PINECRAFT HAZARDOUS FUELS REDUCTION PROJECT

ENVIRONMENTAL ASSESSMENT OR-06-025-059

Bureau of Land Management
Burns District Office
28910 Hwy 20 West
Hines, Oregon 97738

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CHAPTER I: INTRODUCTION; PURPOSE OF AND NEED FOR ACTION

A. Introduction

The Burns District of the Bureau of Land Management (BLM) proposes to implement a multi-staged hazardous fuels reduction project. Proposed activities to mitigate hazardous fuels would include noncommercial and commercial thinning, and various applications of prescribed fire. The project is within dry ponderosa pine forest and woodland in the Craft Point and Pine Creek project sites in the Three Rivers Resource Area (RA).

The project is located in Harney County approximately 5 to 8 air miles northwest of Buchanan, Oregon. The Project Area is approximately 1,200 acres of BLM-administered lands intermixed with private and State land. Additionally, it is bordered on the northern edge by U.S. Forest Service (USFS) administered lands. Of the 1,200 acres, 732 are to be treated with the proposed action. The remaining 468 acres would have no treatment. The project encompasses the following legal locations: Craft Point – Sections 13, 24, and 25, in T. 21 S., R. 32.5 E.; Pine Creek – Sections 14, 15, 16, 17, and 26, in T. 21 S., R. 33 E. (Map 1, Appendix B). The project implementation would begin in fiscal year 2007 and continue over a 5 to 7-year period.

The overall Project Area is dominated by ponderosa pine *(Pinus ponderosa)*/mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*)/Idaho fescue (*Festuca idahoensis*) habitat, with a small community of ponderosa pine/Utah snowberry *(Symphoricarpos oreophilus* Gray var. *utahensis)*/sedge *(Carex L.)* in the northwest portion of the Project Area. There are scattered deteriorating stands of quaking aspen (*Populus tremuloides*), black cottonwood (*Populus balsamifera* ssp. *trichocarpa*) and mountain mahogany (*Cercocarpus ledifolius* var. *intercedens* Schneid.) throughout the Project Area. There is a decline in several shade intolerant species of shrubs and trees, including chokecherry (*Prunus virginiana*), bittercherry (*Prunus emarginata*), and serviceberry (*Amelanchier alnifolia*) which are valuable as wildlife forage. Western juniper (*Juniperus occidentalis* Hook) as well as Douglas-fir (*Pseudotsuga menziesii*) and grand fir (*Abies grandis*) have become more prevalent within the ponderosa pine stands over the past 100 to 150 years due to the reduction of natural fire frequency.

The forests of the Pacific Northwest are classified into five Fire Regimes (FRs) and three separate Condition Classes (CCs) [1]. The FR and CC describe the degree of departure from historical FRs as influenced by a number of modern human based activities (Schmidt 2002). Historic plant communities in the Project Area consisted mainly of an understory of grasses and sagebrush, with a scattered overstory of ponderosa pine and patches of mountain mahogany. Western juniper was found primarily on rocky outcrops and ridgelines and occasionally established in the low open areas. Quaking aspen was predominantly found along areas of high moisture content, such as streambeds and along the north side of ridges. These plant communities are classified as FR I, CC 1, where frequent (0-35 year) low severity fires consumed recent accumulations of duff, litter, and many of the small diameter trees. Such fire would control ponderosa pine densities, keep western juniper to the higher rock outcrops, remove or limit Douglas-fir and grand fir, and regenerate aspen sites. The sites within the Project Area are largely within an FR I, CC 3, which consists of understory of scattered grasses, shrubs, and sagebrush, with a dense multi-layered overstory of ponderosa pine and an establishment of Douglas-fir and grand fir. Currently, without aggressive wildfire suppression, these areas would be at high risk of losing key ecosystem components. Implementing the proposed treatments would move these sites toward a more historic plant community described as FR I, CC 1. These treatments would create a variable density forest that includes pockets of thermal cover and browse for wildlife to savanna-like areas of historic ponderosa/bunchgrass plant communities (Hessburg 2005).

B. Purpose of and Need for Action

Prior to fire suppression efforts in the early 1900s, ponderosa pine and quaking aspen historically dominated the plant communities within the Project Area. Due to fire suppression and little to no forest management, there has been an increase in both ponderosa pine densities and offsite conifers. Fire suppression has shifted these sites from an FR I, CC 1 to a current FR I, CC 3.

Offsite conifers, primarily western juniper, Douglas-fir and grand fir, have become intermixed with these ponderosa pine communities causing a change in historic plant communities. Within the current understory, Douglas-fir and grand fir are found on many of the north facing slopes along the northern edge of the Project Area. These north facing slopes typically retain more moisture and are shaded longer during spring months, providing ideal growth condition for these shade intolerant species. Western junipers are found intermixed along the edges of and occasionally within ponderosa pine stands and mountain big sagebrush communities. The offsite conifers make ponderosa pine and mountain big sagebrush communities more susceptible to a sustained canopy wildfire conditions by increasing vertical ladder fuels and canopy densities and continuity.

[1] Appendix A – Tables 2 and 3 gives an overview of the Fire Regimes and Condition Classes.

In addition, ponderosa pine stands have become overstocked with seedlings, saplings, pole timber and small sawtimber[2] within the canopy layers. Risk of crown fire would increase as density and cover of trees increase. Understory trees, shrubs and herbaceous plants would continue to decrease as dominant tree cover increases. These understory plants function as surface and ladder fuels increasing flame length and intensity and providing a route for fire to travel into the canopy. Under dense forest conditions, the dominant tree canopy may form a nearly continuous layer. As the overstory canopy increases, so does the risk of independent canopy fires. The dense overstory canopy also produces a continuous fuel layer, increasing risk of larger fires. Historically, canopy fires were an extremely rare event in open ponderosa pine forests occurring under extreme conditions. However, today canopy fires are much more common because of the continuous fuel layer in the canopy. After burning there are fewer plants to reestablish herbaceous and shrubby plant communities needed to start succession. The burned area is at risk from invasion by undesirable introduced plants and noxious weeds. As the ponderosa pine approaches its maximum carrying capacity, mortality would increase, thus increasing fuel loading. Within the dense ponderosa pine communities is a scattered component of older fire resistant ponderosa pine. This older ponderosa pine component is threatened by existing surface fuels, fuel ladders, tree densities, sustained crown fire and tree mortality due to drought, resource stress, and insects and diseases. Protection of the older overstory pines requires active management to prevent a stand replacing event.

Within the Project Area, both quaking aspen and mountain mahogany are in decline. These communities are becoming overgrown by conifers, either through direct competition or over shaded. Bunchgrasses and forbs, important forage for elk, mule deer, antelope, domestic livestock and avian species, have been reduced or are completely absent in plant communities in closed canopy ponderosa pine forest stands. Key wildlife browse species such as mountain mahogany, bittercherry, chokecherry, and serviceberry are declining under the closed canopy of ponderosa stands. Additionally, residential and recreational structures have become established over the past 20 years. These structures will be considered as wildland urban interfaces in the analysis of this Environmental Assessment (EA).

Because of the undesirable conditions described above, the objectives of the Pinecraft Hazardous Fuel Reduction project are to reduce surface fuel loading, vertical ladder fuels, crown density and continuity to prevent sustained crown fire, and reintroduce low severity and intensity fire back into the ecosystem. This would return current high density ponderosa pine and associated plant communities (FR I, CC 3) back to an open historic plant communities of FR I, CC 1. Additional objectives associated with reducing hazardous fuels include protecting life, property, and resource value on private and public lands, increase the safety for wildland firefighters, protection of local residences and structures, protection of residual, old, fire resistant ponderosa pine and improvement of the health, vigor, and resiliency of fire dependent plant communities, improve wildlife habitat and functional condition of the streams.

[2] Size classes are described as followed: Seedling/sapling up to 5 inches Diameter at Breast Height (DBH), pole timber from 5 to 11inches DBH, small sawtimber is 11 to 21 inches DBH, and large sawtimber is 21 inches and greater DBH.

In order to meet objectives, a reduction of stocking and fuel loadings in ponderosa pine stands, raising canopy base height, and opening canopy density are needed. Additional benefits include improved growth and vigor of ponderosa pine, quaking aspen and mountain mahogany, a reduction of insect and disease outbreaks that cause further fuel loadings, and improved watershed function. The quality and productivity of forage species available to wildlife and livestock in the planning area would also be improved. As part of fuels reduction, capturing economic value of material (trees and other forest products) removed during commercial thinning would reduce treatment costs and supply raw materials and jobs that contribute to community economic stability.

To accomplish the purpose and need for action, the following decision factors will be used in selection of an alternative.

Decision factors: In choosing the alternative that best meets the project objectives, BLM will consider the extent to which each alternative would:

1. Decision Factor: Does the objective maximize protection of life, property, and high value sensitive resources from the detrimental effects of wildfire? Fire Management Objective FM 1.0 (RMP/FEIS, p. 2-101):

2. Decision Factor: Does the alternative maintain, restore, or enhance the diversity of plant communities and plant species in abundances and distributions which prevent the loss of specific native plant community types or indigenous plant species within the RA? Vegetation Objective V 1.0 (RMP/FEIS, p. 2-51)

3. Decision Factor: Would the implementation of the selected alternative maximize the beneficial use of prescribed fire and wildfire to achieve other resource management objectives under the alternative? Fire Management Objective FM 2.0 (RMP/FEIS, p. 2-106)

4. Decision Factor: Does the alternative provide enhancement of habitat diversity, minor forest products, watershed protection, and rangeland productivity? Forestry and Woodlands Objective F 1.0 (RMP/FEIS, p. 2-24)

5. Decision Factor: Would the alternative restore, maintain, or enhance the diversity of plant communities and wildlife habitat in abundances and distributions which prevent the loss of specific native plant community types or indigenous wildlife species habitat within the RA? Wildlife Objective WL 7.0 (RMP/FEIS, p. 2-74)

6. Decision Factor: Can the selected alternative resolve resource conflicts and achieve management objectives as identified for each allotment? Grazing Management Objective GM 1.0 (RMP/FEIS, p. 2-33)

7. Decision Factor: Does the alternative manage the portion of 7,772 acres of identified commercial forestland timber base for a nondeclining sustained yield? Forestry and Woodlands Objective F 1.0 (RMP/FEIS, p. 2-21)

Chapter II (Alternatives Including the Proposed Action) compares the proposed action and the no action alternative. Chapter III (Affected Environment/Environmental Consequences) summarizes the physical, biological, social, and economic environments of the Project Area and presents potential effects of implementing the no action and proposed action alternatives.

C. Conformance with Applicable Land Use Plans and National/Local Guidance

The Pinecraft Hazardous Fuels Reduction EA is tiered to the Three Rivers Resource Management Plan/Final Environmental Impact Statement (RMP/FEIS), and Rangeland Program Summary, which was approved September 1991, and incorporates by reference relevant sections contained therein.

In addition to the RMP/FEIS, this analysis is strengthened by objectives and guidance provided by the National Fire Plan (NFP), the 10-Year Strategy Implementation Plan and Harney County Community Wildfire Protection Plan (CWPP).

The NFP was developed in August 2000, following a landmark wildland fire season, with the intent of actively responding to severe wildland fires and their impacts to communities while ensuring sufficient fire fighting capacity for the future. The NFP addresses five key points: Fire Fighting, Rehabilitation, Hazardous Fuels Reduction, Community Assistance, and Accountability[3]. The purpose and need for action address four of the five key points:

1. Fire Fighting: Priorities are agencies of the Departments of Agriculture and Interior to maintain a fire fighting organization, which is capable of fire suppression to protect life and property in as safe a manner as possible, and ensure firefighter training and leadership through various academies.
2. Hazardous Fuels Reduction: Hazardous fuels reduction treatments are designed to reduce the risks of catastrophic wildland fire to people, communities, and natural resources while restoring forest and rangeland ecosystems to closely match their historical structure, function, diversity, and dynamics.
3. Community Assistance: Community participation is at the core of carrying out citizen-driven solutions to reduce the risks of fire in the wildland/urban interface. Agencies provide support for educating citizens on the effects of fire, community fire protection planning, and training and equipping rural and volunteer firefighters. Through a variety of grant programs including rural, State, and Volunteer Fire Assistance and Economic Action Programs, delivered by the Agencies and the State Foresters, communities can take action to live safely in fire-prone areas.
4. Accountability: Oversight, coordination, program development, integration, and monitoring are critical to successful implementation of the NFP.

[3] National Fire Plan: www.fireplan.gov

By using the above four key points it is hoped that implementation of the fifth key point Rehabilitation will be avoided.

Additionally, the proposed action responds to the goals of A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: *10-Year Strategy Implementation Plan*[4]. The 10-Year Strategy Implementation Plan was derived from the national attention given to the 2000 wildfire season. The plan was submitted by a group of Federal, State, and county agencies such as the Western Governors' Association, Secretaries of the Departments of Agriculture and Interior, and many others including southern governors, counties, and Tribes. This diverse group recognized that effective management depends on adaptation as new processes, techniques, and research become available and make fuels management efforts more effective; the plan would then be reevaluated.

The goals of the 10-Year Strategy Implementation Plan are:

1. Improve fire prevention: Losses of life are eliminated, and firefighter injuries and damage to communities and the environment from wildfires are reduced.
2. Reduce hazardous fuels: Hazardous fuels are treated, using appropriate tools, to reduce the risk of wildfire to communities and to the environment.
3. Restore fire-adapted ecosystems: Fire-adapted ecosystems are restored and maintained, using appropriate tools, in a manner that will provide sustainable environmental, social, and economic benefits. Lands damaged by wildfire recover to a desired condition.
4. Promote community assistance: Communities at-risk have increased capacity to prevent losses from wildland fire and realize economic benefits resulting from treatments and services.

The Harney County CWPP is founded on the NFP and the related 10-Year Strategy Implementation Plan in Harney County (PF-IRA-006, DNRC et al. 2005). The CWPP was completed in July 2003 through a collaborative effort with a diverse group of interested parties. The purpose and need of the proposal are in conformance with the CWPP goals of:

1. Managing hazardous fuel

   With the objectives of:
   - Sustain a long-term, landscape approach to fuel management that focuses on high wildfire risk areas.
   - Identify priority fuel treatments based on risk assessment and apply for NFP grants and other funding sources.
   - Focus strategic hazardous reduction projects on communities at high risk.

[4] http://www.fireplan.gov/reports/10-YearStrategyFinal_Dec2006.pdf

The CWPP recommends that hazardous fuels reduction projects focus on FRCC 3 (Chapter 5, Wildfire Mitigation Plan) lands and private landowners collaborate with Federal agencies to make fuels management efforts more effective.

Finally, the proposal is in compliance with Federal, local, State, and Tribal laws, regulations, and land use plans.

D. Issues Considered but not Analyzed Further

The general Project Area was evaluated for the presence of wilderness characteristics in May of 2007 by an Interdisciplinary Team (IDT) based on information about current resource conditions and materials submitted by a citizen group as part of scoping for this project. The IDT found that units which include the Project Area do not contain wilderness characteristics; therefore, this issue will not be analyzed further.

CHAPTER II: PROPOSED ACTION AND ALTERNATIVES

A. No Action Alternative

Under the no action alternative, conditions would continue to deteriorate within the Project Area. There would not be a reduction of surface and ladder fuels, or a reduction in conditions that would carry a sustained crown fire. Selection of the no action alternative would not reduce the increase of offsite Douglas-fir, grand fir or western juniper, or reduce threat to structures found in or near the Project Area. Quaking aspen, black cottonwood, and mountain mahogany would continue to decline and be replaced by more shade tolerant conifers (Bartos 1998). The no action alternative would not remove or relocate any existing roads away from riparian zones and drainages or improve any quality wildlife forage, enhance water quality or promote a healthy forest. These conditions, if left untreated, would continue with the current trend of large stand replacing fires that have occurred throughout the western United States in the past two decades. These fires have threatened or destroyed property and resources and the lives of private landowners and wildland firefighters. Figure 1 shows current and continued conditions of the no action alternative.

B. Proposed Action

The proposed action is to utilize a combination of prescribed burning and silvicultural methods to reduce the chance of sustained crown fire on 1,200 acres of ponderosa pine dominated forest within the Craft Point and Pine Creek Project Area. Within the Project Area, 60 acres have had past commercial removal and 387 acres of thinning with full suppression of all fires in the past 90 years. To return these stands to a historical ponderosa pine community it is necessary to continue reducing surface, ladder, and continuous canopy fuels in stages (Agee 2005). Figure 2 gives an example of current understory conditions that threaten older overstory pine and other plant communities.

The four principles of achieving fire-resistant forests are: 1) reduce surface fuels by prescribed fire and biomass removal; 2) increase canopy base height by noncommercial thinning, pruning, and prescribed fire; 3) decrease crown density by commercial thinning to recommended stocking levels, and 4) retain larger diameter trees (Peterson 2003). Figure 3 shows the overall Project Area.

1. Silvicultural Treatments for Hazardous Fuels Reductions: Noncommercial and Commercial Thinning

   Noncommercial thinning selectively removes understory trees less than 9 inches in DBH[5]. Thinning of the understory reduces canopy cover, reduces understory canopy bulk density and raises canopy base height to prevent the potential for active crown fires (Allen 2002). In an observation made by Cram et al. (2006), mechanical treatments followed by prescribed fire had the greatest influence on crown fire mitigation. Response to thinning decreases basal area[6], increases mean tree diameter, and decreases fire severity (Cram 2006). Thinning retains the best formed trees for future overstory replacement. Protection of structures may also be accomplished with noncommercial thinning. Thinning an additional 50 feet from private property in conjunction with current management actions taken by a landowner increases the safety zone for structures. Although noncommercial (< 9 inches DBH) thinning reduces ladder fuels, it does not prevent fires from accessing the overstory canopy (Fiedler 2004). Current average tree density across the Project Area is 180 square feet of basal area in the overstory, placing current tree densities well above recommended stocking levels for all plant community types. Further reduction in tree density is needed in the intermediate and codominant overstory to reduce additional vertical fuel ladders and canopy continuity. Commercial thinning of trees greater than 9 inches DBH, to recommended stocking levels[7], would be applied to decrease BA/A (and break up the overstory canopy continuity within the ponderosa pine community. The combination of thinning activities would also break up fuel continuity by partially removing both understory and overstory creating a variety of openings to avert active crown fire and provide sunlight to the forest floor. Reduction of the current basal area within the stand would decrease ladder fuels and stocking levels, thus return these stands to a natural variable density ponderosa pine savanna (Fiedler 2004). Commercial thinning would retain the largest and best formed trees for overstory retention. In addition, retention of the older codominant and dominant overstory thick bark ponderosa pine and Douglas-fir preserves existing and provides for future fire resistant trees within the planning area. Ponderosa pine, Douglas-fir, and grand fir of 10-inch diameter and greater removed by thinning would be used as timber products.

[5] Breast height is 4.5 feet above the highest ground surface.

[6] Basal area is the cross-section of a single stem, including bark, measured at 4.5 feet above ground. Basal Area per Acre (BA/A) is a measure of all stems within an acre. It measures the amount of space (in square feet) a tree occupies relative to the space (in square feet) found in an acre.

[7] Powell (1999) recommends the following BA/A for each of the following community types: 30 ft^2 – 45 ft^2 in mountain mahogany stands, 25 ft^2 – 40 ft^2 in bunchgrasses, and 50 ft^2 – 75 ft^2 for snowberry.

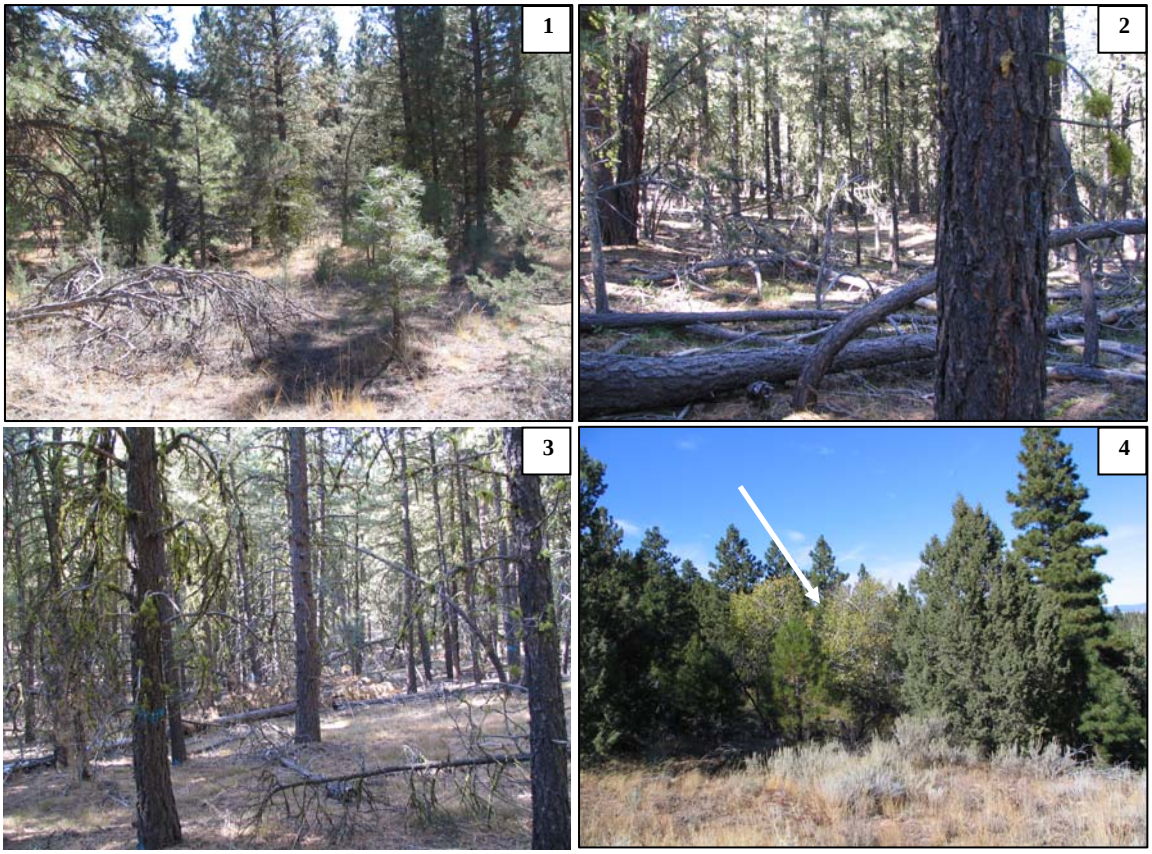

Figure 1 – Examples of continued No Action Alternative, 1) continued mortality in mahogany due to shading, 2) fuel loading due to insects,3) mortality from competition, and 4) aspen further encroached by conifers (white arrow points to aspen).

2. Silvicultural Treatments for Canopy Base Height: Pruning – Mechanical and Nonmechanical

Pruning may be used to remove lower limbs of trees in areas where understory conifer would be damaged by prescribed fire. This can be done by mechanical means or prescribed fire depending on stand density and time of year. Mechanical pruning would be used to raise canopy base height[8] thus reducing ladder fuels. Minimum height for pruning depends on tree height, but maintains at least 50 percent of the trees live crown. One advantage to mechanical pruning is trees are not accidentally consumed by prescribed fire. Mechanical pruning is accomplished by thinning understory trees or by physically cutting branches.

[8] Canopy base height is defined as the lowest height in feet above the ground at which canopy branches are available to cause fire to move from a surface fire, through the canopy and into an active crown fire.

Figure 2 – Example of overstocked ponderosa and the effects of mountain pine beetle.

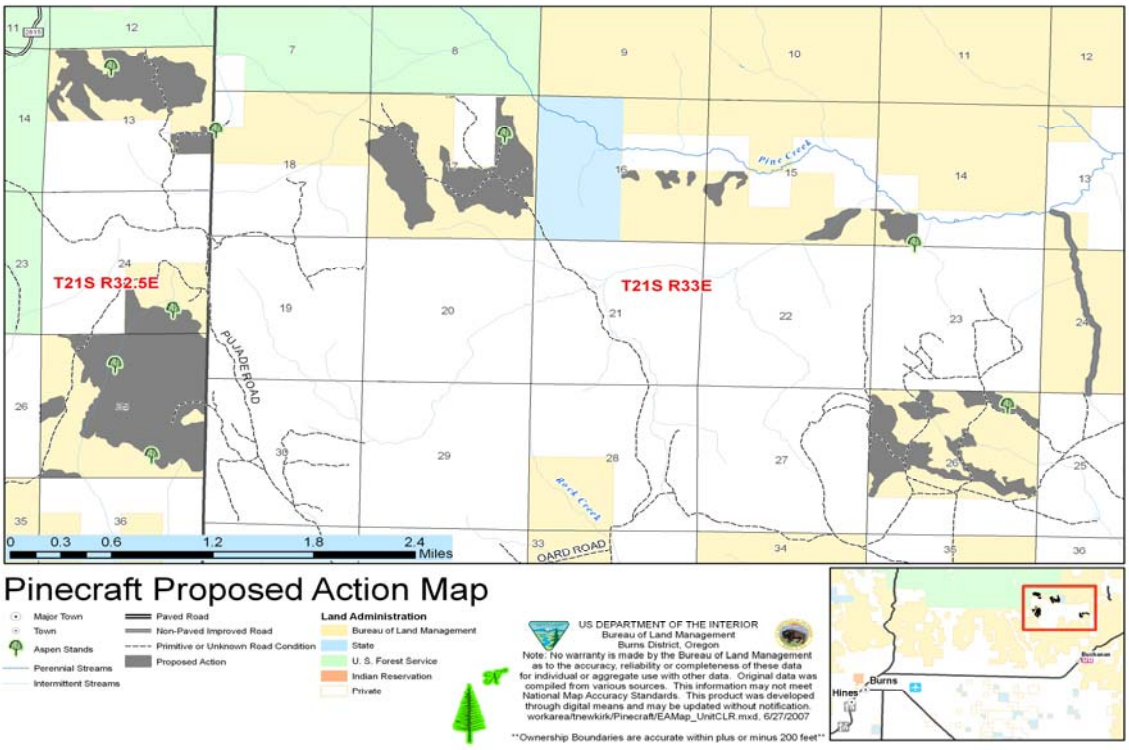

Figure 3 – The map shows the overall area of the Pinecraft

Proposed Action. A larger scaled map (Map 1) maybe found in Appendix B.

Understory thinning removes some smaller trees thus raising the base height of surrounding trees. The felling of understory trees either breaks off lower branches of adjacent trees or exposes trees that have self pruned branches due to nonuse[9]. In the application of prescribed fire, scorching of boles removes lower limbs from trees simulating natural pruning caused by historic low intensity frequent fires. This technique can be successfully used when light fuels are present and lower limbs of pines are dead and needle free.

3. Prescribed Fire Techniques: Raking, Hand/Mechanical Piling and Burning, and Broadcast Burning

Prescribed fire is used to emulate naturally occurring fire, provided that the forest structure and condition is similar to historic structure and conditions. In many cases, a mechanical treatment must precede application of prescribed fire to reduce fuel hazards.

Prescribed burning would be used to varying degrees in all management treatments. These treatments would include activities such as raking, broadcast burning, piling and burning, jackpot burning, and underburning.

Raking is a technique that would be used to protect older ponderosa pines with heavy needle cast and bark deposits that have accumulated over the past century. These buildups of needles and bark around the base of older fire resistant pine create hot spots that retain heat longer over roots and around the tree's root collars. The heat concentrated over roots and root collar has a greater chance of killing the tree. Raking may be necessary to protect these older ponderosa pines from the effects of fire (Allen 2002). Past fire cycles would have maintained lighter, cooler burning accumulations.

Hand or machine piling is needed to remove fuel accumulation created by proposed treatments and existing stand conditions. Accumulations of debris created by noncommercial thinning would be offered as biomass, or piled and burned if not economically feasible to remove. Burning or the physical removal of slash piles controls insect outbreaks and reduces fuel loading on the forest floor. Piling natural and accumulated fuels created by treatment reduces the existing average 23 tons of fuel per acre to an average of 10 tons of fuel per acre.

[9] Shade intolerant trees such as ponderosa pine discontinue the use of lower branches when photosynthesis is no longer conducted. As a result of the discontinued use, the branches die and possibly fall off or are removed by scorching of the bole by low intensity fire.

Broadcast burning would reduce accumulations of surface fuels such as duff (needle casts, cones and half-inch and smaller debris) and other fuels not piled and burned. Broadcast burning would achieve an overall project average of two and half tons per acre remaining. Burning 50 percent of the duff layer promotes growth of native bunchgrasses, desired shrub species, and natural pine regeneration. Large woody debris would be protected, where possible, to retain these structures for wildlife use and future return of nutrients to the forest floor. Further understory burning would be used, at intervals based on historic fire patterns, to simulate a natural FR (Hessburg 2005). Prescribed fire also prunes lower boles as described above in the pruning section. In areas where exposed mineral soils are created by pile burning or areas of heavy duff removals, it may be necessary to reseed these areas to stabilize soils and prevent spread of noxious weeds.

4. Silvicultural Treatment: Reduction or Removal of Fire Susceptible Species

Fire susceptible species include all species of trees that have a thin bark and a base crown height of 70 to 90 percent of tree bole or stem in both juvenile and mature stages of tree. Young ponderosa pine, Douglas-fir, western juniper, and all ages of grand fir are considered in this category. These trees offer fire a means to move from the ground to canopy as vertical ladder fuels. Removal of understory Douglas-fir, grand fir, and juniper would reduce ladder fuels and prevent succession to these species in the dry ponderosa pine ecosystem. Ponderosa pine would be thinned as described in the noncommercial and commercial thinning section in this document. Reduction of Douglas-fir on north facing slopes is necessary to maintain the ponderosa pine fire dependent ecosystem. In addition, older, fire resistant Douglas-fir and western juniper that exhibit old growth characteristics would be retained. Douglas-fir with the upper two-thirds of its live crown infected with mistletoe would be removed to prevent further spread. Reduction of heavily infected mistletoe trees removes the brooms which are vulnerable to fire. Douglas-fir or western juniper that exhibit obvious wildlife occupation would be managed as described in the project design features.

5. Silvicultural Treatments: Other Flora Treatments

Within the Project Area, selected "islands" or corridors of forest would be designated to provide wildlife with thermal and hiding cover. These islands are natural undisturbed patches of trees or shrubs or areas where natural disturbance was less severe, and include pockets of dense pine growth, patches of mountain mahogany, or areas where an overstory of pine trees and an understory of shrubs exist. Locations of islands would be determined during layout and encompass a variety of aspects, elevations, and terrain. Approximately 40 percent of the Project Area would be retained as hiding and thermal cover.

Figure 4 – The white arrow shows aspen overtopped by ponderosa pine.

Where snags are absent, trees would be identified and retained for future wildlife habitat. Trees that exhibit nests and cavities are primary candidates for snag recruitment. If snags or wildlife trees are not present, larger codominant or dominant green trees would be selected as future replacements. Trees selected for snag recruitment include but are not limited to multi-topped trees, trees that exhibit dead tops, individual insect killed trees and lightning struck trees.

Quaking aspen, black cottonwood, and mountain mahogany stands are either in the process of becoming overgrown or are already overgrown by conifers (Figure 4). The exclusion of fire and changes in weather patterns have allowed offsite conifers to invade these micro sites. For purposes of treatment description, quaking aspen and black cottonwood will be treated the same. Removing conifer ingrowth within aspen stands reduces stocking and allows improved health and vigor (Schmitt 2003). Removal of all but the largest and oldest ponderosa pine, along with fire, would inhibit pine regeneration and stimulate aspen suckering. Areas adjacent to quaking aspen, black cottonwood, and mountain mahogany stands would be thinned to minimum recommended stocking levels[10] to provide optimum sun exposure and reduce competition for water and other resources.

[10] Powell (1999) recommends a BA/A of 20 ft^2 - 35 ft^2.

Select quaking aspen stands would be fenced to assist in regeneration of suckers by preventing animal browsing and trampling (Schmitt 2003). Criteria for fencing quaking aspen are as follows: 1) reestablishment of a small, less than an acre, degraded stand, 2) stands where five to ten mature aspen are present but clones are heavily browsed or nonexisting, and 3) in stands where heavy trampling may occur during grazing. Fences are made up of two strands of 4-foot tall field fencing, 9-foot t-posts, and existing ponderosa pine as corners with two by four scabbing. Monitoring of selected stands would determine timing of fence removal. Criteria for fence removal are described in the monitoring section of this document. Prescribed fire may be used within quaking aspen stands to stimulate growth and lower competition from shrubs and conifers (Bartos 1998). In addition, ponderosa pine may be retained within mountain mahogany stands to prevent damage caused by falling and mechanical removal.

Watershed enhancement would be accomplished by promoting bunchgrasses and other native shrubs and forbs, as well as relocating roads outside of intermittent drainages. There is approximately one-half mile of roads (Map 2, Appendix B) to relocate away from intermittent drainages and into the upland areas to reduce erosion and degradation of these sites. Roads would be closed by the following means: 1) tilling the roadbed using an equipment drawn ripper to reduce existing compaction, and break up road contours; 2) barricading road by: a) using large rocks, or b) a dirt berm and trench, or c) scattering debris or, preferably, by using a combination of a, b, and c; and 3) seeding ripped roadbed to start vegetative recovery.

In addition, approximately 2.5 miles of temporary spur roads (Map 2 in Appendix B) would be constructed. Temporary spur roads allow equipment to access the interior of treatment areas. After completion of the project all temporary roads would be closed and reclaimed, as described above. Maintenance performed on XX miles (Map 3, Appendix B) of road would include water dip upkeep, dust abatement, and road surface blading. Road maintenance is used to mitigate erosion, sediment delivery, and dust control.

Thinning overstory pine and reduction of duff layers with prescribed fire also promotes bunchgrass, forbs, and shrub growth that increase soil stability. Understory vegetation functions within the ecosystem to: 1) aid in maintaining soil stability, infiltration of water into soil and reduces erosion on slopes; 2) produce quick moving, low intensity heat and short flame lengths that stay on the forest floor and are easily controlled by fire suppression techniques; and 3) provides nesting and hiding cover for wildlife and livestock forage. Shrubs such as chokecherry, bittercherry, serviceberry, and other wildlife browse would also increase by opening conifer overstory.

The proposed action would provide for a healthy, vigorous, fire resilient forest that retains a mixture of understory and overstory trees and vegetation with reduced hazardous fuel loadings, insect and disease outbreaks, and overstocking of small diameter trees. It would restore historic associations of native plant communities found within this FR.

The combination of all treatments over a 5 to 7-year period would move the Project Area toward a more fire resilient ecosystem in FR I, CC 1. Treatments also reduce resource competition that causes insect infestations and spread of diseases, which cause mortality, increase fuel loading and hinder tree diameter growth (Allen 2002). In addition, a decrease or removal of encroaching successional species such as young Douglas-fir, grand fir, and western juniper would be done.

6. Project Design Features

   a. Cultural, botanical, and wildlife inventories would be done prior to any implementation of the proposed action. Where archaeological sites or Special Status flora or fauna are found, appropriate measures would be taken to mitigate impacts.

   b. The risk of noxious weed introduction would be minimized by ensuring all equipment is cleaned prior to entry to the site, minimizing disturbance activities, and follow-up monitoring.

   c. Ponderosa pine having two-thirds of its crown infected with dwarf mistletoe and containing wildlife cavities or nest would be retained. A buffer of one tree length would be created around retained tree(s) to reduce spread of dwarf mistletoe to surrounding ponderosa pine (Schmitt 2003).

   d. Slash Disposal – As outlined in the Three Rivers RMP/FEIS, slash accumulations in excess of 10 to 12 tons per acre would be treated by piling and burning. Selected areas with less then 10 tons per acre would also receive this treatment. All slash within 100 feet of landings would be mechanically piled and burned. Slash resulting from noncommercial thinning would be piled and burned or underburned without piling.

   e. Approximately 40 percent of the forested project treatment area would be left as suitable big game thermal and/or hiding cover and sites would range in size from 2 to 130 acres. It may be necessary to do a light noncommercial thin and/or underburn to maintain these thermal and hiding cover areas.

   f. Timber removal would take place when the ground is dry or frozen. Machine piling would also take place under the above conditions.

g. In areas where basal area spacing cannot be achieved, a spacing of 22 feet by 22 feet would be established.

h. The intent of the silvicultural prescription is to leave a natural appearing forest. Varied tree spacing, as opposed to even spacing is desired. Some tree clumping for stand diversity would be left. Retained basal area would vary allowing some areas with higher and others with lower basal area to provide different types of wildlife cover.

i. Mechanical cutting of juniper, pine, and fir with old growth characteristics or obvious wildlife occupation (cavities or nests) would be avoided.

j. If active raptor nests are encountered during project implementation, work would cease until a wildlife biologist makes a recommendation of actions needed to ensure that the nest and surrounding area remain suitable for the species encountered.

k. A seasonal restriction precluding all disturbances from June 1 through August 30 within one-half mile of any active goshawk nest would be enforced.

l. At a minimum, 30 acres of the most suitable nesting habitat surrounding the nest site would be deferred from cutting.

m. To lessen impacts to riparian areas, unnecessary roads would be closed and if access is still needed, relocated to the uplands if possible. To lessen soil productivity losses due to compaction, and/or decrease open road densities to reduce big game disturbance, new temporary roads would be barricaded, ripped, and seeded or planted upon completion of forest management activities.

n. Road construction and renovation would be limited to the dry season, May 1 to October 15, or as determined by the Authorized Officer. Administrative easements exist to cross private and State lands into the Project Area.

o. Any road damaged by vehicles or equipment would be restored to its previous standard or higher, with special attention placed on installing and improving drainage on the road.

p. Provide for dead tree habitat (snags) and green tree recruitment within treatment area for primary cavity excavators. To provide interim snag replacement trees and a future source of large woody debris, at least two and half declining large trees would be retained per acre (where they naturally occur).

7. Monitoring

a. Hazardous fuel treatments: Hazardous fuel treatments would be checked upon completion of the initial project, pile burning, and subsequent prescribed burning. This would be done with the use of photo guides for down wood material and natural fuel loadings. Periodic fuel loading would be checked between 8 and 15 years after initial fuel treatments to determine when the next prescribed burn should occur to simulate the natural fire cycle, unless a natural fire cycle had already occurred. Canopy base height should average 20 feet across the Project Area.

b. Mountain mahogany stands: Photo point(s) would be established for a baseline for future monitoring. Pre established photos would determine if mountain mahogany exhibits vigor and growth. A variable plot cruise would be conducted to determine if established BA/A are increasing in adjacent conifer stands. If BA/A has increased to 80 square feet or greater, a thinning is required to bring BA/A back to recommended stocking levels[11]. Check photo point(s) and retake photos a minimum of once every 4 to12 years to determine if mahogany is responding to treatment. Check mahogany stands as necessary after 12-year period.

c. Noxious weeds: Monitoring for noxious weeds would be conducted a minimum of once every 3 years to ensure establishment of new noxious weeds has not occurred. Should noxious weeds be found, a noxious weed site report form would be filed with Natural Resource Specialist, Weeds for appropriate mitigation measures on specific species found. Monitoring would continue until grasses and shrubs establish and prevent or limit noxious weed growth.

d. Quaking aspen enclosure removal: Quaking aspen and black cottonwood enclosures would remain in place until: 1) the terminal bud of suckers or saplings attain a height above the reach of most browsing animals, 2) the majority of tree diameters reach a minimum of 3 inches DBH, or 3) cloning rates are successful enough ungulates would not over browse. Monitoring would be conducted a minimum of once every 5 years to determine timing of fence removal. Enclosures within the same topographic feature should have the fence removed at the same time to provide alternate browse and cover. Monitoring would continue until fences are removed.

[11] Powell (1999) recommends a BA/A of 20 ft^2 - 35 ft^2.

e. Quaking aspen stands: Monitoring would also be conducted to ensure that quaking aspen and black cottonwood are responding to proposed action treatments. Photo points would be established pre and post treatment and a minimum of once every 5 years until stands are mature. Aspen stands would be monitored for diameter and height growth, insects and disease, number of successful suckers that have established and presents of conifer seedlings. If conifers do reestablish, additional thinning or application of prescribed fire may be necessary. If a monitored aspen stand that has no enclosure continues to decline, due to either browsing or trampling, an enclosure fence may be constructed. If insects or diseases are a problem, the Blue Mountain Pest Management Service Center would be consulted to determine what treatment options are available. Monitoring would continue until aspen stands become vigorous enough to sustain population.

f. Understory grasses and shrubs: On photo points established on other monitoring, sites response to treatments would be checked to determine if objectives are being met. An overall increase of 50 percent in grasses is desired with a 30 to 50 percent increase in chokecherry, bittercherry, serviceberry, and other wildlife browse.

C. Alternatives Considered but not Analyzed Further

1. An alternative that would only use noncommercial thinning to reduce understory ladder fuels and pile and burn was considered but not developed further. This alternative was eliminated because it did not address the following project objectives: a) reduce overall canopy closure in ponderosa pine stands; b) reduce intermediate and codominant layer ladder fuels; c) raise existing canopy base height to appropriate levels; d) improve ground cover of chokecherry, bittercherry, serviceberry, and other wildlife browse by opening conifer overstory; e) reduce duff layer to promote herbaceous growth; f) move ponderosa pine forest, and ponderosa pine savanna stand densities, structures, and composition toward historic conditions within the planning area; g) improve health and vigor of quaking aspen and mountain mahogany stands in project; h) increase forage availability to big game and other wildlife; i) reduce conifer encroachment into key wildlife habitat of mountain mahogany, aspen, or riparian hardwoods while maintaining habitat value; nor j) capture any economic value.

2. An alternative using an even-aged shelterwood cutting method was considered but not developed further. This alternative included commercial harvest of all 1,200 acres, renovating 23 miles of road, relocating one-half mile of road out of riparian areas and drainages, juniper cutting, and aspen projects. This alternative would reduce current vertical and continuous canopy fuel loadings by 80 percent of the original BA/A. Fuels created by treatments would be piled and burned and additional prescribed fire would reduce surface fuel continuity. Considerations that eliminated this alternative were as follows: a) the removal of the majority of older fire resistant pine, b) removal of 90 percent of the understory canopy and 70 percent of the codominant overstory ponderosa pines, and c) no wildlife thermal or hiding cover was considered. This alternative was found to be cost-effective but eliminated because it did not meet all decision factors.

3. An alternative that would reestablish only quaking aspen, black cottonwood, and mountain mahogany stands was considered but eliminated. Eliminating factors for this alternative are as follows: a) it did not address any of the hazardous fuels reductions objectives for the Project Area other than the objectives to mitigate effects on these habitats.

4. An alternative that uses only prescribed fire was considered but not developed further. This alternative was eliminated due to the threat of a sustained crown fire without the pretreatment of existing hazardous fuels and overstocking of the ponderosa pine stands. These areas are outside historic FRs and would be an unacceptable risk to wildland suppression crews, private landownership and State, private, and public lands and property and resources. Additional ecological consequences would be possible soil sterilization, accelerated erosion, loss of key wildlife habitat, increased risk of noxious weeds, and loss of viable natural seed source for such species as ponderosa pine and mountain mahogany.

CHAPTER III: AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES

A general description of the existing environment for the area can be found in the Three Rivers RMP/FEIS. Terrain in the Pinecraft Hazardous Fuels Reduction Project Area ranges from flat to moderately steep slopes. All aspects can be found, but in general most of the Project Area could be described as an eastern aspect. Elevation ranges from 4,700 feet to 5,800 feet.

Potential effects in the following critical elements of the human environment have been analyzed in the Three Rivers RMP/FEIS, and are not known to be present in the Project Area or affected by enacting either alternative and, therefore, will not be analyzed further in this document: American Indian Traditional Practices, Area of Critical Environmental Concern (ACEC), Farm Lands (Prime or Unique), Floodplains, Hazardous Material, Paleontology, Special Status Species (SSS)-Flora, Wild and Scenic Rivers, Wilderness, and Wilderness Study Area.

Environmental Justice: There are no economically disadvantaged or minority populations present within the Project Area.

The following critical elements are present and analyzed in the document: air quality, water quality, wetlands and riparian, migratory birds, Threatened, Endangered, and SSS-Fauna, noxious weeds, and cultural heritage. Noncritical elements which are present and analyzed in this document are soils, vegetation/forestry, wildlife, grazing management, recreation, Visual Resource Management (VRM), social and economic values, fire management, and realty.

This section describes site-specific affected environmental components. The discussion is divided into critical and noncritical elements.

The Environmental Consequences sections discuss in detail the environmental effects that potentially would occur under the proposed action and the no action alternatives. The effects of the no action alternative form the baseline against which all other alternatives are evaluated. Map 4, Appendix B shows the analysis area considered for Cumulative Effect in the Environmental Consequences section.

Cumulative effects are the aggregate of incremental changes in resource conditions that would result from adding possible effects of reasonably foreseeable actions including those of the proposed action, to current conditions. For the purpose of this document, "short term" effects are those lasting 5 years or less. "Long term" refers to those effects lasting longer than 5 years.

The past, present, and reasonable foreseeable activities in the Project Area are identified in Appendix C under Tables 4 through 8. These activities were considered by each ITD specialist for potential cumulative effects. These effects are discussed within each of the following resource effect sections. Public scoping has not indicated any need to exhaustively list individual past actions, compare, or describe the environmental effects of individual past actions in order to complete a broad-scale cumulative effects analysis. The analysis of the past actions follows the Council of Environmental Quality guidance provided on June 24, 2005.

The proposed action includes project design features developed to avoid damage to SSS habitat, retain big game cover, avoid cultural resources, and reduce conflict with recreational uses. Project design features would reduce effects related to loss of soil productivity and sedimentation of water sources to levels that are immeasurable at watershed scale.

A. Critical Elements

1. Air Quality

Current discussion and analysis of potential effects on Air Quality resource(s) are tiered to the Proposed Three Rivers RMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Sections AQ, p. 2-3 and Air Quality, p. 3-2.

Affected Environment

Air quality in the area associated with the Pinecraft Project is generally good. No area or community in Harney County is considered a nonattainment area[12] for particulate matter, meaning it is not in violation of the particulate (PM 2.5) national ambient air quality standard. Weather moves into the Project Area generally from the southwest or west and exits to the northeast or east. Periods of degraded air quality can occur though typically these events are short lived. These events are associated with development of a stable air mass and/or cold air inversion. The greatest occurrence of such phenomenon is during the winter months and less so during spring and fall (Personal Communications with National Weather Service 2007). Smoke from wildfires, and to a lesser degree prescribed fires, are also a cause of degraded air quality, primarily from particulate matter contained in smoke.

No Action Alternative, Environmental Consequences

Under the no action alternative no fuel treatments would occur. The potential for wildfires to occur would be greater where fuel treatments do not occur. The impact to air quality would possibly be greater from a wildfire occurring in the area as wildfires typically have a longer ignition phase, burn longer, consume more of the flammable biomass and produce more smoke and particulate matter than prescribed fires. The area in question would continue to amass woody debris in the absence of treatment.

Proposed Action Alternative, Environmental Consequences

The proposed action would produce smoke from prescribed fires, slash pile burning and to a lesser degree dust from mechanical treatments. Impacts to air quality from prescribed fire and pile burning could range from reduced visibility, to pneumonic irritation, and smoke odor affecting people in proximity to the Project Area when such treatments are underway. The greatest impact would occur during the actual ignition phase, lasting from one to a few days depending on the size or number of actual burn units or number of piles to be ignited. Residual smoke produced from burnout of large fuels, or slower burning fuel concentrations could occur, lasting for 1 to 3 days following the ignition phase. Impacts to air quality from mechanical treatments would result in airborne dust reducing visibility in the immediate Project Area but ceasing quickly when such operations stop.

[12] Nonattainment area: An area that does not meet one or more of the National Ambient air quality standards for pollutants designated in the Clean Air Act.

A proximity analysis (Map 5, Appendix B) for smoke impacts indicated the existence of residences, Pine Creek School, developed campsites, Hwy 20 at Buchanan and Pine Creek Road that may be potentially impacted. The proximity analysis also indicated Burns Municipal Airport may potentially be impacted as it is located to the southwest of project center on the very edge of the analyzed area, and the community of Drewsey as it is located to the northeast of project center on the very edge of the analyzed area. Based on their location from project center with respect to the common wind vectors for the Project Area the probability of impact is low. Subsequent site-specific burn plans should contain a contact list of residents, and/or communities adjacent to the Project Area to communicate potential impacts.

Area of greatest impact from prescribed fire would be communities and residences downwind and down drainage. A wind vector analysis and review of topographic features indicated these areas are typically to the east, northeast, and southeast. The amount of impact would be dependent on atmospheric conditions at time of ignition. Prescribed fires are planned and implemented when atmospheric stability and wind conditions promote smoke dispersion into the atmosphere and/or transport smoke out of the area. In addition fires are planned when diurnal wind conditions limit the amount of smoke pooling in canyons and valleys. Greatest impact would be in the immediate of mechanical treatments and from unimproved, (i.e., dirt) roads, used in association with commercial haul of material from the project. Commercial operations are planned and implemented to abate roadway dust, dependent on the amount and timing of haulage expected.

Other prescribed fire projects and mechanical fuel reduction projects are, or will be planned for the Three Rivers RA. However, these projects would only be implemented when not in violation of the particulate national ambient air quality standards.

2. Water Quality

Current discussion and analysis of potential effects on Water Quality resource(s) are tiered to the Proposed Three Rivers RMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Sections WQ, p. 2-4 and Water Quality, p. 3-2.

Affected Environment

The proposed project includes portions of Upper Malheur River and Harney-Malheur Lakes subbasins. Perennial streams in these subbasins have been evaluated for water quality impairment as directed by the Oregon Department of Environmental Quality (ODEQ). Pine Creek, the only perennial stream in the vicinity of the Project Area, is on the ODEQ 303(d) list for water quality impairment for exceeding the 68 ºF water temperature standard for salmonid rearing. No other pollutants have been documented. The remainder of the streams generally flow in response to snowmelt or precipitation events and are dry or intermittent by mid-summer. Water quality has not been tested within the intermittent or ephemeral drainages.

No Action Alternative, Environmental Consequences

There would be no immediate change to current water quality under this alternative. However, water quality impacts could be severe if the area was impacted by a major wildfire event. The increased risk of turbidity, sedimentation, and degradation of water quality exists with increased risk of a high intensity wildfire. High severity wildfires can produce accelerated erosion and soil nutrient loss before vegetation reestablishes (Robichaud 1999).

Areas that continue to be dominated by juniper may also lead to degraded water quality. Reductions in understory vegetation and litter from juniper can negatively affect hydrology and erosion rates (Pierson 2007). Juniper expansion in uplands and riparian areas can lead to degraded water quality from increased erosion and overland flow, streambank instability, degraded channel morphology, loss of storage capacity, and reduced potential for groundwater recharge. The resulting impact can lead to increased sedimentation of streams. As juniper woodlands develop within the riparian zone, the hydric herbaceous (sedges and rushes) understory would subsequently decline, thus negatively affecting the riparian community. The ability of riparian vegetation to capture sediment and store water would be reduced with an increase in xeric species. As juniper plants replace species of willows and alder, the massive rooting capabilities of these species and their soil holding potential would be lost, decreasing bank stability. Water temperatures would be expected to rise with increased siltation in spawning gravels from upland and riparian soil instability.

Under this alternative, one-half mile of existing roads would not be rerouted outside of two unnamed intermittent drainages. Currently, these roads are a chronic source of sediment into these intermittent streams.

Proposed Action Alternative, Environmental Consequences

Improving understory plant communities in ponderosa pine stands and reducing competition from juniper should improve watershed stability and function by reducing bare soil and sediment inputs, increasing infiltration, and maintaining or restoring proper storage and release of groundwater important for late season flows and temperatures. Water quality would improve with improved watershed function where erosion is minimized, sediment inputs are minimized, and infiltration rates increase. Rerouting one-half mile of existing roads outside the riparian zone would also improve water quality by reducing sedimentation from the road into the affected drainages.

The proposed action involves treating approximately 2.4 percent of Middle Pine Creek and Cow Creek subwatersheds. Effects of broadcast burning and road relocations could initially increase sediment yield until vegetation reestablishes. Effects to water quality, riparian, and Special Status fish habitat are expected to return to pretreatment levels once herbaceous vegetation reestablishes with overall beneficial effects of reduced erosion, and higher diversity of riparian species within these subwatersheds.

3. Wetlands and Riparian

Current discussion and analysis of potential effects on Wetlands and Riparian resource(s) are tiered to the Proposed Three Rivers RMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Sections AQ, p. 2-4 and Aquatic Habitat, p. 3-12.

Affected Environment

Pine Creek, which borders approximately 0.15-mile of a treatment unit, is the only perennial stream in the vicinity. In July of 2005, a Proper Functioning Condition (PFC) Assessment[13] along BLM-administered reaches of Pine Creek was conducted. The team considered the section of the creek adjacent to the Project Area to be in PFC. Additionally, there are five intermittent to ephemeral streams within the Project Area. Black cottonwoods are found along one intermittent tributary to Pine Creek (T. 21 S., R. 33 E., Section 24). This community has become invaded with juniper trees as seen in Figure 5. Because black cottonwood is a shade intolerant species, encroached juniper can outcompete and eventually replace cottonwood stands. Cottonwood in this tributary appears to be of a uniform age class – mainly mature. These stands are becoming decadent with little to no reproduction. Black cottonwood would eventually disappear from this tributary once older trees have died.

[13] ***HUC - Hydrologic Unit Code.*** A hydrologic unit is a drainage area delineated to nest in a multi-level, hierarchical drainage system. Its boundaries are defined by hydrographic and topographic criteria that delineate an area drained by a river system, a reach of a river and its tributaries in that reach, a closed basin(s), or a group of streams forming a coastal drainage area.

No data has been collected along remaining intermittent/ephemeral reaches.

No Action Alternative, Environmental Consequences

There would be no immediate change to the current riparian and wetland characteristics under this alternative. However, with continued fuel loading in the Project Area chance of a high severity fire outbreak is increased. In this event, there could be excess sediment delivered into stream channels, eventually affecting fish habitat. Aspen and cottonwood stands would continue to deteriorate and riparian vegetation composition would continue to move farther away from its historical range. Riparian degradation reduces the capacity of riparian features to act as natural fire breaks.

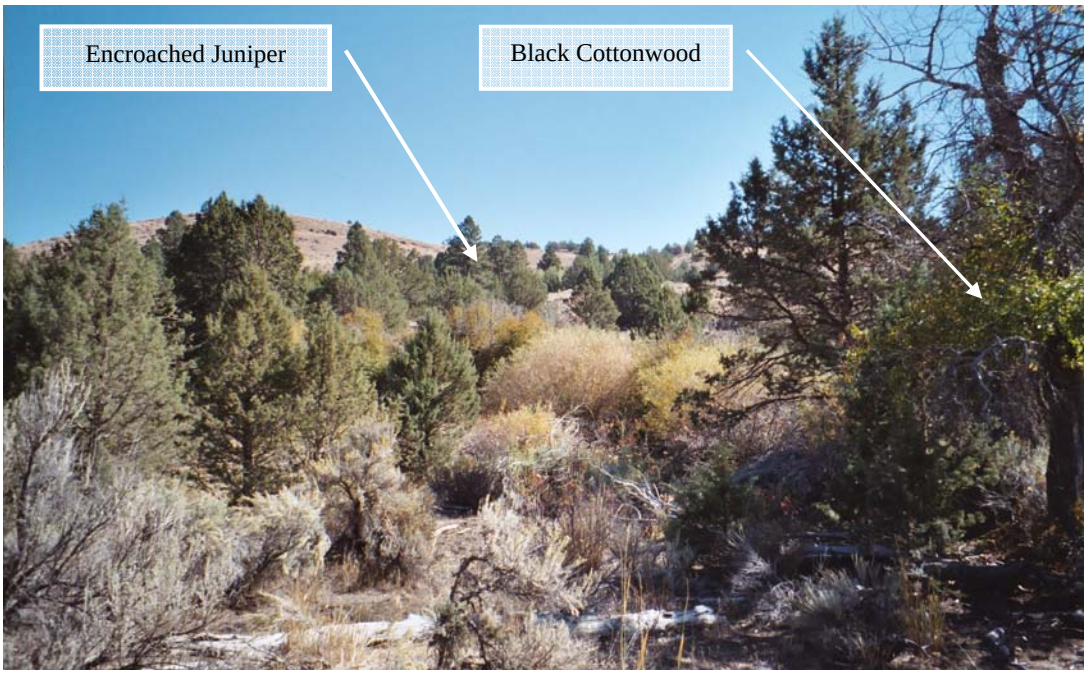

Figure 5 – Upstream view of tributary to Pine Creek in T. 21 S., R. 33 E., Section 24. Black cottonwood trees line this tributary. Juniper is heavily encroached into this riparian community.

Riparian vegetation such as sedges, rushes, grasses, and woody species such as willow, alder, aspen, red osier dogwood, and cottonwood are important for maintaining stream channel integrity, water quality, and fish habitat. Root systems of these plant species stabilize and protect streambanks from eroding during high water events. Streambanks covered with herbaceous vegetation and stands of woody species catch sediment during high water events and help maintain and restore flood plain function. Deep-rooted riparian vegetation also dissipates the energy associated with high water, thus reducing the erosive potential of high water.

In comparison, juniper stands tend to have less complex vegetative communities, less understory cover, more bare soil, and bare inter-canopy areas that exhibit high rates of erosion (Reid et al. 1999). When riparian areas are dominated by juniper, high flow events have greater potential for erosion, leading to bank instability and subsequent channel degradation.

Proposed Action Alternative, Environmental Consequences

The proposed action calls for both prescribed underburning and mechanical treatments near or in riparian areas. Prescribed underburns would be initiated when conditions are conducive to lower intensity burns, which would reduce the potential of losing desired riparian vegetation.

Effects of these actions would be characterized by short-term, negative impacts with long-term benefits. Overall, reintroducing and mimicking natural processes that have been excluded from the riparian zones (e.g., thinning and prescribed burns) should result in a positive vegetation response. Reeves et al. (1995) stated fire can be important for maintaining complex and productive habitats. Any negative impacts are expected to be short term. Riparian plant species possess adaptations to fluvial disturbances that facilitate survival and reestablishment following fires, thus contributing to rapid recovery of streamside habitats (Dwire and Kauffman 2003). Treatment of juniper and overstocked conifers in riparian areas would facilitate recovery of a riparian hardwood community and restore the riparian zone to more natural conditions. With reestablishment of this community, greater bank stability, sediment capture, stream shading, nutrient input, and water storage and release is expected.

4. Migratory Birds

Current discussion and analysis of potential effects on Migratory Birds resource(s) are tiered to the Proposed Three Rivers RMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Sections WL, p. 2-66 and Wildlife Habitat, 3-9.

Affected Environment

Numerous species of migratory birds occur in the proposed Project Area. There are a few migratory bird species of conservation concern for the Great Basin that either occurs, or potential habitat exists within the Project Area. These species include golden eagle, flammulated owl, Lewis's woodpecker, Williamson's sapsucker, and white-headed woodpecker. All these species except for golden eagle, Lewis's woodpecker, and Williamson's sapsucker are Burns District SSS and will be addressed in the SSS section. Golden eagles use a variety of habitats, and generally nest on ledges along rims but may nest in large mature coniferous trees. Lewis's woodpecker and Williamson's sapsucker are cavity nesters that primarily rely upon large dead and dying trees for nesting.

These species prefer open understories with a relatively open canopy. It may be unlikely these species occur within the Project Area, but suitable habitat does exist in the area. There are many other migratory bird species that are not of conservation concern for the Great Basin that use the Project Area for nesting, foraging, and resting.

No Action Alternative, Environmental Consequences

Under the no action alternative, no disturbance to migratory birds would occur from human activities. Ponderosa pine stands would continue to be overstocked with seedling and sapling trees and encroached upon by Douglas-fir and juniper. These conditions would continue to reduce the herbaceous layer in the understories. Avian species diversity and richness are likely to decrease as most species prefer an open understory with some herbaceous cover (Marshal et al. 2003). Mountain mahogany and aspen stands would also continue to be encroached upon and outcompeted by ponderosa pine, western juniper, and Douglas-fir trees, which would likely lead to eventual loss of mountain mahogany, quaking aspen, and specie diversity. This alternative would favor species that prefer densely overstocked conifer understories and/or a higher degree of canopy closure. Golden eagles habitat would likely not be affected by the no action alternative. As forest health decreases and golden eagle prey populations decrease there may be negative effects on golden eagles. Lewis's woodpecker and Williamson's sapsucker would be negatively affected by the no action alternative as this alternative would promote a higher degree of canopy closure and densely stocked understory. Overall, the net effect of the no action alternative is likely to be a decrease in avian species diversity.

Proposed Action Alternative, Environmental Consequences

The overall net effect of the proposed action would likely be an increase in avian habitat diversity and an increase in species diversity. Impacts to migratory birds would be minimized by pile burning in the fall, and cutting and piling in the fall where determined necessary (Pilliod et al. 2006). The proposed action would open the ponderosa pine stands allowing grasses, forbs, and shrub type species to regenerate. Opening of the stands would also increase the health and vigor of retained trees, thus promoting larger trees in the long term. Some areas of overstocked stands would be retained to further diversify the habitat types. The proposed action would also protect and enhance existing quaking aspen and mountain mahogany stands. Migratory bird diversity and richness is very high in aspen stands (Marshall et al. 2003). Reduction of juniper, ponderosa pine, and Douglas-fir these communities would increase health and vigor of the ponderosa pine stands. Fencing of aspen stands would stimulate regeneration and recruitment of younger trees. Protection and enhancement of these communities would ensure long-term availability of aspen habitats for migratory birds.

Existing snag and down woody debris habitat would be retained to provide for functional habitat. Some existing snags and large down woody debris are likely lost if a prescribed burn is completed, but new snags and large down woody debris are likely to be created.

In the long term, cavity nesters and other birds that utilize snags and larger trees would be beneficially affected as the proposed action would protect existing large trees and snags while promoting large tree recruitment. The majority of avian species would be favored as most species prefer more open understories. There would be a reduction in habitat quality for birds that prefer dense conifer understories.

The proposed action is likely to either benefit or have no effect on golden eagles in the long term. Opening the understory, reduction of canopy closure, and improvement of overall forest health should favor Lewis's woodpeckers and Williamson's sapsuckers (Marshall et al. 2003).

5. Threatened, Endangered, and Special Status Species-Fauna

Current discussion and analysis of potential effects on Threatened, Endangered, and SSS-Fauna resource(s) are tiered to the Proposed Three Rivers RMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Sections SSS, p. 2-56; and SSS, p. 3-9.

Affected Environment

a. Terrestrial Species

There are no known Federally listed Threatened or Endangered wildlife species found within or adjacent to the Project Area. The Canadian lynx, a Federally Threatened specie, and the California wolverine, a State Threatened specie, may have historically occurred within or near the Project Area, but there has never been any documentation of such occurrence. The area does not offer preferred habitat for Canadian lynx or California wolverines. These species have little chance of occurring within the Project Area and will not be addressed further. SSS are either known to nest in the Project Area or potential nesting habitat for the species occurring within the Project Area include flammulated owl, northern pygmy owl, white-headed woodpecker, northern goshawk, and pygmy nuthatch. Northern goshawks are the only species, of those mentioned, that have been documented to actively nest within the Project Area.

The flammulated owl, northern pygmy owl, white-headed woodpecker, and pygmy nuthatch are cavity nesters that primarily rely on large dead and dying trees for nesting. The flammulated owl and northern pygmy owl prefer thicker more closed forest canopies, while the white-headed woodpecker and pygmy nuthatch prefer more open canopies. All generally prefer a more open understory. It is unlikely these above species occur within the Project Area, but suitable habitat does exist.

The northern goshawk inhabits a variety of forest types, but typically prefers older stands with moderate to closed canopies with an open understory. They generally nest in larger trees, often close to perennial water. Northern goshawk surveys in and around the Project Area were conducted in 2002 and 2003. Three active nest sites were identified. One nest site occurs just north of the Project Area boundary on USFS-administered land. The other two nest sites are located within designated no action areas within the Project Area. Two of the nest trees are old growth trees that exceed 30 inches DBH, while the third nest was located in a smaller tree of approximately 14 inches DBH.

Several Special Status bat species may also be found within the Project Area. The bat species typically found in forested habitats primarily depend upon large dead or dying trees for roosting.

Species such as American marten, pileated woodpecker, and olive-sided flycatcher are Bureau Tracking species and are not considered Special Status at this time.

b. Aquatic Species

Great Basin redband trout (*Oncorhynchus mykiss ssp*), a Bureau tracking species in Oregon, inhabit Pine Creek, which borders a very small portion (0.15-mile) of the project boundary. Redband trout prefer cold, clear, fast flowing water with clean cobbles and gravels and spawn during the spring. Redband trout are adapted to the dry, hot summers of eastern Oregon and can withstand short periods of time at peak water temperatures of 24 to 27 °C (75 to 80 °F),which would be lethal to most other trout (Bowers et al. 1979).

Other fish species likely to occur in or downstream of the Project Area include speckled dace (*Rhinichthys osculus*), long nose dace (*Rhinichthys cataractae*), redside shiner (*Rhinichthys balteatus*), and sculpin (*Cottus spp*). Effects on these species would be the same as effects to SSS and will not be analyzed separately.

No Action Alternative, Environmental Consequences

a. Terrestrial Species

There would be no known effects to Threatened or Endangered wildlife species under this alternative. The no action alternative would likely have effects on other SSS occurring in the Project Area. There would be no effects on these species as a result of project related human actions.

Cavity-nesting bird and bat species are likely to be negatively impacted in the long term. Habitat quality for these species would continually decrease as the understory continues to become overstocked and conditions worsen. They may benefit initially under this alternative if larger trees are killed by insects and/or disease. However, this alternative does not promote the recruitment of such large trees and snags very far into the future. If a wildfire occurred there could be drastic impacts on the habitat these species are currently using.

This alternative would not affect northern goshawks, or habitat they use in these areas unless a wildfire burns through in less than 10 years. A high intensity wildfire would have devastating effects on their habitat. In the long run, 10 years or longer, habitat quality for northern goshawks would likely decrease as overstocked understories are not as suitable for goshawk prey tactics or their prey populations (Marshall et al. 2003).

b. Aquatic Species

Selection of this alternative would maintain current condition and trends, precluding an event such as high intensity wildfire. There would be no immediate effects to fish habitat. However, with continued fuel loading chance of a high severity fire is increased. In this event, there could be excess sediment delivered to Pine Creek. High sediment loads in streams can cause fish mortality by gill abrasion, reduce growth rates and cause moderate to severe habitat degradation (Newcombe and Jensen 1996).

In addition, the no action alternative would allow western juniper to increase in dominance. Juniper dominance on a site has been shown to decrease shrub and herbaceous vegetation cover (Roberts and Jones 2000). With this loss, soil is more prone to increased soil crusting, decreased infiltration and increased erosion (Pierson et al. 1994). Under the no action alternative, increased runoff and erosion from surrounding hillsides dominated by juniper is likely to occur, causing chronic sediment delivery to stream channels. Chronic sediment input reduces spawning habitat and reproductive success of fish by smothering eggs or trapping newly-hatched fish in the gravels below the streambed surface.

Elevated sediment also reduces available habitat for both fish and macroinvertebrates (an important food source for fish). Increased sediment reduces pool habitat, important for cover, over-wintering habitat, and thermal refuges during temperature extremes (Larkin 1998).

Proposed Action Alternative, Environmental Consequences

a. Terrestrial Species

There are no known effects to Threatened or Endangered wildlife species under this alternative. The proposed action is likely to have no effect or a beneficial effect on all Burns District SSS that occur or potentially occur.

The proposed action is likely to benefit the flammulated owl, northern pygmy owl, white-headed woodpecker, and pygmy nuthatch. These cavity-nesting species are dependent upon large trees and snags for nests. The proposed action would protect existing snags, large down woody debris, and large trees and promote recruitment of large trees which should benefit these species in the long term. All these species should benefit from opening the understory (Marshall et al. 2003). The proposed action would reduce canopy closure in portions of the Project Area. This element of the proposed action may make portions of the Project Area less suitable for species like the flammulated owl, and northern pygmy owl which prefer thicker more closed forest canopies. The proposed action should enhance habitat quality for species like the white-headed woodpecker, and pygmy nuthatch, which prefer more open canopies (Marshall et al. 2003).

Northern goshawks are also likely to benefit from the proposed action. Under the proposed action northern goshawk habitat would either be maintained or enhanced. The proposed action would help protect goshawk habitat from catastrophic wildfire. Goshawk prey populations are likely to increase as resulting condition are likely to attract more songbirds to the area. Effects on goshawks would be minimized as nesting and fledging seasons would be avoided.

The Special Status bat species found within the Project Area are likely to either benefit or not be affected by the proposed action (Pilliod et al. 2006). The proposed action would protect existing roost trees and would promote larger trees which could potentially become roost trees.

b. Aquatic Species

Only 0.15-mile of Pine Creek, a fish bearing stream, is adjacent to a proposed treatment. However, thinning, prescribed fire and juniper removal treatments in surrounding hillsides of Pine Creek and along intermittent/ephemeral tributaries would occur. Short-term negative effects to Special Status fish species are likely to be related to additional input of sediment to the stream following treatment activities. However, additional sediment input from treatment activities is likely to be undetectable. Depending on several factors (e.g., timing of underburns, storm events) the severity of erosional impacts would vary. Prescribed fires create a highly variable mosaic of burn severity, duff consumption, and unburned areas (Robichaud 2000; Robichaud and Miller 1999). This spatial variability in postfire surface conditions results in spatially varying runoff and erosion rates (Elliot 2006). Prescribed burns would be initiated when conditions are conducive to lower intensity burns. A low intensity burn would most likely result in a patchy burn pattern. This would minimize the chance of excessive sediment delivery to the streams because sediment trapping vegetation would still remain. Similar projects have shown undetectable erosion from treatments. Post fire assessments of two thinning and prescribed burning projects in Idaho and Montana showed not easily measured runoff and sediment yields. The low runoff and sediment yields were most likely due to the overall low burn severity and the averaging of fire effects (Elliot 2006).

Within 2 to 3 years post treatment, sediment delivery to streams is expected to return to post treatment yields. Directly reducing overstory competition (cutting) in conjunction with returning historical nutrient cycling mechanisms (burning) should yield the greatest increases in understory richness and abundance (Metlen and Fiedler 2006). An increase in understory abundance should return sediment delivery to natural levels down slope to riparian habitats. By reestablishing more natural patterns and processes in the uplands, long-term restoration of productive aquatic habitats should occur.

6. Noxious Weeds

Current discussion and analysis of potential effects on Noxious Weeds resource(s) are tiered to the Proposed Three Rivers RMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Sections V, p. 2-51 and Vegetation, p. 3-7.

Affected Environment

Within the vicinity there are several known infestations of noxious weeds.

Noxious weed species include Dalmatian toadflax, Scotch thistle, Canada thistle, and whitetop. Medusahead rye is not known to occur in the treatment area but is in relatively close proximity.

No Action Alternative, Environmental Consequences

There would be no change in the risk of introduction of new weed populations or the expansion of existing weed populations due to human activity. The risk of noxious weed invasion would increase as fuels accumulate and the likelihood of a large-scale wildland fire increases. Wildland fires that occur in these communities with excessive fuel loading tend to be severe enough to kill large tracts of vegetation. These conditions are conducive to noxious weed invasion.

Proposed Action Alternative, Environmental Consequences

There would be some increase in the risk of introduction of new weed populations or the expansion of existing weed populations as a result of implementing the proposed action. Risks would be minimized by following project design features listed in this document. Monitoring for noxious weeds would occur for a minimum of 2 years post treatment and any weeds attempting to establish a population would be treated.

7. Cultural Heritage/American Indian Traditional Practices/Paleontology

Current discussion and analysis of potential effects on Cultural Heritage resource(s) are tiered to the Proposed Three Rivers RRMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Sections CR, p. 2-152 and Cultural Resource, p. 3-21.

Affected Environment

Sixteen archaeological sites are known to occur within the proposed Project Area. Six are scatters of flint knapping waste and functioned as fine grained basalt quarries. Seven sites are scatters of flint knapping waste and probably functioned as small prehistoric hunting camps. One site is a deteriorated one-room cabin and refuse scatter. Another site is an historic logging camp and the final site is a rock cairn.

The project location is several miles north and west of the Biscuitroot ACEC, a traditional root gathering area used by Burns Paiute and other Indian groups. A number of prehistoric sites in the Project Area are possibly small root gathering camps used seasonally during spring. No traditional practices areas are known to occur within the proposed Project Area. No paleontological localities are known to exist.

No Action Alternative, Environmental Consequences

No effect to cultural resource properties, paleontological resource properties, and sites of American Indian Traditional use would occur under the no action alternative. Although, cultural resources would continue to be in jeopardy of damage or loss due to wildland fire.

Proposed Action Alternative, Environmental Consequences

All of the sites could be affected by ground-disturbing activities such as log skidding, decking, and machine piling. These activities can disturb surface integrity of sites by moving (vertically and horizontally) and breaking artifacts and features. Subsurface cultural materials (if they exist) can be affected by the use of heavy equipment that produces soil compaction and rutting.

Slash disposal by fire could impact all sites but the rock cairn. Burnable sites such as the logging camp and cabin could be completely destroyed by fire of any intensity. Prehistoric scatters of flint knapping waste, particularly comprised of obsidian flakes and artifacts, are susceptible to damage by moderate to high intensity fires.

Any and all project effects at National Register eligible sites in the Project Area could be mitigated by site avoidance. This would eliminate effects from ground disturbance and slash disposal. If hazardous fuels within site boundaries require treatment, a low intensity burn over frozen or snow covered ground in late fall, winter or early spring would dispose of hazardous fuels and likely not disturb contents of nonburnable sites. Burnable sites such as the cabin and logging site should be avoided during burning operations.

B. Noncritical Elements

1. Soils

Current discussion and analysis of potential effects on Soils resource(s) are tiered to the Proposed Three Rivers RMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Sections SM, p. 2-15 and Soil Management, p. 3-3.

Affected Environment

There are a number of soil types in the Project Area. Generally the soils are gravely, stony or cobbly loams and are well-drained and range from 11 to 36 inches deep with clay content from 18 to 70 percent. The soil compaction hazard is moderate due to the coarseness of soils and medium clay content.

Overall, soil compaction from past management actions is undetectable with the exception of a few skid trails and landings. Soil erosive factors are low in water erosion potential.

No Action Alternative, Environmental Consequences

Under the no action alternative, no additional soil compaction, disturbance or erosion would occur from project related human activity. The risk of soil damage and heavy erosion following a high intensity wildland fire would increase as fuel loads continue to accumulate over time. Increasing western juniper density and cover would also result in increased soil surface exposure which would result in accelerated erosion on some sites. An increase in ponderosa pine densities and cover would decrease soil exposure but would result in bare mineral soil if a high intensity wildland fire occurs which would result in accelerated erosion and hydrophobic soils on some sites.

Proposed Action Alternative, Environmental Consequences

Increases in soil erosion could occur the first couple of years after the proposed projects are implemented. Increases in surface erosion would be short lived. Responses of residual understory plants would reduce soil movement.

Ground-based mechanized thinning treatments can result in localized compaction or displacement of soil along skidding routes and at the site of large piles. Prescribed underburn treatments are not expected to have a detrimental effect on soil. Spring underburns do not result in wide-scale compaction or displacement of soil. Surface erosion could accelerate on burned slopes within the first couple of years after ignition of a prescribed burn. However, spring burns are designed to retain some understory vegetation and litter, which should provide a buffer area that would prevent delivery of sediment to streams.

Cumulative effects with past projects in Section 17, T. 21 S., R. 33 E., and access to Project Area in Section 26, T. 21 S., R. 33 E., would be mitigated by using existing trails to reduce further compaction by equipment.

2. Forestry/Vegetation

Current discussion and analysis of potential effects on Forestry/Vegetation resource(s) are tiered to the Proposed Three Rivers RMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Sections F, p. 2-21; V, p. 2-51; Forestry and Woodlands, p. 3-3 and Vegetation, p. 3-7.

Affected Environment

The vegetation within proposed action areas consists of scattered large dominant overstory trees with a overstocking of codominant, intermediate, and suppressed understories. The understory is beginning to experience mortality from mountain pine beetle due to overstocking (Schmitt 2003). In addition, western pine beetle and pine engraver are beginning to cause mortality in overstory trees. Within the Project Area is a scattering of ponderosa pine dwarf mistletoe *(Arceuthobium campylopodum)* (Schmitt 2003). There is currently no large spread of mistletoe, but this may occur if trees with the upper one-third of the crown infected are not removed during the thinning or if the area around such trees is not heavily thinned, leaving infected trees isolated. Trees that exhibit two-thirds or greater mistletoe infection should be removed to reduce spread of infection. Also noted within the Project Area, was black-stain root disease, and Annosus root disease was noted on adjacent private land (Schmitt 2003).

Within ponderosa pine communities, canopy closure averages 65 percent which has caused a reduced amount of sunlight from reaching the forest floor. An open canopy is important for ponderosa pine understory because: 1) it increases production of grasses, forbs, and shrubs that maintain and carry a low intensity fire; 2) it increases microbial activity that breaks down existing dense organic and duff layers that impede growth of grasses, forbs, and shrubs; and 3) microbial activity returns minerals and nutrients to the soil. Ponderosa pine communities benefit from open canopies primarily made up of older trees with a scattered understory of shrubs and juvenile ponderosa pine. Historically, stands were maintained by frequent low intensity[14] grass fires that were normal within ponderosa pine/bunchgrass savannas (Agee 2004). Furthermore, retention of a dense overstory of 12-inch DBH and larger trees would further cause a decline in overstory. Influencing factors such as drought or resource competition cause additional stresses on already overstocked ponderosa pine forests. These stressors can lead to a reduction of vigor and growth, an influx of insects and disease which lead to mortality and continued hazardous fuel loading. Canopy closure prevents the majority of sunlight and moisture, due to canopy interception, from reaching the forest floor. These conditions threaten remaining older fire resistant ponderosa pine in the overstory. In the event of a wildfire, soil recovery may take longer, causing soil damage, loss of nutrient, loss of viable seed source, change in microclimates, and altered hydrological soil behavior (Cram 2006).

These stands, except Section 17, T. 21 S., R. 33 E., have not had any silvicultural prescriptions or logging activities. The stands within this section have had one regeneration cut in 1949, five noncommercial thinnings in 2005, and two separate salvage cuts due to mortality in 1952. Past pile burning was evident within this section.

[14] Ponderosa pine savannas typically would have burned in 8 to 15-year intervals (Agee 2003).

Other plant species associated with this ponderosa pine plant community are elk sedge, Idaho fescue, western juniper, mountain mahogany, chokecherry, bittercherry, serviceberry, and numerous forbs.

Residual pockets of quaking aspen and black cottonwood are in a state of decline and low vigor. The existing condition is due to absence of fire, encroachment of conifer trees, with trampling and grazing from cattle and elk and deer. Without a major disturbance, these clones could be permanently lost. Selected aspen and black cottonwood may need fence protection from further effects of browsing and trampling.

No Action Alternative, Environmental Consequences

Under the no action alternative vegetation would continue to develop toward a closed mixed conifer forest and western juniper woodland. Conifers would increase in density and cover in sagebrush and ponderosa pine plant communities. This would further reduce understory vegetation. The ponderosa pine and Douglas-fir understory would remain stagnant with a slow growth rate while continuing to suffer pockets of heavy mortality from mountain pine beetle and pine engraver. Overall, tree vigor would remain low, mortality high, large diameter ponderosa pine and Douglas-fir in the overstory would continue to die from western pine beetle and pine engraver attack and not be replaced by other medium to large trees (Cochran 1994). On low productivity areas (low and stiff sagebrush, mountain mahogany, and old growth western juniper) all shrubs and most herbaceous vegetation would be eliminated. Shallow rooted perennial and annual grasses and forbs would remain in the understory until needle fall from western juniper and ponderosa pine is heavy enough to restrict their growth. In areas where the soil is deeper, some shrubs may linger longer than on shallow soil, but overstory trees would eventually eliminate most shrubs when tree density and cover becomes very dense.

Quaking aspen and mountain mahogany stands are small inclusions in other large plant communities. These areas occupy specialized locations and reflect unique, small-scale soil, aspect, and moisture changes. Coniferous species, primarily ponderosa pine and western juniper, would continue to increase on these sites replacing quaking aspen and mountain mahogany. Eventually, quaking aspen stands would continue to suffer mortality from being shaded by invading juniper, ponderosa pine, and Douglas-fir (Bartos et al. 1998). It is highly likely that any wildland fire would become an unnatural stand replacement fire, destroying valuable habitats and vegetative resources.

Proposed Action Alternative, Environmental Consequences

Under the proposed action alternative, thinning of ponderosa pine would help to reduce live fuel loading in forested plant communities. Risk for high intensity fires would be decreased and reduction in overstory trees would increase the amount of solar radiation reaching the forest floor and increase soil moisture and nutrients available for residual trees and understory plants. Understory shrubs and herbaceous plants would increase in cover and density following thinning and prescribed burning. Prescribed burning activity following thinning would help increase tree growth and vigor. Trees would become more resistant to insect and disease attack.

Decomposition of conifer needles and other plant litter would also be furthered by increase in solar radiation on the forest floor. Large dominant and codominant trees may have deep layers of needles at and around their base. Raking the needles and other litter away from the base of these larger trees would help protect them from damage during prescribed burning. If left in place, deep litter deposits would allow heat to concentrate near the soil surface, killing small feeder roots and damaging the cambium of the main stem near the soil surface.

Reducing fuel loads would help increase survivability of understory woody and herbaceous plants following burning. Prescribed fire and subsequent wildfires would move through forested stands at low intensity fueled primarily by herbaceous plants. Flame length and spread rates would be quick and plants would only be exposed to high temperatures for a very short period. Short exposure increases survival potential and in some cases stimulates germination or sprouting. Under extreme conditions a canopy fire may still occur but would be a very rare event and the intensity and severity of fire would be greatly reduced compared to severity in dense pre-treatment stands.

Reduction of conifers in quaking aspen and mountain mahogany stands would help increase vigor of residual trees. Quaking aspen is susceptible to disease when overcrowded. Disease and crowded condition reduces ability of quaking aspen to sucker when canopy openings do occur. Understory vegetation in quaking aspen stands would also increase in density and cover with removal of conifers. The understory is primarily occupied by perennial grasses and forbs. Soil moisture would also last longer into the summer with removal of the conifer overstory. Coniferous species have photosyntheticly active tissue present year round and it is capable of transpiring when conditions are suitable. Quaking aspen and other associated woody and herbaceous vegetation common to quaking aspen stands develop new leaves each year in spring and drop them in fall. The photosynthic active period is much shorter; therefore, moisture in the soil would remain longer into the growing season. Plants in the understory would remain greener longer compared to untreated areas.

Mountain mahogany would also benefit from removal of conifers. Vigor of residual mountain mahogany and ponderosa pine would increase after thinning. Soil moisture and nutrients would increase and growing seasons would be prolonged, similar to those of quaking aspen stands. Removal of conifers would also reduce risk of canopy fires in and adjacent to mountain mahogany. Many mountain mahogany stands occur on small rocky areas within ponderosa pine and big sagebrush plant communities. High intensity fires in proximity to small stands may be as damaging through scorching as fires that burn through the stand. Reduction in conifers would also open the stand and increase likelihood of seedling establishment. Disturbance caused by thinning treatments may also increase seedling establishment by increasing bare mineral soil sites.

Cumulative effects on vegetation include those from a number of projects that have occurred in or near the proposed action area (Tables 4 through 8, Appendix C). These projects primarily involve cutting western juniper, noncommercial/commercial thinning of ponderosa pine and jackpot burning or pile burning. Craft Point and Demaris Springs projects were conducted from 2000 to 2002 and involved understory noncommercial thinning and pile burning. Broadcast burning is scheduled for 2007 and would complete the initial projects. There have been other projects on adjacent lands that have treated approximately 400 acres in private ownership. Projects include noncommercial/commercial thinning, and use of fire to treat existing fuels and fuels created by treatments. These projects are ongoing and further reduce risk of wildfire becoming a canopy driven fire. The proposed action would continue to reduce hazardous fuels and risk of wildfire moving from lands administered by the BLM to USFS-administered, and private lands.

Ponderosa pine forest structure would shift toward a more open park-like appearance, similar that described in early explorers' and settlers' reports. The more open structure would help to keep diversity of plant species and structure in Cow Creek and Middle Pine Creek subwatersheds. Forested areas would have larger average tree size and fewer trees per acre (Cram 2006). The Project Area would contrast with adjacent untreated ponderosa pine and fir stands that have dense canopies and large number of trees per acre. Plant and animal species that prefer open environments would exist in these locations. Untreated forested areas would provide "islands" for hiding and thermal cover important for species that require this habitat.

The project would also help restore quaking aspen in Cow Creek and Middle Pine Creek subwatersheds. Many of these stands are small and have been encroached by conifers. Quaking aspen stands in the Blue Mountains are historically small but provide important habitat to numerous wildlife species. Adjacent forest health projects in Cow Creek also have a number of small quaking aspen stands. Restoration of the Cow Creek and Pinecraft aspen projects in the North Basin watershed would help reestablish the network of historical quaking aspen.

3. Wildlife

Current discussion and analysis of potential effects on Wildlife resource(s) are tiered to the Proposed Three Rivers RMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Sections WL, p. 2-66 and Wildlife Habitat, p. 3-9.

Affected Environment

The entire Project Area is classified as Rocky Mountain elk winter range. Only about 5 percent of the area proposed for treatment is classified as mule deer winter range. All areas proposed for treatment are spring, summer, and fall range for deer and elk. The Project Area also provides habitat for reintroduced wild turkeys. Several raptors also frequent the area. The Project Area also provides habitat for many other bird species, a myriad of small mammals, as well as cougars, bobcats, and coyotes.

No Action Alternative, Environmental Consequences

Under the no action alternative, no disturbance to wildlife would occur due to project-related human activities. Ponderosa pine stands would continue to be overstocked with seedling and sapling trees and encroached upon by Douglas-fir and juniper. These conditions would continually reduce the herbaceous layer in understories. Browse species (bitterbrush, big sagebrush, chokecherry, etc.) elk and especially deer rely upon in fall and winter would continue to decrease in quantity, health and vigor, and palatability. Mountain mahogany and aspen stands would also continue to be encroached upon and outcompeted by juniper and pine trees, which would likely lead to eventual loss of these habitats. This would cause a decrease in habitat quality for big game species as well as several bird and small mammal species. Thermal and hiding cover would increase under this alternative if a catastrophic wildfire did not occur.

Proposed Action Alternative, Environmental Consequences

Overall there is likely to be an increase in wildlife species diversity as a result of the proposed action. Strategically placed conifer thinning, juniper removal, aspen treatments, and underburns would create a diversity of habitats. These actions would reduce conifer stocking levels in overstocked stands, reduce conifer and juniper encroachment upon aspen and mountain mahogany stands, and cause an increase in grasses, forbs, and herbaceous browse species. These treatments are likely to increase the health, vigor, and palatability of winter forage for both deer and elk. Quantity and quality of winter forage browse species are expected to increase as well.

Protection and enhancement of mountain mahogany and aspen stands would also benefit deer and elk, as well as many other wildlife species. There would be a 5 to 8-year loss of aspen habitats for big game species if aspen stands require a protective fence. Thermal and hiding cover would decrease, but cover would still be more than sufficient. Species utilizing more open habitats would be favored. Species favoring dense conifer stands with overstocked understories would be negatively impacted.

Cumulative effects to hiding and/or thermal cover during project implementation may displace wildlife to surrounding areas until project completion. Such areas included the uninventoried roadless area north of the project, mixed juniper and ponderosa pine woodlands on private land between treatment units, and forested cover on Malheur National Forest land to the north and west of the Project Area would be available for wildlife use.

4. Livestock Management

Current discussion and analysis of potential effects on Livestock Management resource(s) are tiered to the Proposed Three Rivers RMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Sections GM, p. 2-33 and Grazing Management, p. 3-4.

Affected Environment

Livestock grazing could be temporarily interrupted as project activities occur. Livestock grazing occurs in the Project Area within the following allotments found in Table 1.

Table 1 – AUMs and Seasonal Use

Allotment No.	Allotment Name	Season of Use	Active AUMs
05501	East Cow Creek Allotment	Last 2 weeks of May	175
05503	Pine Creek Allotment	05/01 – 06/10	250
--	Sagebrush Field (pasture)	05/01 – 06/15	500

In East Cow Creek Allotment, the proposed project would be within North Pasture. Dominant plant communities are mostly ponderosa pine forests and scattered ponderosa with understory key forage plant species being Idaho fescue.

In Pine Creek Allotment the proposed Project Area would be within Pine Creek Pasture and Sagebrush Field Pasture. In Pine Creek Allotment, dominant plant communities are ponderosa pine forest, ponderosa pine/mountain mahogany with understory key forage plant species being Idaho fescue. There are also riparian plant communities along Pine Creek within this pasture. In the Sagebrush Field Pasture dominant plant communities are ponderosa forest/mountain mahogany and mountain sagebrush bunchgrass with the key forage plant species being Idaho fescue. Currently this pasture is grazed one year and rested the next.

No Action Alternative, Environmental Consequences

Cumulative effects of no action on grazing management would be the continuance of high density forested overstory which would continue to lack herbaceous understory and livestock forage. This would continue unless a stand replacement wildfire occurs, which would revert much of the landscape to herbaceous plant communities resulting in increased livestock forage. A wildfire may result in decreased plant structure and species diversity.

Proposed Action Alternative, Environmental Consequences

The proposed action would provide for a healthy forested overstory while increasing the herbaceous understory. This would increase forage plants available for livestock and improve plant community diversity and plant structural diversity. Access for livestock would be limited in some forested communities due to project implementation. These plant communities would not be susceptible to a stand replacement wildfire, and therefore, not result in herbaceous dominated plant communities, thus providing maximum forage for livestock.

A reduction in conifer density would also facilitate livestock movement into and through the Project Area. Livestock rarely access the Project Area to forage under present conditions of dense forest canopy and suppressed herbaceous understory that offers low forage quantity and quality. Effectively, the proposed action would encourage increased uniformity in distribution of livestock.

Cumulative effects of the proposed action would be an increase of the herbaceous understory plant community while maintaining a healthy forested overstory. Reduction of overstory trees would increase plant structural and species diversity and improve forage for livestock and big game. Projects on adjacent private lands also improve the overall diversity and plant structure providing additional forage for domestic livestock and big game.

5. Recreation

Current discussion and analysis of potential effects on Recreation resource(s) are tiered to the Proposed Three Rivers RMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Sections R, p. 2-107 and Recreation p. 3-15.

Affected Environment

Primary recreation activities in the planning area are associated with hunting big game such as mule deer, Rocky Mountain elk, and pronghorn antelope. Other recreation activities are associated with driving for pleasure, hiking, wildlife viewing, and camping.

No Action Alternative, Environmental Consequences

Under the no action alternative there are likely to be brief disruptions to recreational activities in the vicinity of the planning area from fire suppression and smoke during summer and fall seasons due to wildfires. A stand replacing fire would have major effects on hunting, hiking and camping activities, and opportunities for recreationists.

Proposed Action Alternative, Environmental Consequences

Under the proposed action there may be an impact to recreational activities in the project vicinity. Smoke and noise generated during project implementation could disrupt recreational activities in spring or fall seasons. In the long term, 1 to 2 years after project implementation, recreational activities related to driving for pleasure, big game hunting, and wildlife viewing would be enhanced.

6. Visual Resource Management

Current discussion and analysis of potential effects on VRM resource(s) are tiered to the Proposed Three Rivers RMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Sections VM 1, p. 2-148 and Visual Resource p. 3-17.

Affected Environment

All of the Project Area is classified VRM Class IV. This class allows management activities which cause major modification of the existing character of the landscape. The level of change to the characteristic landscape may be high.

No Action Alternative, Environmental Consequences

There would be no effects anticipated to visual resources under the no action alternative in the short term unless a major wildland fire event occurred. A major wildland fire event would drastically change visual resources. In the long term, visual resources would be negatively affected due to loss of diversity of plant communities and associated color and textural differences on the landscape.

Proposed Action Alternative, Environmental Consequences

Thinning and burning of slash would create a short-term visual distraction. Long-term effects to VRM would be positive by the retention of a vigorous and healthy large diameter ponderosa pine forest and the diversity of plant communities. There would be no cumulative effects to VRM. Class IV management objectives would be met.

7. Economic and Social Values

Current discussion and analysis of potential effects on Economic Condition resource(s) are tiered to the Proposed Three Rivers RMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Economic Condition, p. 3-25.

Affected Environment

Ranching and lumber industries are the primary sources of employment in eastern Oregon communities. Forest management programs on public and private lands have a long-term, stabilizing influence on local employment and standards of living. Tourism and recreational activities, especially hunting, have a substantial effect on local economies.

No Action Alternative, Environmental Consequences

There would be no change to social and economic aspects of this area under this alternative. Under the no action alternative no service or stewardship contracts would be granted and no supplies would be purchased for the purpose of project implementation. Under the no action alternative, if a large wildfire occurred, economic impacts would be reflected by reduction in amount of grazing allowed and fewer hunting opportunities along with associated expenditures within local communities.

Proposed Action Alternative, Environmental Consequences

There would be short-term positive effects to the local economy under the proposed action. The proposed action would utilize service contracts and a timber sale to reduce biomass. Purchase of supplies and equipment necessary for implementation of the proposed action would constitute an additional positive economic effect. Use of prescribed fire in pastures would require a rest period of two growing seasons; alternative forage may be provided.

Cumulative effects of the proposed action would increase forage for livestock and wild ungulates after implementation. These effects improve the value of livestock grazing, and hunting quality, to local communities and business.

8. Fire Management

Current discussion and analysis of potential effects on Fire Management resource(s) are tiered to the Proposed Three Rivers RMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Sections FM, p. 2-101 and Fire Management p. 3-15.

Affected Environment

The Pinecraft Hazardous Fuels Reduction Project is in an area designated for full suppression by the Three Rivers RMP and the Burns Interagency Fire Zone Fire Management Plan. Any fires discovered would be suppressed using the appropriate management response. Past forest and fire management decisions have permitted the buildup of understory fuels.

Forested areas of the Project Area are classified as FR I and CC 3 (Tables 2 and 3, Appendix A) because of the increase in fire interval and increase of live and dead fuels. Areas in FR I historically had frequent (8 to 15 years), low severity fires. In their current condition, these areas would burn with greater intensity and produce severe fire effects because of fuel buildup. FR and CC analysis indicates that to move the forested areas of the Project Area toward CC 1, both vegetation/fuel structure and fire effects need to be restored.

Quaking aspen stands historically burned about every 60 years with a mixed severity fire (Miller et al. 2005). Mixed severity indicates less than 75 percent of the plant community was influenced by a stand replacing event. However, the quaking aspen stands in the Project Area are very small and would most likely have burned at a much greater fire return interval because of their proximity to areas that burned at a higher frequency (ponderosa pine and mountain big sagebrush). Where western juniper and ponderosa pine have encroached into aspen stands, the vegetation fuel structure has changed and would increase severity of fires. Fires that now burn in these areas would produce stand replacing events instead of mixed severity. This would also put these areas in to a CC 3.

Low and stiff sagebrush, mountain mahogany, and old growth western juniper plant communities on average have a greater fire return interval than quaking aspen. Shallow soils and low site productivity limit aboveground plant production and, concomitantly, fuel levels. Fire return on these sites may be in excess of 100 years, but fire still played a role in these communities.

Miller and Rose (1999) found low sagebrush areas in Lake County, Oregon, near the forest fringe had fire return intervals of 130 years. These fires were most likely low severity because of sparse vegetation. Areas with these characteristics are classified as FR V. The CC of these areas is difficult to accurately assess because of the long interval. Similar to quaking aspen, these areas are small and exist as islands embedded in ponderosa pine and mountain big sagebrush plant communities. The actual FR of these sites might reflect a more frequent incident of fire than the general groupings. These sites would be CC 2. Occurrence of fire may be similar to historic conditions, but the fuel structure has changed because of an increase in western juniper in interspaces between old trees.

No Action Alternative, Environmental Consequences

Under the no action alternative conifers would continue to increase, further increasing fuel loading onsite. Once conifers fully occupy a site, mortality of suppressed trees would occur, increasing dead fuel loading in the understory. Under historic FRs, fires were primarily low intensity fires that ran through the understory of pine stands. Fires in adjacent big sagebrush plant communities were stand replacing, but severities of fire effects were moderate. Increases in western juniper in adjacent big sagebrush plant communities would also increase fuel loads in the sagebrush plant communities. Ever-increasing western juniper augments ladder fuels in the sagebrush, increasing the probability of canopy fires in adjacent ponderosa pine forests. Fire suppression would be hampered by fire intensity due to increased fuel loads. Fire crews would be required to utilize indirect attack strategies and tactics. Using these strategies would allow fire size to enlarge.

Proposed Action Alternative, Environmental Consequences

Implementation of the proposed action would move the Project Area toward the appropriate FR and CC. The ponderosa pine forest occurs in a FR I, frequent, low intensity fires. Thinning and treatment of slash would reduce fuel load and subsequent fire intensity and severity. Fire is a fairly common event in these plant communities. Thinning and prescribed burning would not eliminate fire from the Project Area, but would structure plant communities in such a way fires, prescribed or natural, would be neutral or beneficial. Treatment would also reduce threats to firefighters by reducing possibility of large, intense wildfires. The proposed action would reduce fireline intensity. Firefighters would be able to apply direct attack and indirect attack strategies in treated stands. Treated stands would also help break fuel continuity on the forest fringe. By understory thinning tree density would drop and canopy base height would raise thus reducing connectivity to the forest canopy. Thinning the overstory further reduces tree density, improves canopy base height and breaks up canopy continuity. Crown fires would become a rare event with implementation of the proposed action.

Completion of the proposed action would help provide firefighters with safe suppression locations before they move onto adjacent private or USFS-administered lands.

The cumulative effects of the proposed action in conjunction with past natural and human management actions in Cow Creek and Middle Pine Creek subwatersheds, Cow Creek Fire and Pine Creek noncommercial thinning (pile and burn) are moving these landscapes from a CC 3 to a CC 2. Current projects, East Cow Creek, and Craft Point old growth underburns, as well as underburns and pile burning associated with the project would be necessary to move from CC 2 to 1, which is the final goal of the project.

9. Lands and Realty

Current discussion and analysis of potential effects on Lands and Realty resource(s) are tiered to the Proposed Three Rivers RMP/FEIS (September 1991), and relevant information contained in the following sections is incorporated into this EA by reference: Sections LR, p. 2-177 and Lands and Realty, p. 3-23.

Affected Environment

Land surrounding the Project Area is a mix of private, State, and other BLM-managed lands not involved in the project. USFS-administered lands make up a major portion of the northern and western boundaries of the Project Area. All land within the Project Area proposed for treatment is BLM-administered.

General access to the Project Area is via U.S. Hwy 20 and Cow Creek Road, Harney County Road No. 101. Primary access into the western part of the Project Area is via Pujade Road No. 6247-0-OO while the eastern portion is accessed by Oard Road No. 6247-0-AO. These primary routes are maintained on a more or less frequent basis by BLM, private landowners, and grazing permittees. They are constructed, maintained roads, with ditches, crowning and other drainage structures in some areas, but are typically not surfaced, making them difficult for travel when soils are saturated and not frozen. These roads have been used when dry or frozen for log hauling from private logging operations.

Direct access into specific units of the Project Area is available on dirt roads which originate and connect to above referenced primary roads. These roads are maintained as needed and generally receive little, if any, use except during hunting season and grazing permittees.

Both primary and local roads cross public, private, and State lands. BLM has secured formal administrative access where these roads cross private lands and State owned parcels in the Project Area.

No Action Alternative, Environmental Consequences

Under the no action alternative there would be no effects to private, State or National Forest-managed lands as a result of human disturbance. Risk of an intense wildland fire occurring and carrying onto other lands would remain high and increase as fuel loads continue to buildup.

Proposed Action Alternative, Environmental Consequences

The proposed action would reduce risk of intense wildfires occurring with extreme rates of spread, reducing risk of fire entering private, State or National Forest lands by way of land administered by the BLM. Other lands within the Project Area and in the general vicinity would have some short-term negative effects as a result of implementing the proposed action. These adjacent lands are likely to experience short-term smoke inundations in addition to dust and noise from timber harvesting and thinning operations. Smoke and dust would dissipate within a few days while noise would be limited to the time the operations are in progress.

Log hauling, which has the most potential to damage road systems, is typically accomplished when road surfaces are dry or frozen. In addition, during this phase of the project, road maintenance equipment is usually available and onsite so any damage is corrected. However, some project activities such as thinning, piling, and burning do not require heavy equipment and are necessary during late fall, winter, and early spring when narrow windows are available between fire season and deep snow. During these times road surfaces and soils may be saturated and unfrozen. In these cases, even light traffic can create ruts, drive arounds and other damage to roads and adjacent soils and vegetation.

During dry periods, damage to roads by vehicles and equipment accessing the area for project purposes is less consequential. Powdering of roads may occur during dry periods when heavier traffic associated with intensive project work is ongoing. This creates dust and visibility problems but is generally confined to the local area. In extreme cases deep dry ruts and dust pockets in roads develop causing effects similar to those that occur from wet season traffic.

Cumulative effects of road closure depend on the technique used. Ripping road beds, a most commonly used technique on flat terrain, reduces surface erosion, improves infiltration, and promotes vegetative growth and wildlife security (Switalski 2004). However, ripping does not improve stability on roads cut into steep slopes. Roads to be closed in the Project Area are found on flat ground with none cut into slopes.

CHAPTER V. CONSULTATION AND COORDINATION

A. Agencies, Private Landowners, Permittees, and Individuals Consulted

Burns Paiute Tribe
Cronin Logging
Harney County Court
Interfor Pacific
Lost Spring Ranch, LLC
Malheur Lumber Company
Malheur National Forest – Emigrant Creek Ranger District
Oregon Department of State Lands – Eastern Region
Oregon Wild (formally Oregon Natural Resources Council)
Pine Creek Ranch
Prairie Wood Products
Rattlesnake Creek Ranch
Wallowa-Whitman National Forest – Blue Mountain Pest Management Service Center
Woodworth Logging, Inc.
11 additional private landowners

B. Participating Bureau of Land Management Employees

1. Interdisciplinary Team

Lindsay Davies	Fisheries Biologist
Terri Geisler	Geologist (Hazardous Materials)
Rick Hall	Natural Resource Specialist (Botany)
Doug Linn	Fire Botanist
Fred McDonald	Natural Resource Specialist (Recreation)
Nick Miller	Fire Wildlife Biologist
Tim Newkirk	Forester/Project Lead
John Petty	Civil Engineer Technician
Skip Renchler	District Realty Specialist
Lesley Richman	Natural Resource Specialist (Weeds)
Dan Ridenour	District Fuels Specialist
Jeff Rose	District Fire Ecologist
Scott Thomas	District Archaeologist

2. Advisory

Bill Andersen	District Range Management Lead
Jim Buchanan	Supervisory Natural Resource Specialist
Gary Foulkes	District Planning and Environmental Coordinator
Jon Reponen	Natural Resource Specialist (Forestry and Fuels)

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APPENDIX A: FIRE REGIME/CONDITION CLASSES[15]

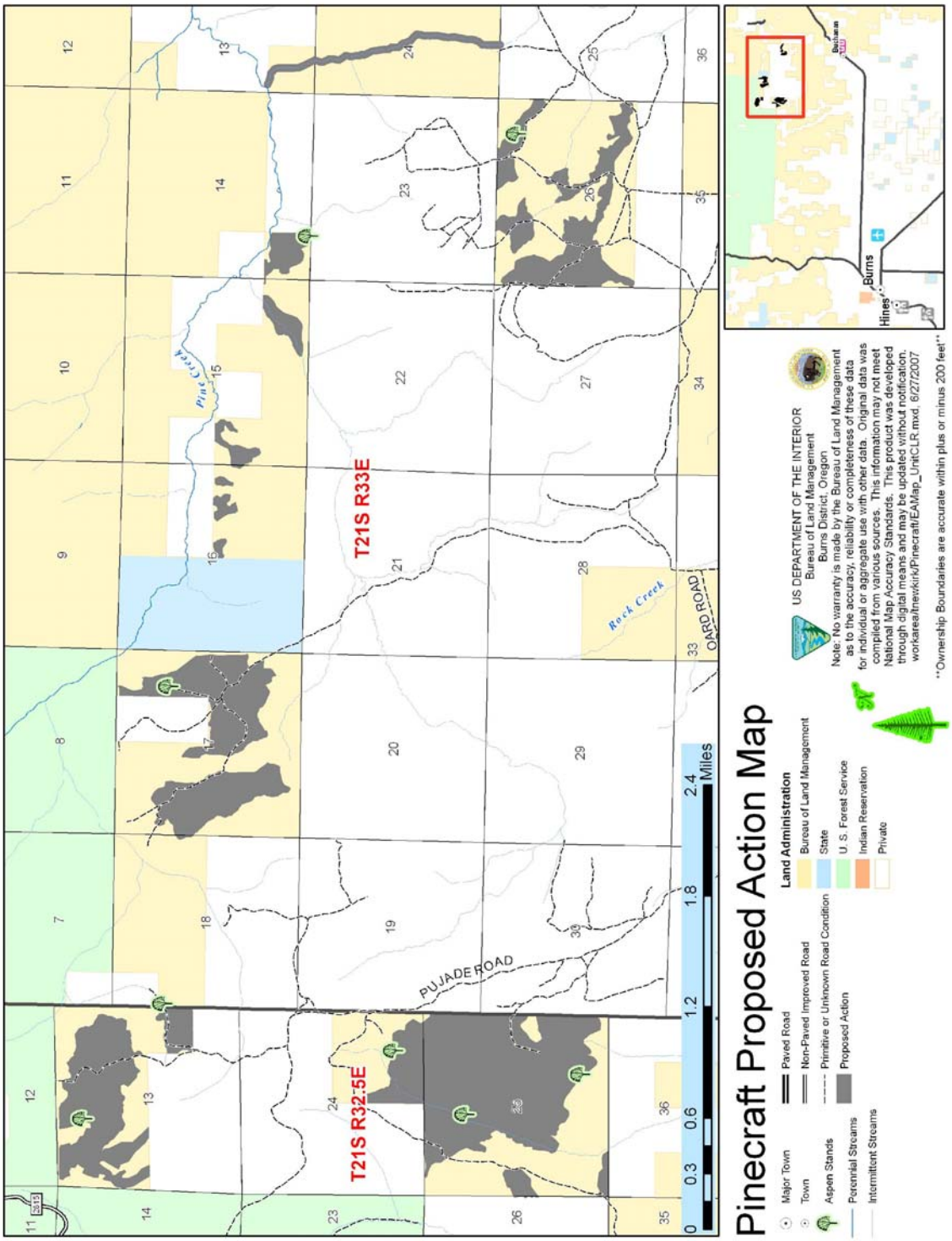
Table 1 – Description of the Five Fire Regimes

Fire Regime Class	Frequency (Fire Return Interval)	Severity	Modeling
I	0-35 yrs (Frequent)	Low	Open Forest or savannah structures maintained by frequent fire; also includes frequent mixed severity fires that create a mosaic of different age post –fire open forest, early to mid-seral forest structural stages, and shrub or herb dominated patches (generally < 40 hectares (100 acres))
II	0-35 yrs (Frequent)	Stand Replacement	Shrub or grasslands maintained or cycled by frequent fire; fires kill nonsprouting shrubs such as sagebrush which typically regenerate and become dominant within 10-15 years; fires remove tops of sprouting shrubs such as mesquite and chaparral, which typically resprout and dominate within 5 years; fires typically kill most tree regeneration such as juniper, pinyon pine, ponderosa pine, Douglas-fir, or lodgepole pine.
III	35-100 yrs (Less Frequent)	Mixed	Mosaic of different age post-fire open forest, early to mid-seral forest structural stages, and shrub or herb dominated patches (generally < 40 hectares (100 acres)) maintained or cycled by infrequent fire.
IV	35-100 yrs (Less Frequent)	Stand Replacement	Large patches (generally > 40 hectares (100 acres)) of similar age post-fire shrub or herb dominated structures, or early to mid-seral forest cycled by infrequent fire.
V	100 yrs + (Infrequent)	Stand Replacement	Large patches (generally > 40 hectares (100 acres)) of similar age post-fire shrub or herb dominated structures, or early to mid to late seral forest cycled by infrequent fire.

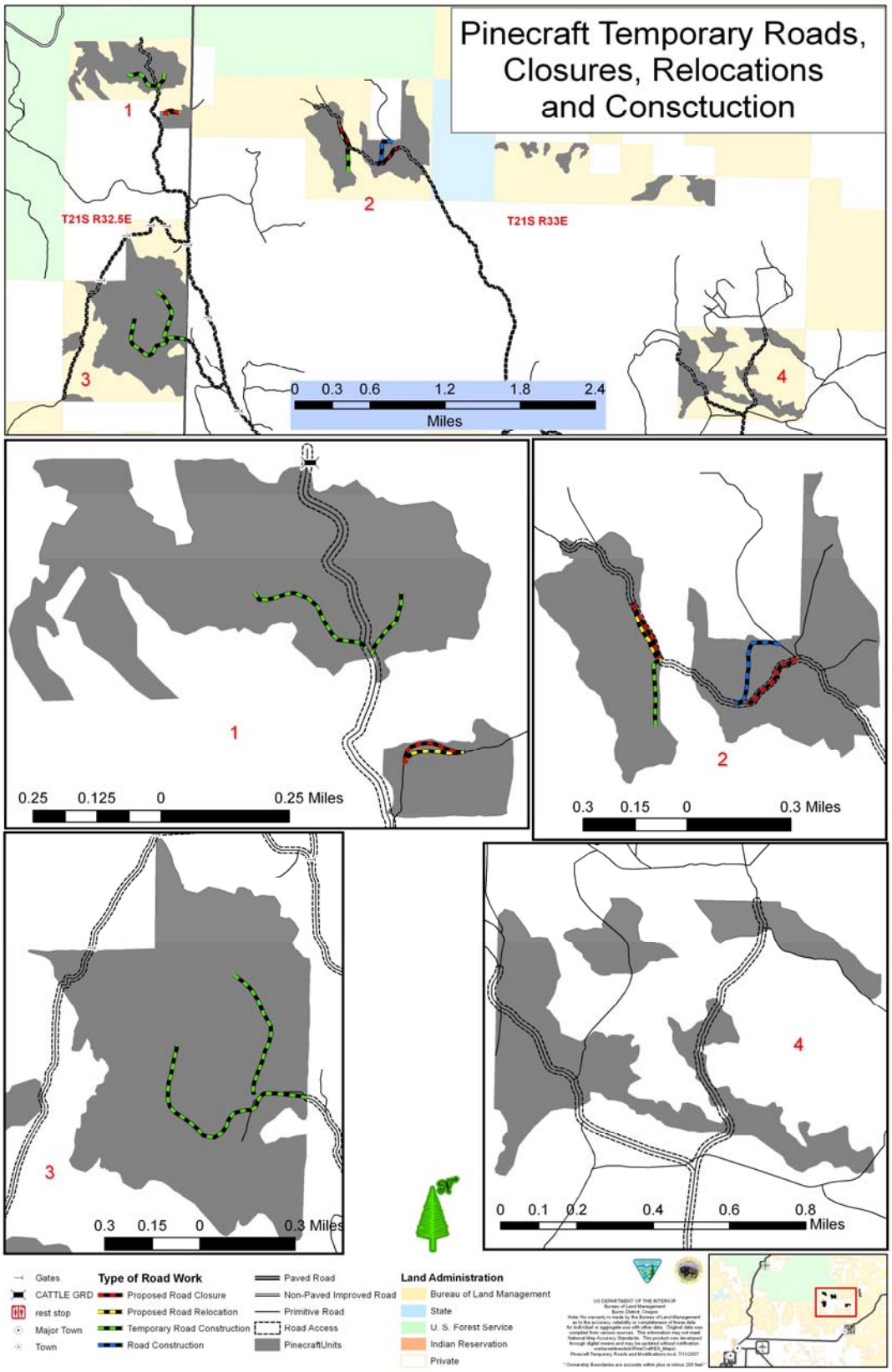
Table 2 – Description of the Three Condition Classes

CC	DESCRIPTION	POTENTIAL RISKS
Class 1	Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances	*Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression and other types of management that do not mimic the natural FR and associated vegetation and fuel characteristics). *Composition and structure of vegetation and fuels are similar to the natural (historical) regime.
Class 2	Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances	*Risk of loss of key ecosystem components (e.g., native species, large trees, and soil) is low. *Fire behavior, effects, and other associated disturbances are moderately departed (more or less severe). *Composition and structure of vegetation and fuel are moderately altered. *Uncharacteristic conditions range from low to moderate; risk of loss of key ecosystem components is moderate.
Class 3	High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances	*Fire behavior, effects, and other associated disturbances are highly departed (more or less severe). *Composition and structure of vegetation and fuel are highly altered. *Uncharacteristic conditions range from moderate to high. *Risk of loss of key ecosystem components is high.

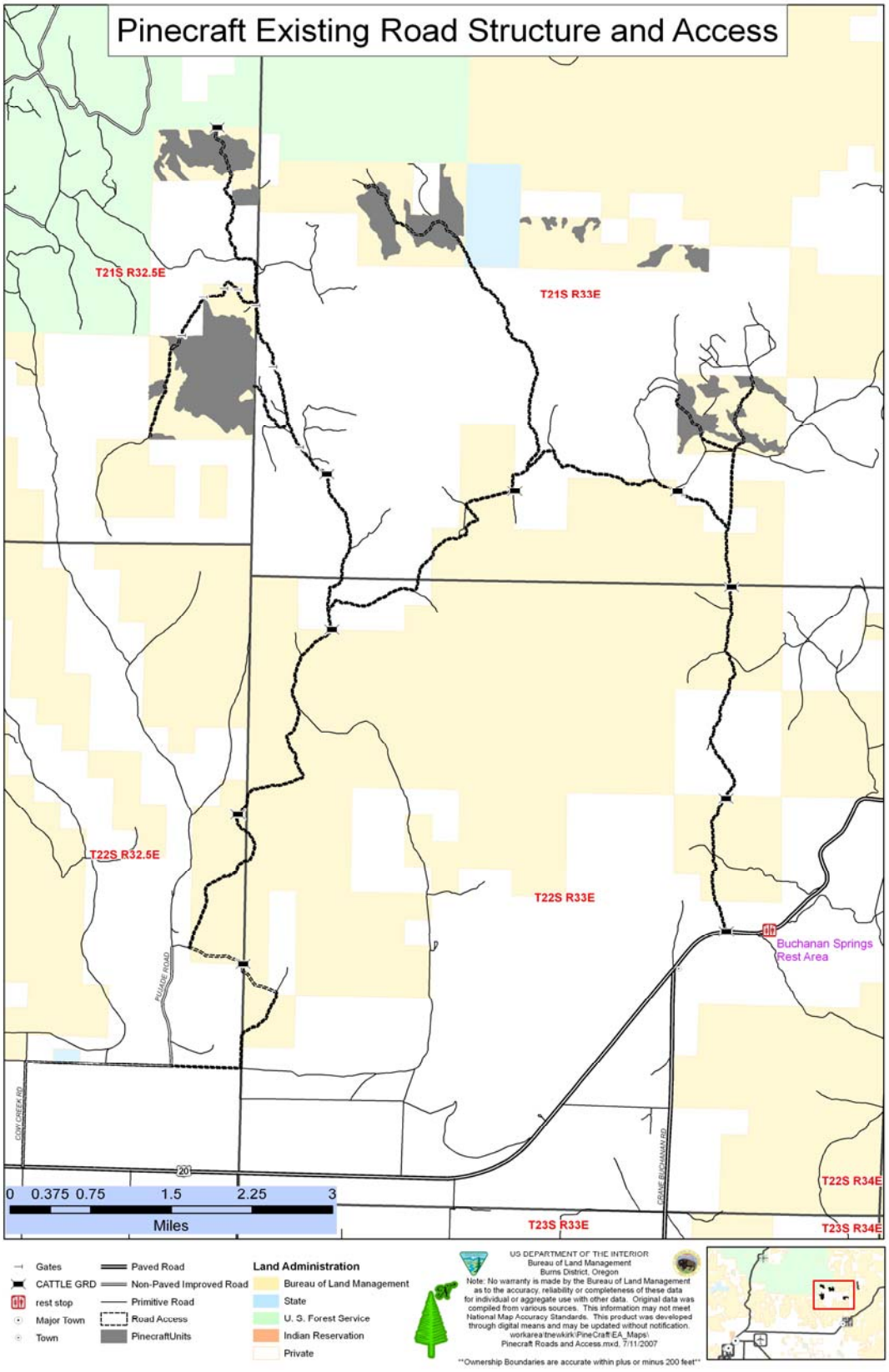
[15] http://www.frcc.gov, or Reference Hann and Bunnell (2001).



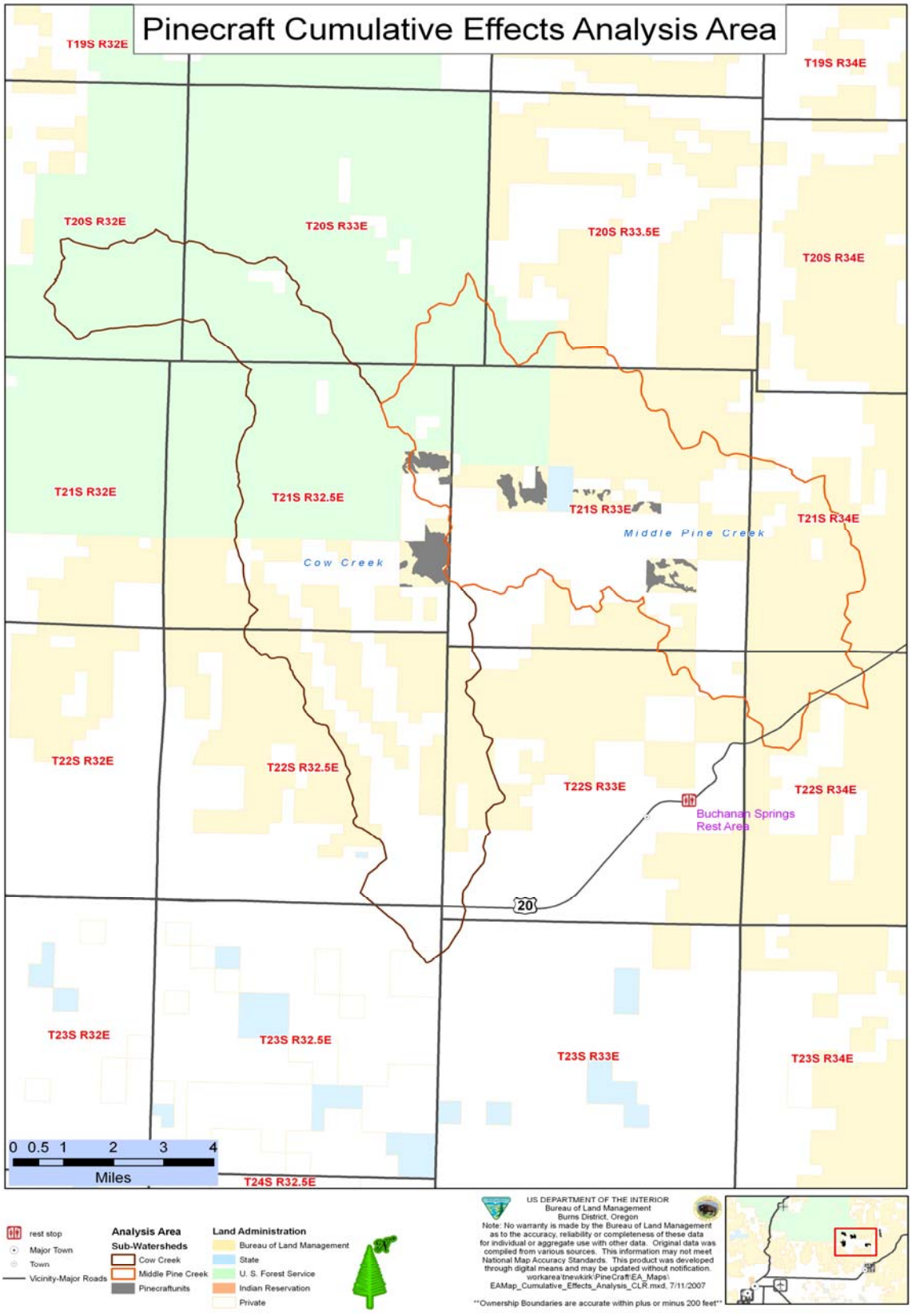
Map 1 – Proposed Action Map



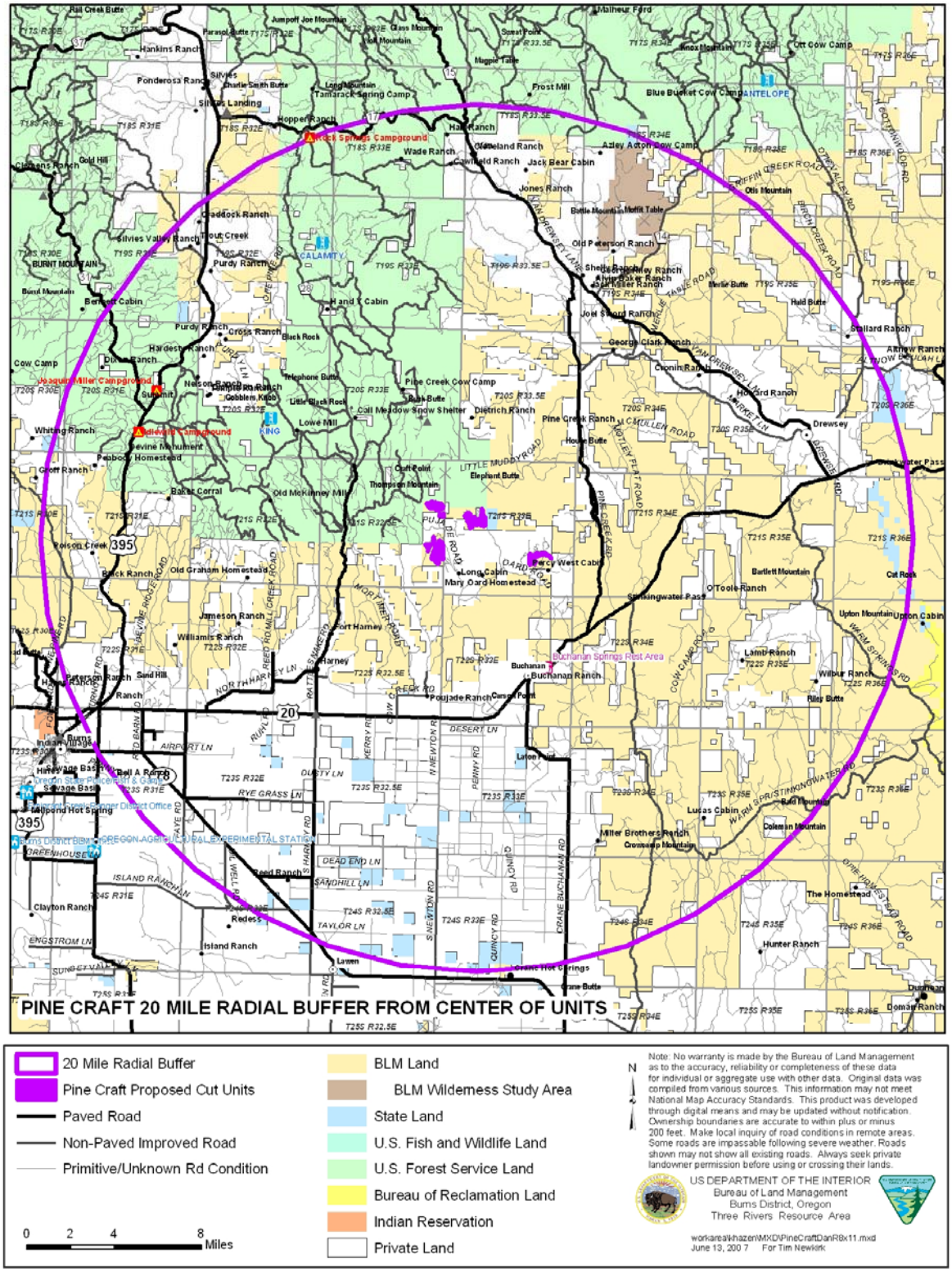
Map 2 – Road Relocations, Road Closures, Temporary roads, and Road Construction.



Map 3 – Road Access to Project Area



Map 4 - Cumulative Effect Analysis



Map 5 – Smoke Management Analysis

APPENDIX C: Projects – Past, Present, Foreseeable Future within Middle Pine Creek and Cow Creek Subwatersheds

Table 3 – BLM Future Projects

Project Name	Planned Date	Type Burn	Subwatershed	Acres
Craft Point Old Growth	Fall 2007	Underburn	Middle Pine Creek	266
East Cow Creek	Fall 2007	Underburn	Cow Creek	83

Table 4 – BLM Past Projects

Project Name	Completion Date	Treatment	Subwatershed	Acres
Cow Creek Units 1 – 7	Aug 2001	Juniper/Ponderosa pine	Cow Creek	224
Craft Canyon	Oct 2002	Ponderosa pine	Middle Pine Creek	32
Craft Point PCT 1 & 2	Nov 2001 and 2000	Ponderosa pine	Middle Pine Creek	56
Demaris PCT 1 – 4	Sept 2002	Juniper/Ponderosa pine	Middle Pine Creek	81
Pine Creek PCT 1 – 4	2000	Ponderosa pine	Middle Pine Creek	193
Pine Creek JUOC	2000	Juniper	Middle Pine Creek	57

Table 5 – Wildland Fires

Fire Name	Date of fire	Species burned	Subwatershed	Acres
Cow Creek Fire	1997	Juniper	Cow Creek	394

Table 6 - Adjacent Landowners Project

Name	Date	Treatment[16]	Subwatershed[17]	Acres
Landowner 1	Ongoing	N, C, B	CC, RC, MPC	280
Landowner 2	Ongoing	N, B	CC	40
Landowner 3	Ongoing	N, C, B	MPC	80
Landowner 4	Ongoing	N, C, B	MPC	40

Table 7 – Malheur National Forest – Emigrant Creek Ranger District Projects

Project	Date	Treatment	Subwatershed	Acres
None	None	None	MPC, CC	0

[16] N – Noncommercial thin, C – Commercial thin, B – Burning, pile or broadcast.
[17] CC –Cow Creek, RC – Rock Creek, MPC – Middle Pine Creek.