

ENVIRONMENTAL ASSESSMENT

For

**BOAZ FOREST HEALTH AND
SMALL DIAMETER UTILIZATION PROJECT**

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

EA No. OR-110-02-036

This Environmental Assessment (EA) for the proposed Boaz Forest Health and Small Diameter Utilization Project was prepared utilizing a systematic interdisciplinary team approach integrating the natural and social sciences and the environmental design arts with planning and decision-making.

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JACKSON COUNTY, OR

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A. BACKGROUND

Thousands of acres of Southern Oregon forest and shrub land are in poor ecological health and at a very high risk to loss from catastrophic wildfire, insect and disease outbreak. The policy of suppression of wildfires over the last eighty years has had profound environmental consequences. Many Southern Oregon forests, both conifer and hardwood, are very dense and are declining in health and vigor. They have slow growth rates, severe competition for water and nutrients, and increased susceptibility to insects, drought and catastrophic wildfire. These conditions are exacerbated by the drought conditions that have been impacting much of the West in recent years. The 2002 wildfire season has been one of the most damaging on record.

The Federal Land Policy & Management Act (FLPMA) directs Bureau of Land Management (BLM) lands to be managed for multiple uses including maintaining healthy ecosystems and the production of wood products. Forests with small diameter material can be managed for long-term forest health and fire hazard reduction by removing the smaller diameter trees and leaving the largest healthiest trees. This practice will help to develop and maintain forests that are more resilient to fire, drought, insect attack and disease agents. The by-products of these thinnings can be used to help provide an assortment of wood products.

American citizens continue to consume considerable quantities of wood products in the form of lumber, paper and packaging. Typically material less than six inches in diameter is not readily used for manufacturing products because of the high cost of removal and handling. Millions of acres in western forest have small diameter growth as a result of long-term fire suppression. Methods to increase utilization of this small diameter material along with improved techniques for wood fiber recovery need to be investigated. Higher levels of utilization could help offset the cost of removing the small diameter material from our forests.

On October 30, 2000, Congress signed the *Secure Rural Schools and Community Self Determination Act of 2000*, commonly known as Payments to Counties. This law has created a mechanism for local community collaboration with federal land management agencies in the selection of projects to be conducted on federal lands or projects that will benefit resources on federal lands. Resource Advisory Committees (RAC) have been formed, consisting of 15 local citizens representing a wide array of interests. The RACs review and recommend projects for funding.

Consistent with RAC procedure and hoping to help implement the goals of “Payments to Counties” legislation, the Jefferson Sustainable Development Initiative (JSDI) collaborated with the Medford District-BLM on a RAC proposal to fund the Boaz Forest Health and Small Diameter Utilization Project. JSDI is a regional non-profit effort to promote sustainable practices across southwest Oregon and northwest California. Responsible stewardship of natural resources on public lands is a key ingredient in a sustainable future for the region. Sharing this perspective and looking to implement an on-the-ground project testing the feasibility and forest health contribution of small diameter harvest and utilization, George McKinley of JSDI and Blair Moody of the BLM worked together to submit the Boaz project to the RAC.

The Boaz Small Diameter Utilization Project was approved for funding by the Medford District Resource Advisory Council (RAC) in the fiscal year 2002 & 2003 program.

B. PURPOSE AND NEED

The purpose of the Boaz Forest Health and Small Diameter Utilization project is to:

- Enhance and maintain the ecological health of the forest stands and help meet the commodity needs of the human population.
- Reduce the risk of high intensity wildfire and resultant tree mortality by restoring the vigor, resilience, and stability of forest stands
- Monitor forest health and fire hazard reduction techniques.
- Assess the technical and economic feasibility of removing small diameter material with a high degree of utilization.
- Determine market opportunities for a variety of small diameter products.
- Contribute to rural economic development and expand the capacity of the rural workforce.
- Increase community awareness of the challenges of small diameter harvest and utilization and expand community support for these operations.

C. CONFORMANCE WITH EXISTING LAND USE PLANS

The proposed activities are in conformance with and tiered to the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (USDI, USDA 2001) and the *Medford District Record of Decision and Resource Management Plan (RMP)* (USDI 1995). These Resource Management Plans incorporate the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and the Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (NFP)* (USDA and USDI 1994). These documents are available at the Medford BLM office and the Medford BLM web site at <http://www.or.blm.gov/Medford/>.

D. RELATIONSHIPS 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, the Federal Land Policy and Management Act of 1976, and the Northwest Forest Plan of 1994.

E. DECISION TO BE MADE

This Environmental Assessment (EA) is being prepared to determine if the proposed action or any of the alternatives would have a significant affect 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.

The Ashland Resource Area Field Manager must decide:

- Whether or not the impacts of the proposed action are significant to the human environment beyond those impacts addressed in previous tiered NEPA documents. If the impacts are not significant, then a Finding of No Significant Impact (FONSI) can be issued and a decision can be implemented. If any impacts are determined to be significant to the human environment, an EIS must be prepared before the manager makes a decision.
- Whether to implement the proposed action alternative and associated Project Design Features, or defer to the no action alternative.

F. SCOPING AND ISSUES

Scoping is the name for the process used to determine the level of the environmental analysis to be conducted. It is used early in the NEPA process to identify (1) issues to be addressed, (2) the depth of the analysis required, (3) alternatives to be considered, and (4) potential environmental consequences associated with the alternatives considered in detail.

The Boaz project was listed in the Bureau of Land Mangement's project announcement newsletter, *Medford's Messenger*, Summer 2002. The project was also presented at several area meetings and field trips. See Chapter IV for detailed summary of scoping efforts.

During the scoping process, the ID Team identified concerns issues and potential impacts to resources that may occur under different alternatives. These issues (listed below) became the focus of the analysis.

The following issues were determined to be relevant to the Proposed Action:

- a. Dense Stands/Forest Health - Many of the stands, both conifer and hardwood, are overly dense. Dense stands are not vigorous. They have slow growth rates, strong competition for water and nutrients, and are susceptible to drought and insects. The stands are at risk of loss to high intensity wildfire.
- b. Special Status Animal Species - Special status animal species may occur in the proposed project area and would need to be protected from project-related activities through buffers or operating season restrictions appropriate to the species in question.
- c. Special Status Plant Species - Special status plant species may occur in the proposed project area and would need to be protected from project-related activities through buffers and operating season restrictions appropriate to the species in question.
- d. Noxious Weeds - Noxious weeds may be present in the proposed project area. Disturbance could facilitate the spread of these species.

INTRODUCTION

This chapter briefly describes the Proposed action and the no action alternative. This chapter also outlines specific project mitigation measures known as Project Design Features (PDFs) that are part of the Proposed Action.

ALTERNATIVE A (No Action)

Under the “no action” alternative, no active management activities would occur in the Boaz project area. No vegetation management would be implemented; there would be no thinning or testing of material utilization authorized by this Environmental Assessment.

ALTERNATIVE B (Proposed Action)

Alternative B would authorize treatments on approximately 40 acres in the Boaz project area. The stands are dominated by Douglas-fir with some scattered ponderosa pine, madrone and oak trees. The stands currently have over 500 trees per acre and will be thinned down to approximately 135 trees per acre. The treatment would consist of removing the majority of the smaller diameter conifer trees on the site and leaving most of the largest, healthiest trees. It is expected the trees left would be spaced approximately 15-30 feet apart depending on their vigor. The final result would be forest stands with very little understory vegetation and an open ‘park-like’ look. The proposed silvicultural prescriptions are based upon the present vegetation structure, species composition, aspect, and vegetation condition class, to leave the tree species best adapted to a particular site and allow for the development of old-growth forest structure over time.

All units would be “leave tree marked” with yellow paint. Trees 2 inches DBH and larger marked with yellow paint shall not be harvested. Trees 2 inches to 8 inches DBH shall be marked to leave at least a 20 to 30-foot bole spacing. These small trees are always spaced off of the largest diameter trees in the forest. Leave trees in this diameter class range shall have a minimum live crown ratio of 30 percent if possible. Always leave the healthiest tree available with the longest terminal leader and the largest live crown. Always attempt to perform a “low thinning” by cutting the smaller diameter class trees from within the dripline of larger diameter trees. Some of the larger diameter class trees may be marked for forest health reasons such as releasing trees with old-growth characteristics and releasing healthy ponderosa pine trees. Larger diameter class trees may also have to be cut if located in a designated logging corridor or for OSHA safety concerns.

The conifer trees in the stands selected for treatment have an estimated pre-treatment average diameter of 8.6 inches. The average of all trees to be removed are estimated to be 7.7 inches. The treatment would increase the stand’s average diameter to an estimated 11.4 inches. Estimates of the stands prior to treatment show 76 percent of the trees in the stands to be treated are below 10 inches in diameter and 97 percent of the trees in the stands to be treated are less than 16 inches in diameter.

Up to 250 thousand board feet of conifer trees would be removed from the site and processed into a variety of products. Material removed from the forest would be tractor or cable yarded to a landing and sorted to help obtain the highest value product. Approximately 10-15 acres would be yarded by tractor and 25-30 acres would be yarded with a small cable yarder. In most cases, both the stems of trees and the branches would be yarded to the road. Trees greater than ten inches DBH would likely be sent to a saw mill for milling into dimensional lumber. Trees smaller than this would be processed using a small portable saw mill known as an ‘Economizer’. Other smaller trees would be peeled of the bark and used for posts and poles. Limbs and tops of trees too small for poles or posts would be brought to the road to be chipped and used for bio mass for electrical power generation. Chips created from some of the milling operations could also be used for bio-mass or marketed for animal bedding.

It is expected that the slash loading generated from this project would be low as the majority of the material would be brought out of the forest to the road. A post project review by BLM fuels specialists would be conducted after the yarding of material is complete. If the slash loading warrants follow up treatment, slash generated from the project would be hand piled and burned or the stands could be under burned.



Before treatment – This stand is similar in size and density to those proposed in this proposal.



After treatment – Photograph of an area treated with a similar tree removal prescription.

The following table is an example to illustrate the composition of the stands proposed for treatment. While not representing the exact trees or numbers of trees proposed to be cut or left standing, it attempts to show the intent of the proposed treatment. This information was obtained by visiting the stands proposed for treatment and measuring a sample of trees. More detail is presented in the silvicultural prescription.

Boaz Tree Size Estimates			
Diameter Class	Number of trees per acre prior to thinning	Number of trees per acre to be cut and removed with thinning	Number of trees per acre after thinning
4-6"	133.3	133.3	-
6-8"	160.0	147.7	12.3
8-10"	129.3	73.1	56.2
10-12"	68.8	37.5	31.3
12-14"	36.0	20.9	15.1
14-16"	11.1	6.0	5.1
16-18"	-	-	-
18-20"	3.6	-	3.6
20-22"	8.2	-	8.2
22-24"	2.1	-	2.1
24-26"	-	-	-
26-28"	-	-	-
28-30"	1.5	-	1.5
30-32"	1.3	-	1.3
32-34"	-	-	-
34-36"	-	-	-
36-38"	0.9	-	0.9
38-40"	-	-	-
40-42"	-	-	-
> 52"	0.4	-	0.4
	556.5	418.5	138.0

PROJECT DESIGN FEATURES (PDFs)

PDFs are an integral part of the project design for the Proposed Action. PDFs include seasonal restrictions of certain activities in order to minimize erosion and reduce disturbance to wildlife. PDFs also outline protective buffers for sensitive species and delineate measures for protecting resources throughout the project. Most PDFs reflect Best Management Practices and standard operating procedures. The PDFs with an asterisk (*) are Best Management Practices (BMPs) to reduce nonpoint source pollution to the maximum extent practicable. BMPs are considered the primary mechanisms to achieve Oregon Water Quality standards. Implementation of PDFs in addition to establishment of Riparian Reserves would equal or exceed Oregon State Forest Practice Rules. BMP effectiveness monitoring would be conducted and where necessary, BMPs modified to ensure compliance with Oregon Water Quality Standards.

Roads and Transportation

A seasonal hauling restriction would be required on roads during the wet season (Generally October 15 to May 15). This would protect roads from damage and decrease sediment production that would occur. Some variations in these dates would be permitted dependent upon weather and soil moisture conditions of the roads.

BLM-administered roads would be maintained on a long-term basis. Minor improvements and design changes may be needed to stabilize and correct conditions that are causing erosion or unsafe situations.*

All natural surface roads would be closed during the wet season.*

Harvest and Logging Systems

When operationally feasible, all units would be yarded in such a way that the coarse woody debris remaining after logging would be maintained at, or greater than, current levels in order to protect the surface soil and maintain productivity.*

All skid trail locations would be approved by BLM before use. Maximum area in skid trails would be less than 12%. Existing skid trails would be utilized when possible. No use of skid trails would be allowed in Riparian Reserves. Tractors would be equipped with integral arches to obtain one end log suspension during skidding of the logs. Skid trail locations would avoid ground with slopes over 35 percent and areas with high water tables. The intent is to minimize areas affected by tractors and other mechanical equipment (disturbance, particle displacement, deflection, and compaction) and thus minimize soil productivity loss.*

After completion of yarding, all skid trails would be water barred according to BLM standards (Medford District RMP, page 167). Main tractor skid trails would be blocked with an earth and log barricade where they intersect haul roads. The intent is to minimize erosion and routing of overland flow to streams by decreasing disturbance.*

Tractor yarding would occur during the dry season (usually between June 15 to October 1) or on approval by the Contract Administrator. Some variations in these dates would be permitted dependent upon weather and soil moisture conditions. The intent is to minimize off-site erosion and sedimentation to local waterways.*

During cable yarding maximum operational suspension would be practiced to alleviate gouging and other disturbance on draw side slopes and headwalls. Trees would be felled to the lead in relation to the yarding corridor. The intent of falling to the lead is to minimize damage to the healthy remaining trees left on the site using a conventional yarding system.*

For all cable yarding, maximum operational suspension would be maintained on slopes greater than 50 percent. Minimum corridor widths (generally less than 15 feet in width) would be utilized to assure silvicultural prescriptions and objectives are met. No yarding corridors are permitted in Riparian Reserves.*

Existing landings should be evaluated carefully before use and should not be expanded.*

Silviculture and Botany

The silvicultural prescription for the Boaz project units are within forest stands designated as dry Douglas-fir prescription areas. Some of these stands may have small areas where the ponderosa pine

prescriptions are appropriate. Pine group selection areas are also appropriate where healthy pine seed trees are present. All units shall be “leave tree marked” with yellow paint. Trees 2 inches DBH and larger marked with yellow paint shall not be harvested. Trees 2 inches to 8 inches DBH shall be marked to leave at a 20 to 30-foot bole spacing. These small trees are always spaced off of the largest diameter trees in the forest. Leave trees in this diameter class range shall have a minimum live crown ratio of 30 percent if possible. Always leave the healthiest tree available with the longest terminal leader and the largest live crown. Always attempt to perform a “low thinning” by cutting the smaller diameter class trees from within the dripline of larger diameter trees. Trees larger than 16 inches DBH may be marked for forest health reasons such as releasing ponderosa pine. Trees larger than 16 inches may also have to be cut if located in a designated logging corridor.

If the final review of slash loading after completion of yarding indicates a need for slash disposal the following guidelines will be used. No piling of slash within the drip line of any Pine species (Ponderosa, Sugar, Knobcone, Western White) equal to or greater than 12" dbh. Pile slash away from all pine leave trees less than 12 inches. In addition burn plans should achieve a goal of no more than 25% of the pine tree live crown being scorched for trees 8 inches DBH and larger. Cool burns are needed so that tree roots and foliage are not killed, stressed or damaged in a manner which predisposes pine to bark beetle infestation.

Hydrology/Fisheries

Standard contract stipulations would include the following:

- Heavy equipment would be inspected and cleaned before moving onto the project site, in order to remove oil and grease, noxious weeds and excessive soil.*
- Hydraulic fluid and fuel lines on heavy mechanized equipment must be in proper working condition in order to avoid leakage into streams.*
- Diesel fuel, oil, hydraulic fluid and other hazardous materials and contaminated soil would be removed from the site and disposed of in accordance with DEQ regulations. Areas that have been saturated with toxic materials would be excavated to a depth of 12 inches beyond the contaminated material or as required by DEQ.*
- Equipment refueling would be conducted within a confined area outside Riparian Reserves.*
- Spill containment booms or other equipment would be used, as required by DEQ.*
- Equipment containing toxic fluids would not be stored in or near (within 300') a stream channel anytime.*

Wildlife

Spotted Owl Seasonal Restriction

No spotted owls are known to be nesting within ¼ of a mile of this project.

If the proposed action alternative were selected, any spotted owl sites found after the NEPA decision is signed would receive protection. During the nesting season (usually March 1- June 15), timber harvest and fuels reduction activities that generate noise such as log haul, timber falling, heavy equipment operation and chainsaw use, would be prohibited within 1/4 mile of any actively nesting owl site within the project area. This restriction could be lifted on a site-by-site and season-by-season basis if BLM surveyors determine that a site is not reproductive during a breeding season.

Great Gray Owl Seasonal Restriction

No great gray owls are known to be nesting within ¼ of a mile of this project

If the proposed action alternative is selected, any great gray owl sites found after the NEPA decision is signed would receive protection. During the nesting season (usually Feb. 1- June 15), timber harvest and fuels reduction activities that generate noise such as log haul, timber falling, heavy equipment operation and chainsaw use, would be prohibited within 1/4 mile of any actively nesting owl site within the project area. This restriction could be lifted on a site-by-site and season-by-season basis if BLM surveyors determine that a site is not reproductive during a breeding season.

This chapter describes the environment that would be affected by the Proposed Action or No Action Alternative, and discusses the environmental consequences of implementing each alternative, in terms of the direct, indirect, and cumulative effects on the human environment. The analysis documented in this chapter provides the scientific and analytic basis for comparison of alternatives.

A. Forest Health and Forest Composition

Affected Environment

The present day landscape pattern of the vegetation in the vicinity of the Boaz project area is a result of topography, fires from 1864 to 1917, timber harvesting, and agricultural/residential land development. There is a natural diversity of vegetation condition classes within stands and between stands whose boundaries are generally dictated by slope, aspect and past disturbance. Aspect is an important determinant in vegetation changes. Ridges with westerly to southerly aspects and areas with shallow soils have severe growing conditions with shrubs and grasses dominating these sites. As a result, grasslands, shrublands or oak woodlands separate the majority of the timber stands. These influences create a coarse-grained pattern across the landscape with a mosaic pattern of different vegetation types and seral stages.

In the project area, the larger forest stands originated between 1864 and 1917 following small and large-scale fires. Most of the forest stands became established within 10 years after a fire, although the harsher sites may have taken 30 to 40 years to become forested. Because these fires were forest-replacing in nature, individual timber stands now tend to be fine grained. This means that there are many trees of the same age class and almost equal in height, with few older trees scattered throughout. The majority of the trees in the project area are between 80 and 170 years old. However, there are 170 to 200 year old trees in fewer numbers. The oldest trees found in the entire drainage were 352 and 372 years old. The stands within the Boaz project area have seen limited previous timber harvest. Some of the areas may have had minor salvage logging of dead and dying trees in the early 1990s.

Most conifer stands in the area are suppressed and diameter growth is less than one inch per decade. Pole stands are in the stem exclusion stage. These stands are characterized by a closed canopy and high stocking levels with many suppressed trees resulting in poor individual tree vigor. Subtle changes in species composition and stand structure are occurring over the landscape. Many trees with old-growth characteristics are dying as a result of increased competition with younger trees for limited resources. Douglas-fir, referred to as the climax species, is replacing ponderosa pine, sugar pine and incense cedar because of its more shade-tolerant nature. Douglas-fir is encroaching upon the edges of the oak woodlands, and mortality of Douglas-fir along these edges has been noticeable during the last few years. In the mid-size vegetation condition class, suppressed shrubs and hardwood trees beneath the dominant tree canopy layer are dying. Pacific madrone and white and black oak have dropped out of conifer stands where light and water have become limiting. Dead whiteleaf manzanita may be found in the understory of some conifer stands and is indicative of a vegetation shift from shrubs to trees. This may also indicate that whiteleaf manzanita is the species that will pioneer the site following future disturbance. Other shrub species dying out of the conifer stands include deerbrush ceanothus, creambrush oceanspray, and serviceberry.

Currently, the stocking levels of stands throughout the project area are high. This is primarily due to the lack of natural disturbance and fire suppression. The average relative density for the area is .82 and indicates that physiologically the trees are at the point of suppression and mortality. The average tree vigor index is 43. Trees with vigor indices below 30 will succumb to attack from bark beetles of relatively low intensity. Trees with vigor between 30-70 can withstand progressively higher attacks but

are still in danger of mortality from the insect attacks. Trees with vigor between 70-100 can generally survive one or more years of relatively heavy attacks and trees with indices above 100 generally cannot be killed by bark beetles (Waring, 1980).

Bark beetle infestations are present in the project area. Western pine beetles (*Dendroctonus brevicomis*) are attacking the pines while flatheaded fir borers (*Melanophila drummondi*) and Douglas-fir beetles (*Dendroctonus pseudotsugae*) are killing Douglas-fir. Drought conditions and high tree stocking levels are severely stressing the trees physiologically, enabling the beetles to enter and kill the trees.

Forest pathogens are also changing the forest stand structure and forest development pattern. *Phellinus pini* (red ring rot) is affecting Douglas-fir and ponderosa pine. This rot appears to be more common in extremely droughty sites. Some of the infected trees are beginning to die or are subject to stem breakage thus allowing light to reach the forest floor and the understory reinitiation stage to begin. *Phaelous schweinitzii* (brown cubical butt rot) is also present. Some Douglas-fir dwarf mistletoe is also present in small areas.

In the project area, the overall average amount of coarse woody material (CWM) is approximately 12.4 tons per acre. The coarse woody material stem diameters were concentrated in the 9 to 34 inch classes at the large end and averaged 17.4 feet in length. Coarse woody material was most often found to be in a decomposition class 3 which is characterized by very little bark, no twigs, but a solid stem. Stand inventory data shows that there is a range of 13 to 91 damaged (includes physical defects or pathogens) trees/acre with an average DBH of 12.2 inches.

Direct, Indirect, and Cumulative Effects – No Action

No action would allow forest stands to remain overstocked and individual tree vigor and growth would remain poor. A 318 tree sample of dominant trees showed an average decadal radial growth of .4 inches or .80 inches diameter growth per decade in the Boaz project area. Dominant tree 10-year radial growth ranged from .1 to 1.65 inches. When diameter growth is less than 1.5 inches per decade, pine trees cannot pitch-out bark beetles and tree mortality results (Dolph, 1985).

Without action, forest structure and species composition could not be controlled. On pine sites, Douglas-fir would remain the most prevalent species and stands would remain in the stem exclusion stage of development until mortality or a fire occurs. Old-growth ponderosa pine and Douglas-fir trees with seedling size through pole size trees below and within their dripline would continue to die from competition for water. Pine and oak species would continue to decline in number from competition with Douglas-fir because of their shade intolerance. Leaf area index would decline as live tree crowns decrease in size from tree competition. With large tree mortality, forest stand structure would gradually shift to the understory reinitiation stage. This is a transition phase when trees in the main canopy layer start to die, either singly or in small groups, from lightning, wind-throw, or insects and disease. This is ecologically significant in that resources previously used by the dead tree are reallocated to the surviving vegetation. The hundreds of trees per acre also present a high fuel hazard across the landscape. No action contradicts the Medford District Resource Management Plan forest condition objectives in regard to forest health. The plan states that management emphasis be placed on treatments and harvests that restore stand conditions and ecosystem productivity.

With no forest stand density reduction, slow tree growth and vigor will result in individual tree and perhaps stand mortality. If severe stand mortality results, silvicultural options in the future will be reduced. It is possible that after bark beetle attack, there may be less than 16 trees per acre remaining in some forest stands. Hardwood tree, shrub and forb species would become more abundant and provide forage and hiding cover for big game animals. Habitat for some species of song birds would be enhanced.

Pine species would continue to decrease in number if large openings are not created for these shade intolerant species. The more shade tolerant Douglas-fir would continue to dominate the forest.

Where dense forest stands persist overtime, canopy closure would remain at 90 to 100 percent. When tree mortality is singular or in small patches, canopy closure may approach 50 to 80 percent. Where large patches of trees die, canopy closure would be 0 to 40 percent.

Fire hazard would increase with the abundance of dead vegetation and ladder fuels, and would be at maximum levels. Forest fires would likely burn with very high intensity and with a high probability of stand replacement.

Direct, Indirect, and Cumulative Effects – Proposed Action

The proposed prescriptions to be applied across the Boaz project area are based upon the present vegetation structure, species composition, aspect, and vegetation condition class, to allow for the creation of desired old-growth forest structure and the desired tree species over time. Through forest stand treatments, tree densities are reduced thus allowing for improved individual tree vigor and growth, and improved forest health. Forest stands receiving commercial thinning treatments that remove the smaller, weaker trees would be less subject to crown fires.

Numerous scientific studies reviewing thinning of Northwest conifer forests have shown increases in vigor and diameter growth. Analysis using the Southwest Oregon ORGANON growth model indicate that 10-year diameter growth would increase substantially versus the no treatment alternative if the stands are treated as prescribed in the project description. Trees will then be vigorous enough to withstand bark beetle attacks. Tree vigor index values should begin to increase after the stands are thinned.

The prescription meets the specifications of restoration thinning and density management as outlined in the Medford District Resource Management Plan. At the stand level there will be a decrease in fire hazard.

This project would treat 40 acres and would not help on the landscape level to restore forest health and reduce fire danger in the scale that is needed. As a demonstration project, it can help serve as an example of work that could be done on a broader scale.

By utilizing the treatment prescriptions, stand level forest health would be improved. The likelihood of larger Douglas-fir and pine trees remaining in the stand will be increased. There exists now within-stand variation in canopy closure and this variation would remain. Immediately after treatment the canopy closure would be approximately 50 - 60 percent. Over time the canopy closure will increase as the remaining trees grow and capture the resources of the site.

The adjacent untreated areas in the drainage will still be at risk to declining forest health, loss of tree vigor and loss from catastrophic wildfire. Mortality of untreated stands could cause epidemic levels of bark beetle species that could infect adjacent thinned forest stands.

B. Fire and Fuels

Affected Environment

Fire is recognized as a key natural disturbance process throughout southwest Oregon (Atzet and Wheeler 1982). Human-caused and lightning caused fires have been a source of disturbance to the landscape for thousands of years. Fire has played an important role in influencing successional processes. Large fires of varying severity were a common occurrence in the area based on analysis of individual tree fire scars and landscape vegetative patterns. The natural fire regime appears to have been "slowed" through human activities and fire suppression in this last century. In the early 1900s, uncontrolled fires were considered to be detrimental to forests. Humans moved into and developed homesteads and ranches intermingled

with publicly managed land. Suppression of all fires became a major goal of land management agencies. As a result of the absence of fire, there has been a very high accumulation of fuel and an increase in fire-prone vegetative conditions.

Based on calculations using fire return intervals, five fire cycles have been eliminated in the Southwest Oregon mixed conifer forests that occur at low elevations (Thomas and Agee 1986). Many seedling and pole size forests have failed to grow into old-growth forests because of the lack of natural thinning once provided by frequent fire. Consequently, old-growth forest habitat has not developed along with populations of old-growth dependent and related species. Species such as ponderosa pine and oaks have decreased as the elimination of fire has allowed Douglas-fir to grow in these once open stands. In addition, fire suppression has allowed these stands to become heavily stocked with Douglas-fir changing the horizontal and vertical stand structure. The threat of crown fires, which were once historically rare, has increased. The absence of fire has also had negative effects on grasslands, shrublands, woodlands, and riparian areas.

Direct, Indirect, and Cumulative Effects – No Action

The current trend of increasing stand density which results in increased mortality to the timbered stands would continue. The transition from ponderosa pine stands to excessively dense Douglas-fir stands would also continue within the project area. Trees growing under these conditions often become weakened and are highly susceptible to insect epidemics and tree pathogens. Younger trees (mostly conifers) contribute to stress and mortality of mature conifers and hardwoods.

Ladder and surface fuels would also increase within these stands. Increasing stand densities and fuel loadings would increase the chance of more acres that would burn in high intensity fires within the project area. Fire fighter safety would continue to be an issue as well as the potential of resource damage.

Air quality would be impacted in the event of a large wildfire. Emissions from wildfires are significantly higher than from thinning or prescribed burning. The wildfires which occurred in southern Oregon in 1987 emitted as much particulate matter as all the burning that occurred within the state that year.

Direct, Indirect, and Cumulative Effects – Proposed Action

The proposed thinning would reduce the overall density of the treated stands. These treatments would reduce some of the aerial fuels present in the stands. Some of the smaller diameter commercial trees that are proposed for harvest also act as ladder fuels. The combination of removing some of the aerial component as well as the ladder fuels would reduce the chance of sustaining a crown fire in these stands (Omi and Martinson 2002). Over time, the thinning would also increase diameter growth of the residual stand. Larger diameter trees are more tolerant to surface fires so there would be less mortality to the stand in the event of a surface fire. The thinning proposed would also favor the establishment of more fire tolerant species such as pine.

Treatments designed to reduce canopy fuels through density management, increase and decrease fire hazard simultaneously. Slash generated from the thinning of timber stands, if not treated, would create surface fuels that would be greater than current levels. Material up to 3 inches in diameter has the greatest influence on the rate of spread and flame length of a fire, which has direct impacts on fire suppression efforts. This project proposes to remove the smallest diameter classes of material during the thinning operation. This will reduce the overall fuel hazard considerably.

The removal of the 2-8 inch diameter class will result in ladder fuels in these stands being significantly reduced. The reduction of this material along with treatment of surface fuels would reduce fire behavior such as flame length and fire duration. With the reduction of flame length and fire duration the chance of a crown fire initiating in these stands would be greatly reduced. Also, mortality of the remaining conifers

would be reduced. The reduction of flame length would also increase the chance that direct attack of a wildfire could occur which would reduce acres burned in the event of a wildfire.

The reduction in stand density would make it possible to use prescribed fire as a tool to further reduce fire hazard in these stands. Many factors influence fire behavior and the effects fire will have on a resource. Some are beyond our ability to control such as the location of where a fire starts, weather and topography. Fuels management programs focus on the factor that can be influenced, fuels.

The commercial thinning of conifer stands, approximately 40 acres, proposed under this project will reduce the aerial component of fuel that is currently present. The fuels reduction work proposed for all of these stands will reduce the ladder and surface fuels. The whole yarding of trees and the removal of trees down to two inch diameter should create very low fuel loadings in the treated stands.

As previously discussed, fire is recognized as playing an important role in the development and maintenance of vegetative diversity in fire prone ecosystems such as those found in this project area.

While this project will help reduce fuel hazard in the individual areas treated, there will not be sufficient acreage treated to have a significant landscape level reduction in fire intensity in the watershed.

Areas being treated under this alternative will require a post treatment review to assess the need for additional fuel treatments in addition to the harvest and removal of material outlined in the project proposal. The areas treated may require hand piling and burning to bring the final fuel loadings down to the optimum level.

C. Soils

Affected Environment

The soils in the project area formed from material weathered from igneous, metamorphic, and granitic rock on hill slopes and alluvial fans. The major soil series identified in proposed project area is the Caris-Offenbacher complex (25G, 26G).

The Caris and Offenbacher soils are intermingled across the landscape forming the Caris-Offenbacher complex. Although these soils generally have surface textures of gravelly loam, soils for much of the project area are overlaid by stones forming talus. Not all of the talus is easily identified, as it is covered with a layer of needles, leaves, and twigs about one inch thick. The Caris and Offenbacher soils are moderately deep (20 to 40 inches), well drained, with moderate permeability and severe erosion potential. Erosion Hazard relates to the ease of detachment and movement of soil and rock particles. As with all soils, the runoff rate and the hazard of erosion due to water increases as the slope of the landscape increases and conversely as the presence of protective cover decreases. Also included in this area may be small patches of Schefflein and Tallowbox series soils.

Direct, Indirect, and Cumulative Effects – No Action

Under the No-Action Alternative, there would be no increase in erosion rates in the short-term. No density management or fuel reduction would occur. This would increase the potential for wildfire to occur in the project area. The increased fuel levels could result in a much more severe wildfire. Wildfire, even a severe fire, is a natural part of the landscape. However, severe fires have higher potential to devastate watersheds. The risk of severe fire in the watershed would continue to increase. A severe fire of any appreciable size would increase erosion and sedimentation rates dramatically. Such a fire could destroy riparian vegetation, increase sediment delivery and erosion potential, and destabilize stream channels. Negative soil impacts from a large, high intensity wildfire would be much greater and effect much more of the watershed than the proposed action.

There would be no increase in erosion rates short-term (unless a severe fire occurred) but no decrease in erosion and sedimentation rates long-term as a result of the no action alternative.

Direct and Indirect Effects of Alternative – Proposed Action

Soils in the project area are generally stable and the landslide hazard is considered low. No stands on areas of high landslide potential are being proposed for treatment and no entry into Riparian Reserve is proposed with this project. Soil disturbance would be limited to these localized areas with only a fraction of soils within each harvest unit disturbed. There would be no widespread areas of continuous soil disturbance. The commercial thinning activities planned would impact a very small portion of the Boaz. Approximately 10-15 acres would be tractor logged using designated skid trails. The remaining acres, approximately 25-30, would be skyline-cable logged using partial suspension

Erosion rates would be higher in the tractor units where the soil is disturbed and lower in the cable units. Although erosion rates would increase, most soil particles would remain on-site and very few soil particles are likely to reach any waterways because of the distance of the project from any active streams. See the Hydrology section for more information on sedimentation.

Most of the slash created by the logging would be removed from the site or treated to reduce the total fuel loading on-site. All tractor yarding would be accomplished using designated skid trails resulting in the compaction of no greater than 12 percent of the unit.

Cable yarding would result in low soil disturbance. Cable yarding subjects up to seven (7) percent of the unit to severe disturbance (Smith 1979). Because of the very small size of the proposed project the effects of soil compaction from it are negligible within the watershed. It is unlikely that there would be any noticeable effect from this small amount of disturbance.

The cumulative effects to the soil resource in the affected landscape area would be a moderate short-term increase in erosion rates which would last about three to five years. A slight long-term decrease in erosion rates would occur as the affected harvest units re-establish ground cover and the risk of severe wildfire is reduced. By way of contrast, the impacts of yarding material with cable logging is far less severe on the soil resource than a high intensity wildfire which can remove all organic material from the site and create hydro phobic soil conditions. A reduction in vegetation density as planned for in this project would mitigate compaction and help. Site productivity would also be enhanced by reducing the potential for severe wildfires.

Almost a century of fire exclusion has occurred in this area, consequently "natural" conditions no longer exist. Fuel loading is greater and duff/litter layers are often greater than would naturally occur. Given the natural fire frequency in this area, many low-severity fire events have likely been suppressed over the past century. Long periods of protection from fire are associated with fuel buildup (Agee, 1993), which leads to litter depths greater than would be expected under a more natural fire regime. Consequently, an uncontrolled wildfire event could be of such intensity so as to severely increase erosion and sedimentation, and also severely set back the community of microorganisms. For this reason, proposed treatments are considered to have a net positive influence on soil resources.

Additionally, site productivity can be enhanced by reducing the potential for hot, uncontrolled wildfires through: fuel reduction treatments, encouraging the building of soil organic matter, promoting hardwood species, maintaining an adequate duff and litter layer, and encouraging development of large woody debris (Amaranthus, *ibid.*).

D. Hydrology and Fish

Affected Environment

The proposed Boaz project area is located high on ridges in the headwater areas of the Boaz Gulch and Neds Gulch drainages in the Applegate River McKee Bridge Watershed, and the Grouse Creek and Waters Gulch (tributary to Yale Creek) drainages in the Little Applegate River Watershed. The *Applegate-Star/Boaz Watershed Analysis* (1998) and the *Little Applegate River Watershed Analysis* (1995) provides a general description of geomorphology, hydrology, water quality, stream channels, and riparian vegetation for the large basin level context around the project area.

Precipitation Regime

Average annual precipitation in the Boaz project area ranges from approximately 25 to 29 inches based on PRISM model calculations (Taylor, 1995). The project area is near the ridge tops of Boaz Mountain and Cinnabar Mountain. The elevations range from 3000 to 3500 feet. Summer months are typically very dry. Rain is the predominate form of precipitation in the project area with the majority occurring in the late fall, winter, and early spring. None of the project area is located in the Transient Snow Zone, so no analysis for Transient Snow Zone effects is included in this document.

Streamflow & Groundwater

Moderate to high streamflows usually occur between mid-November and April, with runoff peaking in February and March. The largest major flood flows in smaller tributaries probably occur in response to rare isolated major thunderstorms rather than in broader-scale winter flood events, although this has not been proven to be the case. The lowest streamflows generally occur in August and September. The project area has been surveyed by BLM to determine hydrologic features and associated Riparian Reserve locations. The project area does not contain any draws that exhibit defined channels or annual scour and deposition, so these areas are not classified as Riparian Reserves. Intermittent stream Riparian Reserves are located downstream from the project area. There are no springs, wetlands or other features within the project area that meet the definition of a Riparian Reserve

Upland Conditions Affecting Streamflow

Upland disturbances involving vegetation removal or soil compaction have the potential to affect the streamflow regime. Past road building, timber harvest, and agricultural land clearing have the potential to alter hydrologic processes (infiltration, interception, and evapotranspiration) in the Little Applegate River and Applegate River McKee Bridge watersheds. Changes to hydrologic function can result in increased magnitude and frequency of peak flows, which in turn can cause accelerated streambank erosion, scouring and deposition of streambeds, and increased sediment transport.

In the uplands of the watersheds, many shrub communities, conifer stands and woodlands have become very dense. Grass and other ground cover have been greatly reduced in some areas. Unnaturally high vegetation densities are a negative long-term impact largely brought on by historic fire exclusion policies and vegetation management that does not mimic natural disturbance. The very high vegetation densities in many portions of the watersheds substantially increase the risk of negative cumulative effects to the hydrologic/aquatic system should a major fire occur.

Water quality

The portions of the Applegate River, Little Applegate River, and Yale Creek below the project area are on the Oregon Department of Environmental Quality 1998 list of water quality limited streams, also known as the 303(d) list from Section 303(d) of the 1972 Federal Clean Water Act (CWA). These water bodies are listed for high summer stream temperatures. No streams in the project area are listed for any 303(d) list concerns (data from ODEQ website <http://waterquality.deq.state.or.us>). Although actions proposed in this project are not directly adjacent to the listed streams themselves, and there is no surface flow out of the project area, the cumulative effect of water quality originating from small drainages throughout the

Applegate Subbasin (the entire Applegate River drainage) is an important factor in the water quality of the river.

Fish and Aquatic Habitat

There are no intermittent, perennial, or fish-bearing streams within the project area. Units #1-#7 are on the ridge, approximately 2.5 miles from the Applegate River, which supports coho salmon (*Oncorhynchus kisutch*). Unit #8 is on the ridge approximately 3/4 mile away from Beaver Creek, and approximately 2 miles from the upper limit of steelhead in Beaver Creek. Coho are not found in Beaver Creek. The project units are not within coho Critical.

Direct and Indirect Effects - No Action Alternative

Direct Effects, Streamflow and Groundwater and Water Quality

Fish and Aquatic Habitat

The No Action Alternative would have no direct effects on streamflows, groundwater, stream channels, channel morphology, water quality, Riparian Reserves, or riparian areas. Because there are no intermittent or perennial streams within the project area, there would be no direct improvements or damage to fish and other members of the aquatic biotic community or to aquatic habitat.

Indirect Effects

Streamflow and Groundwater

The No Action Alternative would have no direct effects on streamflows or groundwater.

Water Quality

The No Action Alternative would have no indirect effect (beneficial or adverse) on stream temperatures in the project area, since stream shading would not be affected by the project. For the same reasons, this alternative would not have any beneficial or adverse effects on water temperatures in the Applegate River, Little Applegate River, or Yale Creek, all 303(d)-listed water bodies.

Fish and Aquatic Habitat

Without treatment, the gradual increase in vegetation density levels will increase the likelihood of severe fire effects in the project area, which, if they occurred, could present minor impacts to aquatic habitat in perennial streams and aquatic habitat below the project area.

Cumulative Effects – No Action Alternative

Streamflow, Groundwater and Water Quality

With the No-Action Alternative, there would be no change in conditions related to hydrology and fisheries described under the affected environment, and therefore it would not contribute directly to adverse cumulative effects. Increasing densities of vegetation would continue to use much of the available soil moisture, allowing very little to infiltrate to deeper soils where it could be available to larger trees and groundwater. Summer streamflows would continue to be lower than would be expected with more open stand conditions. Peakflows could also decrease due to reduced rates of runoff from the dense vegetation.

The Bobar landscape project is currently being planned in the Little Applegate and Applegate River McKee Bridge watersheds. The Bobar project proposes thinning forest stands to improve forest health and reduce fire hazard. The thinning of the smaller diameter materials and brush to grow larger and more fire-resistant trees would likely have a beneficial effect of reducing fire hazard and fire effects on a landscape scale.

Future timber harvests on private lands, particularly clearcutting, could temporarily increase peakflows on local streams. A future major fire would likely have negative consequences to both peakflows and groundwater, with stormflow running off much more quickly and less making it into groundwater.

Management actions on private lands that reduce stream shade, maintain riparian areas in open stand conditions, and divert water and return warm water flow (irrigation practices), as well as naturally warm climatic conditions could continue to prevent stream temperatures from meeting the State water quality criteria. Beneficial uses sensitive to stream temperatures, such as cold-water fish and other aquatic life, would not thrive under water temperatures that exceed the State criteria.

Fish and Aquatic Habitat

Downstream riparian habitat and condition would remain unchanged. The residential, commercial, agricultural and transportation impacts on lands in nearby mountains as well as streams valleys, rivers, and estuaries limit animal migration, block fish passage, divert water, and in general have seriously reduced riparian habitat. Consequently, severe fires or other landscape-level changes due to inaction may further impact already stressed riparian systems.

Direct and Indirect Effects – Proposed Action Alternative

Streamflow, Groundwater, Water Quality, Fish and Aquatic Habitat

The proposed project would not have any direct effect on stream temperatures. There are no Riparian Reserves or associated stream channels within the project area; therefore, stream shade cannot be compromised by the project. The Proposed Action would have no direct effect on instream sediment levels. This project would have no direct effect on any fish species or fish habitat.

Streamflow and Groundwater

There would be no effect to streamflow and groundwater due to the limited acres and the low impacts of the thinning treatments of the project, implementation of Project Design Features, and distance to Riparian Reserves and active stream channels.

Water Quality

The Proposed Action would have no indirect effect (beneficial or adverse) on stream temperatures in the project area, since stream shading would not be affected by the project, nor would there be any beneficial or adverse effects on water temperatures in the Applegate River, a 303(d)-listed water body. There would be no effect to other water quality parameters due to the limited timeframe of the project, implementation of Project Design Features, and distance to Riparian Reserves and active stream channels.

Fish and Aquatic Habitat

The Proposed Action is intended to improve forest health and vigor, move forest stands toward older tree dominance and reduce hazardous fuels and the risk of severe wildfire effects. This would have the indirect effect of reducing the risk of impacts to fish and aquatic habitat from wildfires. There would be no other indirect effects due to the distance from fish bearing streams and lack of active stream channels within the project area, combined with the limited timeframe of the project and implementation of the Project Design Features. There is no route for any fine sediments, disturbed soil, or slash to enter a stream channel and affect (positively or negatively) downstream aquatic habitat.

Determination of Effects to Southern Oregon Northern California (SONC) salmon, SONC Coho salmon Critical Habitat, and Essential Fish Habitat (EFH)

Under the Proposed Action, there would be no positive or negative effects from the proposed project on coho salmon, coho Critical Habitat or Essential Fish Habitat. Due to the distance of the treatment areas from coho habitat, lack of any active stream channels within the project area, and buffering nature of downstream Riparian Reserves, natural ecosystem processes would be maintained. No fine sediments flow problems or other potentially harmful physical changes would negatively impact downstream conditions and coho habitat.

Cumulative Effects – Proposed Action Alternative

Streamflow, Groundwater, and Water Quality

With implementation of the Proposed Action, vegetation densities would be reduced in the project area; thus, increasing the likelihood that wildfire would result in low severity rather than stand-replacement fire.

The thinning and periodic underburning of a large number of acres throughout the Boaz project area and greater Applegate subbasin could also improve hydrologic and riparian function. Summer streamflows may begin to improve in some streams as treatments produce more open stand conditions allowing greater infiltration of winter rains into groundwater. Peakflows may increase slightly from currently depressed levels. Possible future timber harvests on private lands, particularly clear cutting, could temporarily increase peakflows on local streams, but this effect would be short-lived as small trees and brushy vegetation grow up on those sites. Thinning in surrounding uplands would likely increase soil moisture available to riparian areas at certain times of year. Available groundwater could increase from such activities.

A major wildfire would likely have adverse consequences to both peakflows and groundwater, with stormflow running off much more quickly and less making it into groundwater. As more vegetation treatments designed to mimic the natural fire regime are completed on more of the landscape, the potential for severe wildfire effects would begin to decrease within the project area and at the landscape scale.

Stream temperatures in the area would continue to be heavily influenced by riparian conditions on private lands. The proposed project would help maintain a lower vegetation density within the project area, but would have no other effect on water quality. Overall improvement in stream temperatures depends on improvement in riparian conditions along many streams, particularly the larger, valley-bottom perennial streams that contain water during the times of the year when high stream temperatures are a concern. Management actions on private lands may still prevent stream temperatures in the Applegate River from meeting the State water quality criteria. Beneficial uses sensitive to stream temperatures, such as cold-water fish and other aquatic life, would not thrive under water temperatures that exceed the State criteria.

At the watershed scale, the Proposed Action would produce no detectible changes in streamflow or groundwater because of the small acreage involved and the minor change in vegetation condition that would result. The implementation of the Proposed Action would have no effect to riparian vegetation, stream shade, or sedimentation, and therefore would have no adverse effects to water quality. Considering this project with past, current, and reasonably foreseeable projects there is no potential for adverse cumulative effects to hydrologic function or water quality as a result of implementing this project.

Fish and Aquatic Habitat

Reduced wildfire impacts would lessen the risk of severe habitat impact to downstream fish. However, any small improvements may be offset by other human-caused problems as the valley population increases: continued floodplain development, industrial timber harvest, increased Off Highway Vehicles (OHV) erosion in the uplands, or road construction on private land. The proposed treatment would not contribute to adverse cumulative effects on fish.

E. Air Quality

Nonattainment Areas

In the past, the population centers of Grants Pass, Medford/Ashland (including Central Point and Eagle Point), and Klamath Falls were in violation of the national ambient air quality standards for particulate matter smaller than 10 micrometers (PM 10) and are classified as nonattainment for this pollutant. The nonattainment status of these communities is not attributable to prescribed burning. Major sources of

particulate matter within the Medford/Ashland nonattainment area is smoke from woodstoves, dust and industrial sources. The contribution to the nonattainment status of particulate matter from prescribed burning is less than 4% of the annual total for the Medford/Ashland air quality management area. Over the past seven years the population centers of Grants Pass and Medford/Ashland have been in compliance for the national ambient air quality standards for PM 10.

F. Special Status & Survey And Manage Plant Species And Noxious Weeds

Affected Environment

Qualified botany contractors surveyed the proposed project area for Bureau Special Status (BSS) and Survey and Manage (S&M) vascular plants as well as the federally listed *Fritillaria gentneri* in the spring of 1998 and again in the spring of 2002. No BSS, S&M or federally listed vascular plants were found.

Direct, Indirect, and Cumulative Effects

There would be no effects to any Bureau Special Status or Survey and Manage, or federally listed vascular plant species. There would be no effects to any Bureau Special Status or Survey and Manage nonvascular plant species.

NOXIOUS WEEDS

Affected Environment

At least two noxious weed species are known to exist alongside roads and in disturbed areas adjacent to the project area. These species are bull thistle (*Cirsium vulgare*) and yellow star thistle (*Centaurea solstitialis*).

Direct, Indirect, and Cumulative Effects

Project Design Features are included to minimize the potential to spread noxious weeds in the project area. With the implementation of Project Design Features the potential for the spread of noxious weeds is reduced.

G. Wildlife

Affected Environment

SPECIAL STATUS SPECIES

Special Status Species (SSS) include those species that are listed as threatened or endangered, are proposed for listing as threatened or endangered, or are a candidate for listing as threatened or endangered by the U.S. Fish and Wildlife Service, under the auspices of the Endangered Species Act (ESA) of 1973, as amended. Also included are those species listed by the BLM as Sensitive and Assessment species.

For this project, those species identified in the *Record of Decision and Standards and Guidelines for amendments to the Survey and Manage, protection Buffer, and other Mitigation Measures Standards and Guidelines (Jan 2001 S&M ROD)* will also be addressed as SSS.

Special Status Species known to occur in the proposed project area are as follows:

Pileated Woodpecker (*Dryocopus pileatus*)

The pileated woodpecker is a Bureau assessment species that is found throughout SW Oregon. Primary habitat is mature/old-growth coniferous forest in the Mixed Conifer and White Fir zones. This species is known to occur in the proposed project area. Although it has not been documented as nesting in the project area it almost certainly nests in the project area. No surveys for this species have been conducted in the proposed project area, none are required.

Northern Spotted Owl (*Strix occidentalis caurina*)

The northern spotted owl is listed as a Threatened species under the auspices of the ESA. This species uses the habitat in the proposed project. Five acres of the habitat in the proposed project area is classified as suitable for this species, which means that it is judged to be at a minimum, suitable for spotted owl roosting and foraging. One acre of the above figure is also suitable for nesting. There are no known spotted owl sites within the boundaries of the project area and one owl core is within 1.3 miles of the proposed project area.

Great Gray Owl (*Strix nebulosa*)

The great gray owl is a Bureau-Sensitive species that receives protection as a Survey and Manage species under the S&M ROD of 2001. Great gray owls in this part of their range nest in mature/late seral mixed conifer and white fir forests, and forage primarily in the meadows/grassland or early seral stand conditions of conifer forests. Two seasons of formal protocol surveys for this species have been conducted in the proposed project area. These formal surveys resulted in no great grey owl nest sites being located.

Western Bluebird (*Sialia mexicana*)

The western bluebird is a Bureau assessment species. Primary habitat is naturally occurring open areas or early seral conifer forest. Cavities in trees and snags occurring in open areas are natural nest sites for bluebirds. No surveys for this species have been conducted in the proposed project area, none are required. This species had been observed in the vicinity of the project area.

Siskiyou Mountain Salamander (*Plethodon stormii*)

This species occurs in surface rock habitat scattered throughout the Boaz watershed.

This is a Survey and Manage category D species in this part of its range according to the results from the 2001 Annual Species Review of the status of this species. The BLM is required to manage (protect) high priority sites for this species. However, the interagency process for identifying which known sites are high priority for management (protection) has not been established to date. In the absence of that

guidance the BLM is required to manage (protect) all known sites. None of the proposed Boaz units contain occupied habitat or known occupied sites.

Pacific Pallid Bat (*Antrozous pallidus*)

The Pacific pallid bat is a Bureau assessment species and is a Survey and Manage strategy 2 species in the ROD. Preferred habitat is canyons and other rocky areas near water sources in arid areas. This species is known to roost extensively in large snags on ridgetops in the Applegate Valley. This species has been documented foraging and roosting in large snags in the Ned's Gulch area near the proposed project area, and probably uses snags and rock outcrops throughout the proposed project area. No surveys for this species have been conducted in the proposed project area, none are required.

Special Status Species suspected to occur in the proposed project area.

California Mountain Kingsnake (*Lampropeltis zonata*)

The California mountain kingsnake is a Bureau assessment species. This species is known to occur throughout SW Oregon. Preferred habitat is oak-woodland and mountain chaparral plant communities in the Interior Valley and Mixed Conifer Zones. The non-conifer and forest edge areas adjacent to the proposed project area are suitable for this species. No surveys for this species have been conducted in the proposed project area, none are required.

Northern Goshawk (*Accipiter gentilis*)

This Bureau sensitive species is known to occur in the Little Applegate and star/beaver/palmer watersheds. The goshawk is a late successional habitat associated species in this part of its range. Nests are usually in the lower portion of the canopy in late successional stands. This species forages in a wide variety of habitats including open forest stands and openings. There are no known nest sites in or adjacent to the proposed project area. Pre-disturbance surveys are not required and none have been performed.

Golden Eagle (*Aquila chrysaetos*)

While the golden eagle is not listed under the ESA and is not a Bureau Sensitive species, it is protected under the auspices of the Bald Eagle Protection Act of 1940. There are no known nests in the proposed project area. This species uses late-successional forest habitat for nesting in this part of its range. Golden eagles build large nests in dominant overstory trees. Nest trees often have significant defect, such as a blown out top or unusually large branches, and are often among of the largest diameter trees in mature and old growth stands. Golden eagle nests in SW Oregon are usually on or near the tops of major ridges. There have been numerous incidental golden eagle sightings in the Lower Little Applegate valley and the Boaz area over the last 10 years. It is possible that there is an undiscovered nest near the proposed project area. No surveys have been conducted for this species; none are required.

Northern Saw-whet Owl (*Aegolius acadicus*)

The Northern Saw-whet Owl is a Bureau assessment species. Primary habitat is dense conifer forest intermixed with meadows in the Mixed Conifer and White Fir Zones. Little is known about this owl in SW Oregon. No surveys for this species have been conducted in the proposed project area, none are required.

Flammulated Owl (*Otus flammeolus*)

The flammulated owl is a Bureau assessment species that is occasionally observed throughout SW Oregon. Primary habitat is conifer forest intermixed with oak-woodland and grassland in the Mixed Conifer Zone. This species nests in cavities created by other bird species (pileated woodpecker, flicker) in large pine trees and snags. No surveys for this species have been conducted in the proposed project area, none are required.

Fisher (*Martes pennanti*)

The fisher is a Bureau assessment species. This species may occur in the proposed project area. Preferred habitat is dense conifer forests in the mixed conifer and white fir zones. There are no specific protection measures prescribed for this species. There is a population of fishers documented in the Williams area 15 miles to the west of the proposed project area, and the USFS has documented this species in the Steve Fork drainage approximately 12 miles south of the proposed project area. No surveys for this species have been conducted in the proposed project area, none are required.

American Marten (*Martes americana*)

The marten is a Bureau assessment species. This species may occur in the proposed project area, however, the low elevation forest types typical of the proposed project area make the presence of this species somewhat unlikely. Preferred habitat is mature/old-growth conifer forests that have an abundance of large down woody material and standing snags in the Mixed Conifer and White Fir zones. No surveys for this species have been conducted in the proposed project area, none are required.

Townsend's Big-eared Bat (*Plecotus townsendii*)

The Townsends big-eared bat is a Bureau sensitive, and Survey and Manage species. Preferred roosting habitat is caves, crevices, and abandoned mines. There are no known records of this species being present in the proposed project area. No surveys for this species have been conducted in the proposed project area, none are required.

Fringed Myotis (*Myotis thysanodes*)

The fringed myotis is a Bureau assessment species and is a Survey and Manage species. It appears to be a habitat generalist since it is found in both forested and non-forested habitats. Caves, crevices, abandoned buildings, or other similar structures are required for nursery colonies. There are no known records of this species being present in the proposed project area. No surveys for this species have been conducted in the proposed project area; none are required.

The following is a list of special status species that are **not likely** to occur in the proposed project area.

Western Pond Turtle (*Clemmys marmorata*)

Cascade Frog (*Rana cascadae*)

Tailed Frog (*Ascaphus truei*)

White Pelican (*Pelicanus erythrorhynchos*)

White-headed Woodpecker (*Dendrocopos albolarvatus*).

Black-backed Woodpecker (*Picoides arcticus*)

Northern Three-toed Woodpecker (*Picoides tridactylus*)

Bald Eagle (*Haliaeetus leucocephalus*)

Peregrine Falcon (*Falco peregrinus*)

Lewis' Woodpecker (*Asyndesmus lewis*)

Greater Sandhill Crane (*Grus canadensis*)

Pygmy Nuthatch (*Sitta pymaea*)

The proposed project area is within the known and suspected range of the Red Tree Vole, which is a Survey and Manage species. Formal, pre-disturbance surveys of all suitable habitat for this species in areas potentially were conducted according to applicable protocol in 1999. These surveys resulted in no detections of red tree voles or their nests.

Terrestrial mollusks

Surveys for terrestrial mollusks have been conducted in the proposed project area. No positive detections of Survey and Manage mollusk species were made as a result of these surveys.

Direct, Indirect, Cumulative Effects – No Action Alternative

This alternative would have no immediate affect on the species discussed below. However fuel accumulation in the area would continue and could facilitate stand replacement type wildfires in the event of an ignition. In the event of a stand replacement fire in the project area, many acres of suitable habitat for some or all of these species could be destroyed. It is impossible to determine the site specific, acute, effects of a theoretical, yet likely, wildfire.

The Applegate Valley is currently experiencing a die off of many large and medium sized trees. Large trees are important habitat components in forested stands for many species of wildlife. Dense stand conditions increase the affects of drought on large trees, leading to higher mortality than would occur in less dense stands. Large trees appear to be dying faster than they are being replaced by new growth. The continued death of large trees favors those wildlife species that specialize in the use of large snags and down wood, but this is at the expense of other species which prefer or require large live trees. The no-action alternative would allow the current process of large tree die off to take it's course and continue into the future because stand density would not be significantly reduced as is proposed under the action alternative.

Many natural openings, brushfields, and meadows in the project area are shrinking due to succession and encroachment. This process favors some species of wildlife which prefer or require more closed habitats with denser vegetation. This is at the expense of other species which prefer more open habitats. The no-action alternative would allow this process of succession and encroachment to continue unless and until a disturbance occurs which sets back the process.

Siskiyou Mountain Salamander (*Plethodon stormii*)

No action: No affect.

Northern Spotted Owl (*Strix occidentalis caurina*)

No action : No affect..

Northern Saw-whet Owl (*Aegolius acadicus*)

No action: No affect.

Golden Eagle (*Aquila chrysaetos*)

No action: No affect.

Great Gray Owl (*Strix nebulosa*)

No action: No affect.

Northern Goshawk (*Accipiter gentilis*)

No action: No affect.

Western Bluebird (*Sialia mexicana*)

No action: No affect.

Pileated Woodpecker (*Dryocopus pileatus*)

No action: No affect.

Flammulated Owl (*Otus flammeolus*)

No action: No affect.

California Mountain Kingsnake (*Lampropeltis zonata*)

No action: No affect.

Common Kingsnake (*Lampropeltis getulus*)

No action: No affect.

Fisher (*Martes pennanti*)

No action: No affect.

American Marten (*Martes americana*)

No action: No affect.

Pacific Pallid Bat (*Antrozous pallidus*)

No action: No affect.

Red Tree vole (*Arborimus longicaudus*)

No action: No affect.

Fringed Myotis (*Myotis thysanodes*)

No action: No affect.

Other Special Status Species

The following is a list of special status species that would not likely be affected by the action alternative. They (or their habitat) are not known or suspected to occur in the proposed project area, or no negative affect to their habitat is anticipated under either action alternative.

Bald Eagle (*Haliaeetus leucocephalus*)
Peregrine Falcon (*Falco peregrinus*)
Lewis' Woodpecker (*Asyndesmus lewis*)
Greater Sandhill Crane (*Grus canadensis*)
Western Meadowlark (*Stunella neglecta*)
White Pelican (*Pelicanus erythrorhynchos*)
White-headed Woodpecker (*Dendrocopos albolarvatus*).
Black-backed Woodpecker (*Picoides arcticus*)
Northern Three-toed Woodpecker (*Picoides tridactylus*)
Pygmy Nuthatch (*Sitta pymaea*)
Western Pond Turtle (*Clemmys marmorata*)
Cascade Frog (*Rana cascadae*)
Tailed Frog (*Ascaphus truei*)

Townsend's Big-eared Bat (*Plecotus townsendii*)

Direct, Indirect, Cumulative Affects – Proposed Action

This proposed project would have some affects in the short term on species which use closed canopy forest. In the long term, large tree habitat development would be accelerated and the risk of catastrophic loss of the stands in questions from fire would be reduced.

Siskiyou Mountain Salamander (*Plethodon stormii*)

This proposed project does not enter salamander habitat. Since no habitat would be impacted by this project there would be no direct, indirect or cumulative affect for this species.

Northern Spotted Owl (*Strix occidentalis caurina*)

This project occurs within the provincial home range radius (1.3 miles) of 1 known spotted owl site. The loss of suitable habitat within the provincial home range radius constitutes Incidental Take of these owl sites. Incidental Take and the loss of suitable spotted owl habitat as a result of this proposed project requires consultation with the U.S. Fish and Wildlife Service (USFWS). This consultation occurred as part of the Medford District programmatic consultation for fiscal year 2003 projects. A Biological Opinion addressing this consultation was issued by the USFWS on October 12th, 2001. The USFWS concluded that the projects covered in the consultation were not likely to jeopardize the survival of the spotted owl as a species.

Table 1 (below) displays the anticipated changes to spotted owl habitat suitability under this alternative.

Table 1. Spotted Owl habitat changes anticipated under the proposed action alternative of the Boaz project.

Current habitat rating		Post-harvest habitat rating	Acres
Suitable	----->	Suitable	0
Suitable	----->	Dispersal	5
Suitable	----->	Non-habitat	0
Dispersal	----->	Dispersal	35
Dispersal	----->	Non-habitat	0

Northern Saw-whet Owl (*Aegolius acadicus*)

There is a possibility that nest sites (snags) and foraging habitat would be reduced, lost or degraded to some degree on 40 acres.

Golden Eagle (*Aquila chrysaetos*)

No affect.

Great Gray Owl (*Strix nebulosa*)

No affect.

Northern Goshawk (*Accipiter gentilis*)

Canopy closure would be reduced below 50% on approximately 40 acres of forest habitat. These acres would be potentially less suitable for nesting goshawks.

Western Bluebird (*Sialia mexicana*)

No affect.

Pileated Woodpecker (*Dryocopus pileatus*)

No affect

Flammulated Owl (*Otus flammeolus*)

No affect.

California Mountain Kingsnake (*Lampropeltis zonata*)

The proposed action is unlikely to affect this species.

Common Kingsnake (*Lampropeltis getulus*)

The proposed action is unlikely to affect this species.

Fisher (*Martes pennanti*)

No affect

American Marten (*Martes americana*)

This species is unlikely to occur in the Boaz project area.

Pacific Pallid Bat (*Antrozous pallidus*)

No affect

Red Tree vole (*Arborimus longicaudus*)

No affect.

Fringed Myotis (*Myotis thysanodes*)

No affect.

Special Status Terrestrial mollusks

No affect.

Other Special Status Species

The following is a list of special status species that would not likely be affected by the proposed action. They (or their habitat) are not known or suspected to occur in the proposed project area, or no negative affect to their habitat is anticipated under either action alternative.

Bald Eagle (*Haliaeetus leucocephalus*)

Peregrine Falcon (*Falco peregrinus*)
Lewis' Woodpecker (*Asyndesmus lewis*)
Greater Sandhill Crane (*Grus canadensis*)
Western Meadowlark (*Stunella neglecta*)
White Pelican (*Pelicanus erythrorhynchos*)
White-headed Woodpecker (*Dendrocopos albolarvatus*).
Black-backed Woodpecker (*Picoides arcticus*)
Northern Three-toed Woodpecker (*Picoides tridactylus*)
Pygmy Nuthatch (*Sitta pymaea*)
Western Pond Turtle (*Clemmys marmorata*)
Cascade Frog (*Rana cascadae*)
Tailed Frog (*Ascaphus truei*)
Townsend's Big-eared Bat (*Plecotus townsendii*)

Cumulative Effects – Proposed Action

There are 46,884 acres of federal land in the Applegate-Star/Boaz Watershed area, of which the proposed project is a part. In the last five years, approximately 6,500 acres of vegetation have been thinned in the Applegate-Star/Boaz Watershed. In the foreseeable future, approximately 3,000 acres are planned for thinning on federal land in this watershed during the period from 2003 through 2006. The Proposed Action alternative is a very small piece of the large-scale effort to restore forest health and reduce fire hazard.

H. Aquatic Conservation Strategy Objectives

The Proposed Action Alternative would meet all the requirements of the Aquatic Conservation Strategy. The distribution, diversity, and complexity of watershed and landscape scale features, the spatial and temporal connectivity within and between watersheds, and the timing, variability, and duration of floodplain inundation and water table inundation in meadows and wetlands would all be unaffected. The limited timeframe of the project, implementation of Project Design Features, and distance to Riparian Reserves and active stream channels would ensure that instream flows and the timing, magnitude, duration, and spatial distribution of peak, high, and low flows would be maintained. For the same reasons, there would be no affect on water quality or the riparian, aquatic, and wetland ecosystems. There are no Riparian Reserves in the project area.

I. Cultural Resources

The project area was surveyed for cultural resources in FY 98. Sites discovered by the survey are located outside of the project area. Since there are no known sites in the project area so no negative impacts to cultural resources are anticipated from the proposed project.

J. CRITICAL ELEMENTS

The following elements of the human environment are subject to requirements specified in statute, regulation, or executive order and must be considered in all EAs.

Critical Element	Affected		Critical Element	Affected	
	Yes	No		Yes	No
Air Quality		✓	T & E Species		✓
ACECs		✓	Wastes, Hazardous/Solid		✓
Cultural Resources		✓	Water Quality		✓*
Farmlands, Prime/Unique		✓	Wetlands/Riparian Zones		✓
Floodplains		✓	Wild & Scenic Rivers		✓
Nat. Amer. Rel. Concerns	?	✓	Wilderness		✓
Invasive, Nonnative Species		✓**	Energy Resources (EO 13212)		✓
			Environmental Justice		✓

*These affected critical elements could be impacted by the implementing the Proposed Action. Impacts are being avoided by project design specifications.

**These affected critical elements would be impacted by implementing the Proposed Action. The impacts are being reduced by designing the Proposed Action with Best Management Practices, Management Action/Direction, Standard and Guidelines as outlined in the Environmental Impact Statements (EIS)/Record of Decisions (RMP) (USDI BLM 1995)(USDA FS; USDI BLM 1994) tiered to in Chapter 1. The impacts are not affected beyond those already analyzed by the above-mentioned documents.

CHAPTER 4: CONSULTATION WITH OTHERS

An interdisciplinary team of resource specialists reviewed the proposal and all pertinent information, and identified relevant issues to be addressed during the environmental analysis.

Scoping

Scoping was accomplished through a number of outreach methods.

The Boaz project was listed in the Bureau of Land Management's project announcement newsletter, Medford's Messenger, Summer 2002 issue. Medford's Messenger is mailed to over 800 contacts that have requested to be informed of BLM projects.

The Medford's Messenger project list is also posted on the BLM Medford District web site.

The following meetings and presentations took place in Jackson County, Oregon.

A presentation was made to the Medford District Bureau of Land Management Resource Advisory Council meeting March 27, 2002.

A presentation was made to the Southern Oregon Regional Economic Development, Inc (SOREDI) July 18, 2002.

A field trip for the Medford District Bureau of Land Management Resource Advisory Council, July 25, 2002

A presentation to Headwaters was made August 5, 2002.

A presentation to Collaborative Learning Circle was made August 15, 2002.

A presentation to Community-based Forestry Congressional Tour in Trinity County was made August 15-18.

A scoping tour for community members, Resource Advisory committee members, local federal agencies and other non-government organizations on August 28, 2002

A presentation about the project was made at the Collaborative Learning Circle National Fire Plan Workshop on October 18, 2002.

EA Availability and Distribution List

Upon completion of this EA, a legal notification was placed in the Medford Mail Tribune offering a public review and comment period. For additional information, please contact Ed Reilly at (541) 618-2384.

References Cited

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