacts would be located to localized drainages within and adjacent to the project area. Underburning requires a low intensity burn that may not have the energy to lift the smoke away from the project site. Smoke retained on site could be transported into portions of the nonattainment areas if it is not dispersed and diluted by anticipated weather conditions. Localized concentration of smoke in rural areas away from nonattainment areas may continue to occur during prescribed burning operations.

In order to ensure there will be no impact on air quality of the airshed, burning will only be done when there are favorable weather conditions that encourage an unstable atmosphere. Other factors include, a high moisture content of the duff and dead woody fuels and favorable conditions within the airshed . These conditions are based on atmospheric stability, which affect smoke transportation, dispersion of smoke, and air quality in designated areas and other areas sensitive to smoke. Communication with smoke management forecasters and following smoke management instructions issued daily will help to determine if burning can be accomplished.

Under this alternative, prescribed burning would comply with the guidelines established by the Oregon Smoke Management Plan (OSMP). Prescribed burning under this alternative is not expected to effect visibility within the designated areas or other areas sensitive to smoke.

With the treatment of the understory, fire intensities and flame lengths will be reduced to levels where fire fighters can safely attack or control fires. Although a reduction in the understory will occur the Rate of Spread (ROS) will remain at a high level. Without the dense understory, ladder fuels and high flame length components, the high ROS will not interfere with fire fighters ability to contain a fire.

b) Short Term Uses vs Long-Term Productivity

In the short term, fire hazard would be increased due to the curing of the debris created from treatments. Within the year the cured debris will be burned either via piles or underburning, reducing the hazard. The Condition Class of the project area would be lowered, bringing it closer to historic fuel loading levels. In order to maintain the project area as Condition Class 1 and continue to reduce fire hazard, re-entry into the project area will need to be maintained.

The potential for large scale fires would decrease resulting in the reduced risk of losing long term site productivity and other resource values. The decrease in fire intensities will also increase fire fighter and public safety, allowing fire fighters to safely attack the fire and maintain a defensible space within the WUI.

c) Irreversible or Irretrievable commitment of resources.

None anticipated

d) Cumulative Effects

Treatments would result in a change in Condition Class. Over the project area, 55% is consider Condition Class 3, while 30% is consider in a Condition Class 2. There is only 15% that is considered to be a Condition Class 1, (refer to Purpose and Need). Through treatments, the condition classes across the project area would be lowered, increasing the percentage of the project area having a Condition Class 1 rating where the vegetative communities are within their historical fuel loadings.

With a change in Condition Class, there will be a shift in fuel models over the project area. Fuel models 4

and 6 which have a high expected fire intensity level would be altered to a condition where low to moderate fire intensities would be expected, similar to those found in fuel models 2,8, 9. Smoke emission from wildfires that occur in the project area, will be lower by reducing the total amount of material that can be consumed. Although fire risk will still remain high, due to the recreation and WUI within the project area, the fire hazard will be dramatically reduced.

Shifting of the Condition Class and Fuel Models will decrease flame length and fire behavior. The rate of spread will still be high, yet with the decrease in fire intensities. Fire fighters will be able to safely attack the fire and maintain a defensible space within the WUI. These lower fire intensities will also reduce the risk of large uncontrollable and destructive wildfires.

Specific strategy areas being treated to cumulatively reduce the potential of large fire spread include:

1. Treatment of vegetation adjacent to the Shipley Terrace subdivision off of Lewis Road continuing to private land north of the sub division and to the ridgetop east. Cumulatively, the treatments within these locations would reduce fire spread potential between the WUI and adjacent wildands, crown fire initiation and providing defensible space for the sub-division, refer to the map in Appendix G.

2. Treatment of oak/pine woodlands and brush fields along Lewis Road and BLM road 32-1E-36. Treatments would reduce the fire spread potential between the road and adjacent WUI lands and adjacent wildlands. In addition, treatments would reduce fire hazard lowering fire intensities allowing fire fighters to safely implement suppression tactics, refer to Appendix G.

3. Treatment of a variety of vegetation types along the Lost Creek Lake Trail and Fire Glenn Recreation Site would reduce the potential of large fire spread from the lakes edge into the uplands to the north and west of the lake. Reducing the fuel hazard will lower fire intensities allowing fire fighters to safely implement suppression tactics, refer to Appendix G.

4. Treatment of a variety of vegetation types along Takelma Drive and BLM road 35-1E- 27 are concentrated along the road and adjacent WUI lands, as well as the lake trail and the Four Corners Recreation Site. Cumulatively, this would contribute towards reducing the potential of fire spread from the road, trail, recreation site, WUI, and the lakes edge into the uplands to the west. In addition, treatments would reduce fire hazard lowering fire intensities allowing fire fighters to safely implement suppression tactics, refer to Appendix G.

Road Related Sediment

a) Direct and Indirect Effects

The direct effect of implementing the road renovations, improvements, and closures would reduce the risk of sediment production on roads proposed for these activities. These actions would stabilize the drainage structures and protect running surfaces from erosion and improve access needs for management activities in the future. Road and landing decommissioning will remove the risk of culverts plugging, increase infiltration into the soil and reduce runoff, and promote re- vegetation of the reclaimed roads.
Indirectly in the short term (1-2 years), some increases in erosion and subsequent sedimentation of streams may occur in localized areas of ground disturbance from these proposed activities. This is expected to be short term and minimal until these areas stabilize and re-vegetate.

b) Short Term Uses vs. Long Term Productivity

None Anticipated

c) Irreversible or Irretrievable Commitment of Resources

Same as Alternative 1

d) Cumulative Effects

The proposed road improvements, renovations, closures, and decommissioning would reduce the risk of road related sediments in this project area. These actions are expected to help improve water quality and aquatic habitat particularly in those streams in close proximity to these roads. Although as mentioned earlier in the affected environment section of this document, the total amount of road miles BLM controls (21%) in this project area is relatively small on a landscape scale. Therefore, these actions will only fractionally reduce the sediment levels for this entire watershed area.

D. Effects of Implementing Alternative 3

Forest Condition -- Dense and Declining Forest Stands

a)Direct and Indirect Effects

The direct and indirect effects for forest stands identified for density management and selective cut treatment are the same as Alternative 2.

Forest stands identified for regeneration harvest would have the same direct and indirect effects as Alternative 2, but acres of treatment would decrease from 98 to 18 acres. Subsequently with the reduction of regeneration harvest acres a higher level of canopy closure, forest structure, and connectivity would be maintained across the landscape. Abrupt changes in forest structure caused by harvesting timber would be minimized, providing improved movement and migration corridors for a variety of plant and animal species.

The reduced regeneration harvest acres would be less than the levels prescribed for (based upon stand age) and allowed under the Northwest Forest Plan and the Medford District Resource Management Plan.

Large healthy sugar and ponderosa pine would be favored by removing adjacent competing trees; this would result in a decreased rate of mortality and the conservation of a declining genetic and structural resource.

b)Short-term Uses vs. Long-term Productivity

Same as Alternative 2

c) Irreversible or Irretrievable Commitments of Resources

Same as Alternative 2

d) Cumulative Effects

Same as alternative 2

Fuel Hazard Reduction

a) Direct & Indirect Effects

Under this alternative approximately 2625 acres of treatment would occur across a variety of vegetation types using various methods that include slashing/handpile/ handpile burn, slashbuster and underburning. The treatments would have the same effects as that described for alternative 2.

In timber sale units, treatments would reduce canopy fuels through density management and selectively cut, increasing and decreasing fire hazard simultaneously. After thinning and prior to slash treatment, there is a period of increased fire hazard as untreated thinning debris makes additional fuel available to wildfire. The hazard would be treated via mechanical, hand piling, lop and scattering, and underburning.

b) Short Term Uses vs Long-term Productivity

Like alternative 2, in the short term, fire hazard would be reduced. The Condition Class of the project area would be lowered, bringing it closer to historic fuel loading levels. In order to maintain the project area as Condition Class 1 and continue to reduce fire hazard, re-entry into the project area will need to be maintained.

The potential for large scale for large scale fires would decrease resulting in the reduced risk of losing long term site productivity and other resource values found in the project area. The decrease in fire intensities will also increase fire fighter and public safety, allowing fire fighters to safely attack the fire and maintain a defensible space within the WUI.

c) Irreversible or Irretrievable commitment of resources.

None anticipated

d) Cumulative Effects

Cumulatively, treatments would result in a shift in condition class and fuel models. Reducing fuel loadings which will lower smoke emissions from wildfires within the project area. Treatments would also lower fire intensities allowing fire fighters to safely implement suppression actions as described in alternative 2.

Road Related Sediment

a) Direct and Indirect Effects

Same as Alternative 2

b) Short Term Uses vs. Long Term Productivity

Same as Alternative 2

c) Irreversible or Irretrievable Commitment of Resources

Same as Alternative 2

d) Cumulative Effects

Same as Alternative 2

E. Effects of Implementing Alternative 4

Forest Condtions -- Dense and Declining Forest Stands

a)Direct and Indirect Effects

Same as alternative 2.

b)Short-term Uses vs. Long-term Productivity

Same as alternative 2.

c) Irreversible or Irretrievable Commitments of Resources

Same as alternative 2.

d) Cumulative Effects

Same as alternative 2.

Fuel Hazard Reduction

a) Direct & Indirect Effects

Under this alternative approximately 2625 acres of treatment would occur across a variety of vegetation types using various methods that include slashing/handpile/ handpile burn and underburning. The treatments would have the same effects as that described for Alternative 2. The primary difference between the two alternatives is there would be no use of slashbusters.

In timber sale units, treatments would reduce canopy fuels through density management and selectively cut, increasing and decreasing fire hazard simultaneously. After thinning and prior to slash treatment, there is a period of increased fire hazard as untreated thinning debris makes additional fuel available to wildfire. The hazard would be treated via mechanical, hand piling, lop and scattering, and underburning.

b) Short Term Uses vs Long Term Productivity

Like Alternative 2, in the short term fire hazard would be reduced. The Condition Class of the project area would be lowered, bringing it closer to historic fuel loading levels. In order to maintain the project area as Condition Class 1 and to continue to reduce fire hazard, re-entry into the project area will need to be maintained.

The potential for large scale fires would decrease resulting in the reduced risk of losing long term site productivity and other resource values found in the project area. The decrease in fire intensities will also

increase fire fighter and public safety, allowing fire fighters to safely attack the fire and maintain a defensible space within the WUI.

c) Irreversible or Irretrievable commitment of resources.

None anticipated

d) Cumulative Effects

Cumulatively, treatments would result in a shift in condition class and fuel models. Reducing fuel loadings which will lower smoke emissions from wildfires within the project area. Treatments would also lower fire intensities allowing fire fighters to safely implement suppression actions as described in Alternative 2.

Road Related Sediment

a) Direct and Indirect Effects

Same as Alternative 2

b) Short Term Uses vs. Long Term Productivity

Same as Alternative 2

c) Irreversible or Irretrievable Commitment of Resources

Same as Alternative 2

d) Cumulative Effects

Same as Alternative 2

F. Effects of Implementing Alternative 5

Forest Condition -- Dense and Declining Forest Stands

a)Direct and Indirect Effects

Same as Alternative 3.

b)Short-term Uses vs. Long-term Productivity

Same as Alternative 3.

c) Irreversible or Irretrievable Commitments of Resources

Same as alternative 3.

d) Cumulative Effects

Same as alternative 3.

Fuel Hazard Reduction

a) Direct & Indirect Effects

Under this alternative approximately 2625 acres of treatment would occur across a variety of vegetation types using various methods that include slashing/handpile/ handpile burn and underburning. The treatments would have the same direct and indirect effects as described for Alternative 2. The primary difference between Alternative 2 and 3 is there would be no use of slashbusters.

In timber sale units, treatments would reduce canopy fuels through density management and selectively cut, increasing and decreasing fire hazard simultaneously. After thinning and prior to slash treatment, there is a period of increased fire hazard as untreated thinning debris makes additional fuel available to wildfire. The hazard would be treated via mechanical, hand piling, lop and scattering, and underburning.

b) Short Term Uses vs Long-term Productivity

Like Alternative 2, in the short term fire hazard would be reduced. The Condition Class of the project area would be lowered, bringing it closer to historic fuel loading levels. In order to maintain the project area as Condition Class 1 and to continue to reduce fire hazard, re-entry into the project area will need to be maintained.

The potential for large scale fires would decrease resulting in the reduced risk of losing long term site productivity and other resource values found in the project area. The decrease in fire intensities will also increase fire fighter and public safety, allowing fire fighters to safely attack the fire and maintain a defensible space within the WUI.

c) Irreversible or Irretrievable commitment of resources.

None anticipated

d) Cumulative Effects

Cumulatively, treatments would result in a shift in condition class and fuel models. Reducing fuel loadings which will lower smoke emissions from wildfires within the project area. Treatments would also lower fire intensities allowing fire fighters to safely implement suppression actions as described in Alternative 2.

Road Related Sediment

a) Direct and Indirect Effects

Same as Alternative 2

b) Short Term Uses vs. Long Term Productivity

Same as Alternative 2

c) Irreversible or Irretrievable Commitment of Resources

Same as Alternative 2

d) Cumulative Effects

Same as Alternative 2

V. List of Preparers

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Robin Snider, Wildlife Biologist	Threatened & Endangered Animals
Gene Shull, Fisheries Biologist	Fisheries/ Aquatic Ecosystems
Dusty Pence, Fuels Specialist	Fuels/Air Quality
Marcia Wineteer, Botanist	Plants
Ken Van Etten, Soil Scientist	Soils, Water
Doug Kendig, Riparian Reserve Coordinator	Riparian
Diane Parry, Geologist	Cultural Resources
John McNeel, Engineer	Engineering
Craig Brown, Forester	Harvest Systems and Unit Layout
Lee Anderson, VRM Specialist	Visual Resources
Jim McConnell, Environmental Coordinator	Environmental Assessment

References

Agee, J.K., 1993. Fire Ecology of Pacific Northwest Forests, Island Press, Washington, D.C. Covelo, California. 493p.

Agee, J.K., 1996. The Influence of Forest Structure on Fire Behavior. Presented at the 17th Annual Forest Vegetation Management Conference. Redding, CA. January 16-18., 1996, p52-68.

Bennett, W.S., Maguire, D.A., 1995 A Field Procedure for Thinning by Relative Density Specifications: Development, Implementation and Relationship to Stand Structure. Western Journal of Applied Forestry: Vol.10, No. 3: 58-90.

Bradford, K.J., and Hsiao, T.C., 1982. Physiological responses to moderate water stress. In Encyclopedia of plant physiology, Vol.12B. Edited by O.L. Lange, P.S. Nobel, C.B. Osmond, and H. Zeigler. Springer-Verlag, Berlin. pp 265-364.

Brown, R., 2000. Thinning, Fire and Forest Restoration: a Science Based Approach for National Forests in the Interior Northwest. Defenders of Wildlife, December 2000, Washington DC, 26p.

Burns, R.M. and Honkala, B.H., tech cords., 1990. Silvics of North America: 1. Conifers; 2. Hardwoods Agriculture Handbook 654, USDA Forest Service, Washington D.D. Vol. 2, 877p.

Curtis, R.O., 1982. A Simple Index of Stand Density for Douglas-fir. Forest Science, Vol. 28, No. 1: 92-94.

DOE, Department of Energy, 1999. Carbon Sequestration, Chapter 4, draft February 1999. www.fe.doe.gov/coal_power/sequestration/reports/rd/Chap4.pdf

Duncan, S., 2002. Volume, Value and Thinning: Logs for the Future. Science Findings, Issue 48, Portland, OR: USDA Forest Service, Pacific Northwest Research Station. 5p.

Emmingham, W.H., Elwood N.E., 2002. Thinning, an Important Timber Management Tool. PNW 184, Corvallis OR: Oregon State University, Washington State University, University of Idaho, Pacific Northwest Extension Publication.

Filip, G.M., 1998. Effects of Insects and Diseases on Short-term and Long-term Tree Yields. Tech Notes, BMNRI-TN-11, May 1998. Blue Mountains Natural Resources Foundation and Institute.

Franklin, J.F., 1992. Scientific Basis for New Perspectives in Forest and Streams, In: Naiman, Robert J. ed., Watershed Management – Balancing Sustainability and Environmental Change. Springer Verlag, New York p 27-72.

Franklin, J.F., Shugart, H.H., Harmon, M.E., 1987. Tree Death as an Ecological Process, BioScience, Vol. 37, No.8: 550-556.

Goheen, D.J., Otrosina, W.J. 1998. Characteristics and Consequences of Root Diseases in Forests of Western North America. USDA, Forest Service, Gen. Tech. Rep. PSW-GTR 165. 8p.

Graham, T.G., Harvey, A.E., Jain, T.B., Tonn, J.R., 1999. The Effects of Thinning and Similar Stand Treatments on Fire Behavior in Western Forests. Gen. Tech Rep. PNW-GTR-463, Portland OR: USDA Forest Service, Pacific Northwest Research Station. 27p.

Habeck, R.J., 1992. Pinus Ponderosa var. Ponderosa. Fire Effects Information System. USDA, Forest Service Rocky Mountain Research Station, Fire Science Lab, Missoula MT, 10p.

Hadfield, J.S., 1985. Laminated Root Rot, A Guide for Reducing and Preventing Losses in Oregon and Washington Forests. USDA Forest Service, Pacific Northwest Region. 13p.

Hann, D.W. and Scrivani, J.A. 1987. Dominant-Height-Growth and Site Index Equations for Douglas-fir and Ponderosa Pine in Southwest Oregon. Research Bulletin 59, College of Forestry, Oregon State University.

Hann, D.W. and Wang, C.H., 1990. Mortality Equations for Individual Trees in the Mixed Conifer Zone of Southwest Oregon. Forest Research Lab, Research Bulletin 67. Oregon State University, Corvallis, OR.

Hansen, A.J., Spies, T.A., Swanson, F.J., Ohmann, J.L., 1991. Conserving Biodiversity in Managed Forests, Lessons from Natural Forests. BioScience Vol. 41, No. 6: 382-392.

Harmon, M.E., Hua, C.,1991. Coarse Woody Debris Dynamics in Two Old-Growth Ecosystems. BioScience Vol. 41, No. 9: 604-610.

Hunter, M., 1995. Residual Trees as Biological Legacies: In: Communiqué Number 2, Cascade Center for Ecosystem Management, Oregon State University and USDA Forest Service, Corvallis OR, 27p.

Kramer, P.J. and Kozlowski, J.W., 1979. Physiology of Woody Plants. Academic Press, Orlando, Florida. 811p.

Kramer,P.J. and Kozlowski, J.W., 1979. Physiology of Woody Plants. Academic Press, Orlando Florida, pp 610 & 678.

Latham, P. and Tappeiner, J. 2002. Response of Old Growth Conifers to Reduction in Stand Density in Western Oregon Forests. Tree Physiology, published online January 2, 2002.

McComb, W.C. and Hansen A.J., 1992. An Introduction to Forest Wildlife Ecology, In: Silvicultural Approaches to Animal Damage in Pacific Northwest Forests: Gen. Tech. Report PNW-GTR-287, p. 93-122, Portland OR: USDA Forest Service, Pacific Northwest Research Station.

Oliver, W.W., Ferrell, G.T., Tappeiner, J.C., 1996. Density Management of Sierra Forests, Chapter 11, p. 1-7. In: Summary of the Sierra Nevada Ecosystem Project Report, Final Report to Congress, University of California, Sierra Nevada Ecosystem Project Science Team and Special Consultants.

Oregon Department of Forestry, 1990. Dead Branches, Dead Tops, and Dead Conifer Trees – The Interaction of Drought, Water Stress, Insects and Disease. Pest Note: 2-0-5-210, 2-2-1-130, Salem OR, 7p

Perry, D.A., 1994. Forest Ecosystems. The Johns Hopkins University Press. Baltimore and London,256p.

Perry, D.A., 1995. Landscapes, Humans and other System-Level Considerations: a Discourse on Ecstasy and Laundry. Symposium Proceedings of Ecosystem Management in Western Interior Forests, May 3-5, 1994. Spokane Washington, p. 177-188.

Pollet, J., Omi, P.N., 2002. Effect of Thinning and Prescribed Burning on Wildfire Severity in Ponderosa Pine Forests. Joint Fire Science Conference and Workshop.

Powell, D.C., 1999. Suggested Stocking Levels for Forest Stands in Northeast Oregon and Southeast Washington: An implementation Guide for the Umatilla National Forest., F14-SO-TP-03-99, April 1999.

Rothermel, Richard, Predicting Behavior and Size of Crown Fires in the Northern Rockies, Research Paper. INT – 438. January 1991.

Theis, W.G., Sturrock, R.N., 1995. Laminated Root Rot in Western North America. Gen. Tech. Rep. PNW GTR-349. Portland OR: USDA Forest Service, PNW Research Station. 32p.

USDA, Forest Service and Department of the Interior, 2000. National Fire Plan, a Report to the President in Response to the Wildfires of 2000. Managing the Impact of Wildfires on Communities and the Environment,17p. @ www.fireplan.gov/president.cfm.

USDA, Forest Service and Department of the Interior, 2000. National Fire Plan, Restoring Fire – Adapted Ecosystems on Federal Lands – A Cohesive Fuel Treatment Strategy for Protecting People and Sustaining Natural Resources. @ www.fireplan.gov.

Wenger, K.F., 1984. Forestry Handbook, Society of American Foresters, John Wiley and Sons, New York, 1335p.