

GREATER SAGE-GROUSE
HABITAT IMPROVEMENT
PROJECT AND RESOURCE
MANAGEMENT PLAN
AMENDMENT

(Project Code 065H)

ENVIRONMENTAL ASSESSMENT
OR-08-025-036

Three Rivers Resource Area
Bureau of Land Management
Burns District Office
28910 Hwy 20 West
Hines, Oregon 97738

TABLE OF CONTENTS

Chapter I. Introduction and Purpose and Need for Action	3
A. Conformance with Applicable Land Use Plans	7
Chapter II. Alternatives Including the Proposed Action.....	9
A. No Action Alternative.....	9
B. Proposed Action.....	10
C. Alternatives Considered but Eliminated	14
Chapter III. Affected Environment and Environmental Consequences.....	15
1. Air Quality	18
2. Migratory Birds.....	19
3. Threatened, Endangered, and Special Status Species – Fauna	22
4. Noxious Weeds	27
5. Cultural Heritage.....	28
6. Soils.....	30
7. Vegetation	31
8. Wildlife	35
9. Grazing Management.....	36
10. Recreation	38
11. Visual Resource Management	38
12. Economic and Social Values	40
13. Fire Management	41
14. Access/Transportation.....	44
15. Biological Soil Crusts	45
Chapter IV. Consultation and Coordination	49
A. Agencies and Individuals.....	49
B. Interdisciplinary Team	49
C. Advisory.....	50
Appendix A. Maps	51
Appendix B. Monitoring.....	54
References	58

GREATER SAGE-GROUSE HABITAT IMPROVEMENT PROJECT
AND RESOURCE MANAGEMENT PLAN AMMENDMENT
ENVIRONMENTAL ASSESSMENT

OR-08-025-036

CHAPTER I. INTRODUCTION, PURPOSE AND NEED FOR ACTION, AND
BACKGROUND

Introduction and Background

The Burns District Bureau of Land Management (BLM) proposes to control juniper (*Juniperus occidentalis*) encroachment of sagebrush steppe to improve greater sage-grouse (*Centrocercus urophasianus*) habitat and re-establish travel corridors that once existed between Glass Butte and Rye Grass leks (mating/display grounds) and amend the Three Rivers Resource Management Plan (1992) to allow the public to remove downed juniper. The project area is located on the western edge of the Three Rivers Resource Area approximately 45 air miles west of Burns, Oregon (Map A - Project Vicinity Map), and includes portions of the Roundtop Butte (#7063) and Rimrock Lake (#7006) grazing allotments (T. 23 S., R. 23 E., T. 23 S., R. 24 E., T. 24 S., R. 23 E., T. 24 S., R. 24 E). The project area encompasses approximately 19,700 acres of BLM-managed lands south of U.S. Highway 20 (Map B - Project Area), and is within one of the largest contiguous sagebrush (*Artemisia* sp.) steppe communities remaining in Oregon (Hagen 2005). The amendment area is comprised of three general areas and covers approximately 290,000 acres (Map C – Amendment Area).

There are no Wilderness Areas, Wilderness Study Areas (WSA), Areas of Critical Environmental Concern (ACEC) in the project area. Additionally, there are no Herd Management Areas (HMA) in the project area, but two HMA's extend across portions of the amendment area. No perennial streams are present in the project area. Juniper expansion would be controlled by personnel with chainsaws, and follow-up treatment of cut trees would be completed by various means, including cutting and dispersing limbs, piling and burning, or by permitted removal by the public. Treatments would occur over a three to seven year period (dependent on funding, climatic conditions, and other agency priorities).

In the past 130 years, western juniper has been expanding and infilling within its geographic range at unprecedented rates compared to any other time period during the last ~ 10,000 years (Miller and Tausch 2001) and has invaded meadow, grassland, sagebrush-steppe, and riparian plant communities (Young and Evans 1981). Azuma and others (2005) estimate that juniper occupies five million more acres now than it did seventy years ago in eastern Oregon alone. Current estimates indicate that over ninety percent of existing juniper established within the last one hundred years (USDI-BLM 1990), and millions of acres of sagebrush communities are at high risk of displacement from juniper and other conifer species (Suring et al. 2005). As juniper increases in site dominance, there is a resulting decline in shrubs and herbaceous vegetation (Burkhardt and Tisdale 1969, Adams 1975, Bunting et al. 1999, Miller et al. 2000, Roberts and Jones 2000, Schaefer et al. 2003). The increase in juniper density and distribution has often resulted in negative impacts to soil resources, plant community structure and composition, forage

availability, water and nutrient cycles, and wildlife habitat (Miller et al. 2000, Miller et al. 2005). While a low level of juniper adds structural/vertical diversity to the landscape and increases habitat values for many species, a continual increase in dominance causes a general decline in species richness, wildlife abundance, and wildlife diversity (Miller et al. 2005). Greater sage-grouse (sage-grouse) and other sagebrush obligates appear to be the most negatively affected wildlife species by juniper expansion and infilling.

Historic grazing practices (which removed fine herbaceous fuels) and the start of fire suppression activities around the turn of the century greatly reduced the role of fire in the environment. Fire was the principal factor that controlled conifer encroachment into shrub-grassland communities in the Intermountain West prior to Euro-American immigration (West 1999, Miller and Tausch 2001). As the frequency and intensity of fires across the landscape diminished, juniper expanded into shrub-grassland communities with an overall loss in ecosystem function and a dramatic alteration in historic biodiversity, hydrologic cycles, fauna, and nutrient cycling (Bates et al. 1999).

Over the past 130 years, knowledge of land management in this region has increased dramatically. The Taylor Grazing Act of 1936 paved the way for improved livestock grazing management on public lands. Since then, many policies and directives have set guidelines for current grazing practices. Current grazing management is designed to maintain or move toward improved upland and riparian/wetland watershed functions, ecological processes, water quality, and habitats to support native, Threatened and Endangered and locally important species. While grazing practices have drastically changed, fire prevention programs continue to be a dominant force limiting the spread of wildfire. In recent times, modern fire control and prevention programs are probably the most important factor influencing juniper expansion (Burkhardt and Tisdale 1976, Miller and Rose 1995).

Standards for rangeland health are being achieved in Roundtop and Rimrock Lake allotments, including maintenance of adequate sagebrush and herbaceous cover for sage-grouse. However, juniper expansion is negatively affecting sagebrush habitat in the project area, and may preclude these allotments from achieving Standards for sage-grouse in the future. The increasing dominance of western juniper within portions of the project area is apparent from rangeland trend studies, permanent photo points, and presence of young juniper dispersed from presettlement¹ trees. Encroaching and infilling juniper is affecting the density, patch size, and health and vigor of Wyoming big sagebrush-bunchgrass, basin big sagebrush-bunchgrass, and low sagebrush-bunchgrass communities. These communities in the project area are in the early transition (Phase I)² to mid-transition (Phase II)³ from sagebrush to woodlands, and still contain healthy sagebrush and herbaceous vegetation. Small pockets (<1 acre) of late transition (Phase

¹ Time period prior to Euro-American settlement in the 1870's. Sagebrush steppe was extensive and juniper was only a minor component. Western juniper has expanded since Euro-American settlement of the region (Burkhardt and Tisdale 1976, Miller and Rose 1995).

² Phase I: juniper trees are present but shrubs and herbs are the dominant vegetation that influences ecological processes on the site (Miller, et al., 2005).

³ Phase II: juniper trees are co-dominant with shrubs and herbs and all three vegetation layers influence ecological processes on the site (Miller, et al., 2005).

III)⁴ may also be present. Rehabilitation/restoration of these communities is possible with juniper control treatments (Miller et al. 2005).

In 2010, the United States Fish and Wildlife Service determined that protection of greater sage-grouse under the Endangered Species Act was warranted, but precluded by higher priority listing actions (75 FR 13910). Sage-grouse are dependent on sagebrush throughout the year (Schroeder et al. 1999), and may be found in the project area at various times of year. Sagebrush is the dominant vegetative community in the project area, but western juniper has expanded across eighty percent of this area and is in the early stages of converting the open sagebrush habitat to woodlands. Juniper expansion into once open sagebrush habitat provides hiding cover and perches, which allows raptors to more easily hunt sage-grouse. Commons et al. (1999) found high levels of predation at lek sites with encroaching pinyon and juniper trees, and less predation on the same leks after removing the trees. Once juniper expansion becomes too dense around a lek, sage-grouse would likely abandon the site.

Juniper expansion can also limit sage-grouse movements as it begins to colonize open sagebrush stands. In central Oregon, sage-grouse avoided western juniper communities for nesting and winter use (USDI-BLM 1994), and Commons et al. (1999) found sage-grouse clearly avoided juniper trees during breeding and summer periods. Recent research indicates greater sage-grouse avoid areas with as little as five percent juniper cover (Freese 2009). This project would complement a recent juniper treatment around the Glass Butte Lek in the northwestern part of the project area, and is part of a larger goal to control expansion juniper in various habitat types across the District.



Figure 1. Post-settlement juniper expansion in the project area.

Purpose of and Need for Action

A. Project Area

The purpose is to remove juniper expansion to restore, maintain, and improve greater sage-grouse habitat and re-establish travel corridors that once existed between Glass Butte and Rye Grass Leks (mating/display grounds). Associated benefits of improving sage-grouse habitat include improved watershed health, vigor of native sagebrush-bunchgrass communities, improved habitat for big game and species associated with open sagebrush habitat, such as sage thrasher, sage sparrow, and sagebrush lizards, and improved forage for livestock. The need for action is because juniper has expanded into 80% of the open sagebrush habitat in the project area

⁴ Phase III: juniper trees are the dominant vegetation and the primary plant layer influencing ecological processes on the site (Miller, et al., 2005).

to the extent that it may displace greater sage-grouse from this important lekking and nesting area, and create an impediment to sage-grouse movement through the area.

Development of the alternatives is based on management objectives identified in the Three Rivers Resource Management Plan (RMP). The RMP directs land managers to: 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 Resource Area (WL-7 and V-1); and maintain, restore or enhance the habitat of candidate, State listed and other sensitive species to maintain the populations at a level which will avoid endangering the species and the need to list the species by either State or Federal governments (SSS-2). Additional guidance and project planning is based on sage-grouse and sagebrush management in the Greater Sage-Grouse Conservation Assessment and Strategy for Oregon: A Plan to Maintain and Enhance Populations and Habitat (Strategy) (Hagen 2005). The BLM is signatory to the Strategy and supports the management recommendations and conservation guidelines of that document (BLM IM OR-2007-073).

B. Three Rivers Resource Management Plan Amendment

The purpose is to allow the BLM to issue permits to the public for use of woodland byproducts resulting from BLM juniper treatments, such as fuelwood, posts, poles, and juniper boughs, in the region south of U.S. Highway 20 and west of Oregon Highway 205 (Map C - Amendment Area). The need is to amend the RMP to allow this activity in the identified part of the Three Rivers Field Office (Three Rivers). The need arises from public demand for woodland products and BLM's legal requirement that all authorized uses achieve the principles of multiple-use in the area south of Highway 20 and west of Highway 205, the plan amendment area. The public has expressed interest in harvesting the cut juniper in the amendment area, but RMP direction does not authorize the BLM to issue woodland product permits for public use in this area (Three Rivers RMP W7.11 p. 2-76).

Currently, juniper felled in Three Rivers outside the amendment area can be made available for public use through a permit process, while juniper cut in the amendment area must be treated through other means, such as piling and burning, by agency personnel or contractors. The proposed plan amendment would allow the public an opportunity to harvest juniper that is cut as part of BLM authorized projects, provided it complies with project objectives and meets other goals and direction in the RMP.

Permits are issued for public harvest of woodland products across the rest of the Resource Area with certain restrictions to minimize potential resource damage, and the same process is proposed for the plan amendment area. In addition to harvesting treatment byproducts, the plan amendment would also allow collection of juniper boughs. Juniper boughs (the last 12-18 inches of branches) are harvested from live trees, and an eighteen year study on the District indicted harvesting juniper boughs does not affect juniper growth or productivity.

Decision Factors

The following Decision Factors will be relied upon by the Authorized Officer in selecting a course of action from the range of alternatives fully analyzed. Does the alternative:

- reduce western juniper from sage-grouse habitat where it has or is currently replacing desirable plant communities
- maintain existing, healthy sagebrush and understory vegetation
- improve connectivity for sage-grouse between Glass Butte and Rye Grass Leaks by restoring open sagebrush habitat.
- meet the direction of the Three Rivers RMP and address recommendations of the Greater Sage-grouse Conservation Assessment and Strategy for Oregon: A Plan to Maintain and Enhance Populations and Habitat (Strategy) (Hagen 2005).
- provide for an economical way of disposing downed juniper that also meets the public demand for the byproducts.

Decision to be Made

The BLM will decide 1) whether or not to accept, in whole or in part, the juniper treatments proposed and analyzed in the alternatives and 2) the plan amendment; including:

- a. Removal of expansion juniper
- b. Slash treatment – hand-pile and burn, machine pile and burn, leave where it is and burn, or leave where it is and not burn
- c. Accept entire Amendment Area as proposed or only a portion
- d. Allow public harvest of cut juniper (by permit) following juniper treatment projects
- e. Allow public harvest of juniper boughs (by permit) across all or portions of the Amendment Area

Conformance with Land Use Plans, Laws, Regulations and Policies

The project is in conformance with management direction established in the Record of Decision for the Three Rivers RMP/Final Environmental Impact Statement (FEIS) of 1992 except for the proposed removal of cut juniper by the public. The amendment to the RMP as proposed would allow for such use. The RMP objectives, applicable to the Proposed Action include:

- 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 Resource Area (WL-7).
- maintain, restore or enhance the habitat of candidate, State listed and other sensitive species to maintain the populations at a level which will avoid endangering the species and the need to list the species by either State or Federal governments (SSS-2).
- 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 Resource Area (V-1).

The Proposed Action is in compliance with the management goals set forth in the Greater Sage-grouse and Sagebrush-Steppe Ecosystems Management Guidelines (2000) and Greater Sage-grouse Conservation Assessment and Strategy for Oregon (Hagen 2005) including:

- maintain and enhance existing sage-grouse habitats, use mechanical treatment or prescribed fire to remove juniper where it has invaded into...sites with mountain big sagebrush and/or low sagebrush.
- maintain connectivity between core sagebrush areas between Burns, Lakeview, and Prineville BLM Districts
- vegetation manipulations should benefit the long-term health of sage-grouse habitat.

In addition, the Proposed Action utilizes the following documents, which direct and provide the framework and official guidance for management of BLM lands within the Burns District:

- BLM National Sage-Grouse Habitat Conservation Strategy (2004)
- Roundtop Butte and Rimrock Lake Allotment Management Plans
- National Environmental Policy Act (42 U.S.C. 4321-4347)1970
- Federal Land Policy and Management Act (43 U.S.C. 1701, 1976)
- Burns District Integrated Weed Management Plan (1998)
- Oregon State Smoke Management Plan

Scoping

This proposal was developed internally within the BLM during the early spring of 2007. The initial proposal was small in size and scope, and was considered a Categorical Exclusion level project. During initial planning and internal scoping, the project was expanded to treat a larger landscape area to better meet the purpose and need, and then changed to an Environmental Assessment (EA) process. A notice inviting public comment on the project was published in the Burns Times-Herald on March 1st of 2007. In addition, letters soliciting public comment were also sent to several individuals and organizations including Harney County, Oregon Natural Desert Association (ONDA), Burns Paiute Tribe, and Oregon Department of Fish and Wildlife (ODFW).

Responses received were generally favorable toward the project. Potential concerns brought up during scoping are listed in Table 1.

Table 1. Issues brought up through scoping.

How would the project affect livestock grazing in the allotment?
Would the public be allowed to harvest cut juniper?
What would happen to the old-growth juniper component in the allotment?
How would the juniper treatments impact the cultural heritage resources?
How would the juniper treatments contribute to the hazardous fuels in the area, or affect the risk of a severe wildfire?
How would the project affect water quality in the watershed?
Would the removal of juniper trees affect the character of the viewshed in the area?
What impacts would the project have on Special Status Species of flora and fauna in the project area?
How would the removal of expansion juniper affect wilderness characteristics in the project area?

Public interest was expressed in using cut juniper for fuelwood, posts, and poles rather than have the BLM pile and burn all the slash as initially proposed. Public removal of cut juniper in this area is not in conformance with direction in the Three Rivers Resource Management Plan, therefore an amendment was proposed to analyze public removal of juniper cut as part of all BLM habitat improvement of other rangeland health projects in the proposed Amendment Area. A Notice of Intent (NOI) to amend the RMP and conduct public scoping was published in the Federal Register June 17th of 2008. The only public comment following the NOI was from Oregon Wild. The Oregon Wild comment raised issues similar to those identified during initial scoping of the project and did not address the proposed amendment.

Issues Considered But Not Analyzed Further

The BLM's 1979 and 1980 wilderness inventory found wilderness character not present on BLM-administered lands within the proposed project area and amendment area. In September 2007, BLM received several citizen Proposed Wilderness Study Area (PWSAs) proposals including the proponent's positions concerning the existence of wilderness characteristics in portions of the amendment area (including the project area). These PWSAs overlap approximately fifty-three percent (144,650 acres) of the amendment area, including seventy-six percent (15,060 acres) of the project area.

Starting in August 2008, wilderness inventory maintenance (WIM) assessments have been completed by a BLM interdisciplinary team (IDT) that included the lands in the project area and portions of the amendment area. The IDT used current field data along with the citizen's PWSA data and determined that no substantive changes in conditions had occurred that would warrant reversal of the original wilderness inventory's finding that wilderness characteristics were not present in the project area or assessed portions of the amendment area. Additional assessments are ongoing in the remaining portions of the amendment area, including areas outside citizen PWSA's.

The project area lies within five WIM units. Two units were found to be under the 5,000 acre minimum size criteria, and the other three units were over 5,000 acres. The three units over 5,000 acres are: Rim Rock Lake (24,962 acres), Midnight Point (5,520 acres), and Round Top Butte (18,057 acres) units. These three WIM units met the naturalness criterion. However, they were determined to not provide outstanding opportunities for solitude or outstanding opportunities for primitive and unconfined recreation.

Wilderness maintenance assessments have been completed on seven additional WIM units covering approximately forty-one percent of the entire amendment area. This includes approximately fifty-five percent (80,100 acres) of the citizen PWSAs in the amendment area. All units assessed to date have met the size criteria (>5,000 acres), and all but the Jack Mountain Unit met the naturalness criterion. None of the units met the criteria for outstanding opportunities for solitude or outstanding opportunities for primitive and unconfined recreation. Based on these assessments, BLM determined that wilderness characteristics were not present in these units. Assessment of the rest of the amendment area is ongoing. No juniper would be cut or made

available for public removal unless that area has first been inventoried for wilderness characteristics and analyzed site specifically under a separate NEPA document.

CHAPTER II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

A. Alternative A - No Action

No treatments to control juniper expansion and improve sage-grouse habitat would be implemented. Current management would continue under the Three Rivers RMP and all other relevant policy direction. Juniper would continue to expand and infill, and convert open sagebrush communities to closed woodlands.

The Three Rivers RMP would not be amended. The public would not be authorized to harvest juniper boughs or juniper that is cut during habitat improvements or as part of other BLM projects in the Three Rivers Resource Area in the amendment area.

B. Alternative B - Proposed Action —Treat expansion juniper and amend the Three Rivers RMP to allow public removal of woodland byproducts and products.

The proposal is to utilize personnel with chainsaws to cut expansion juniper within the project area (Map B - Project Area). Once juniper is cut down, follow-up treatments include a combination of limbing boles, scattering branches, jackpot burning, or piling and burning to reduce the impact of post-settlement juniper expansion into open sagebrush communities in the project area. The proposed treatment areas are displayed in Map D – Treatment Areas. Maintenance of existing sagebrush and herbaceous vegetation is a primary goal; therefore, no broadcast burning is proposed.

Follow-up treatments would be dependent on concentrations of downed wood after initial cutting. The amount of down wood is expected to be closely associated with the stage of woodland succession; however, this may vary depending on other factors, such as the level of public harvest of downed wood.

Once juniper is controlled at a site, it would be maintained at desired levels through periodic future treatments. Juniper established prior to Euro-American settlement (presettlement juniper), juniper with cavities or other signs of obvious wildlife use, small juniper hidden by sagebrush, and the juniper seed already on the ground would remain following treatment. Future treatments would be dependent on the rate of new recruitment from these sources, but would likely occur at least twenty years after initial treatment. Subsequent treatments are expected to be less expensive and cause less ground disturbance if implemented in the early stages of juniper expansion.

Exceptions to cutting include juniper trees that:

- were established prior to Euro-American settlement (trees > 140 years old)⁵
- have obvious signs of wildlife use (i.e. cavities, nests)
- are in sensitive mining reclamation areas of the Glass Buttes Abandoned Mine Lands (approximately 575 acres)

Juniper growing in inaccessible or fire-sheltered areas (e.g. rocky cliffs) and some young replacement trees near presettlement trees may also be excluded from cutting. These exceptions would be identified on a site specific basis during field project layout. With these exceptions, it is anticipated that approximately ninety to ninety-five percent of juniper trees would be cut under the proposed action.



Figure 2. Juniper with characteristics typical of presettlement trees.

Treatment Descriptions

Cut/Scatter: Juniper growing at low densities or consisting primarily of small trees (Phase I) would be cut and left in place where there would be negligible risks of fire spread associated with increasing hazardous fuels. Due to the crown width of some trees, cut juniper is often taller than standing juniper. In this case, branches of cut juniper would be removed and scattered to limit vertical height of cut trees to less than four feet. The intent is to eliminate competition between juniper and the sagebrush-bunchgrass communities, minimize the number of potential perches for avian predators, and accelerate the breakdown of cut juniper. This treatment area boundary incorporates many acres that do not contain trees due to the low density and scattered nature of juniper expansion. However, this large area was delineated partly for ease of description and partly to account for small trees not identified during project development or field visits. This treatment would be the primary treatment method applied, covering up to 7,345 acres.

Cut/Limb/Jackpot Burn: Juniper growing at moderate to high densities (Phase II) would be cut down, and branches protruding vertically above four feet in height would be limbed and stacked on top of the bole. This pile would be jackpot burned in one or three years after drying. Jackpot burning would be used where fuel loads are discontinuous or in isolated areas with higher fuel concentrations. Jackpot burning would consist of personnel with drip torches or other ignition sources walking through treatment areas and lighting concentrations of cut juniper, although a helicopter equipped with a helitorch may also be used. Burning by this method would reduce the fine fuels and minimize soil sterilization relative to burning of larger machine-pile slash. Jackpot burning would only be conducted under conditions when the fire is unlikely to spread or impact desirable vegetation, such as when the ground is frozen or wet during late fall, winter, or spring. This treatment is conducive to maintaining the shrub and herbaceous component on the site. A

⁵ Determination of age would be based on the presence of morphological characteristics typical of presettlement trees (Miller et al. 2005)

mixture of native and desirable non-native grasses, forbs, and shrub species may be seeded as needed following burning. This would be the second most used treatment, covering up to 3,441 acres.

Cut/Machine Pile/Burn: Juniper growing at moderate to high densities (Phase II-III) would be cut, left in place, and later machine or hand piled prior to being burned. Areas with continuous fuel concentrations or areas potentially creating hazardous conditions for future fire suppression efforts (e.g. near roads), would be piled two to four years after cutting. Hand crews or heavy equipment (e.g. grapple-equipped excavators) would pile the slash. Machine piles are typically 12 feet tall by 16 to 22 feet wide. To limit soil disturbance and reduce potential risk of soil erosion, machine piling would occur when soil conditions are dry or the ground is frozen. Pile burning would only be conducted under conditions when the fire is unlikely to spread or impact desirable vegetation, such as when the ground is frozen or wet during late fall, winter, or spring. A mixture of native and desirable non-native grasses, forbs, and shrub species would be seeded as needed at the pile sites following burning. This would be the least selected method in the project area, covering up to 2,473 acres.

Specific locations where each treatment method would be applied are illustrated on Map D – Treatments. Total acres treated under each method were derived from GIS data, satellite imagery, and field verification. However, not every acre can be accounted for across the landscape, and juniper distribution and density is highly variable within some areas of the project. Minor modifications to treatment areas are likely, and would occur during layout.

Table 2. Juniper treatment methods in the project area (Map D).

Treatment	Description	Location	Site Description
Cut and Scatter	Cut juniper, and limb branches to limit vertical heights to 4 feet or less No piling, No burning	Throughout project area	Low concentrations of juniper (Phase I)
Cut/Limb/Jackpot Burn	Cut juniper, limb branches to limit vertical heights to 4 feet and stack cut branches on top of the tree Burn pile in 1-3 years	Throughout project area; piling and burning would not occur within 100 feet of pockets of tall sagebrush stands or pygmy rabbit burrows	Moderate concentrations of juniper, but where fuel loads are discontinuous or the ability of fire to spread is low (typically early to mid stage Phase II)
Cut/Pile/Burn	Cut juniper and leave whole tree on ground; machine or hand pile and burn in 1-3 years	Throughout project area; piling and burning would not occur within 100 feet of pockets of tall sagebrush stands or pygmy rabbit burrows	Fuel loads are high or continuous (typically Phase II-III), or where the cut creates unsafe situations for future fire suppression (e.g. near roads)

Juniper cut within three hundred feet of a road or route would be made available by permit for public use for fuelwood, posts, and poles. After one to three years, areas remaining with moderate to high concentrations of downed juniper would be jackpot burned or piled and burned to remove hazardous fuels. Locations of excessive slash concentrations needed to be burned are anticipated based on current juniper density and distribution, but would be reassessed in the field after cutting and the observed level of public removal of downed trees. BLM would evaluate

these areas for resource concerns during allotment monitoring and other site visits. Permits for woodland products would no longer be issued if public removal is determined to be causing damage to vegetation or other resources that won't recover in one or two growing seasons. Treatments would be implemented over three to seven years and monitored to determine if the project is progressing toward the desired goal of restoring the health of the sagebrush community, improving habitat for greater sage-grouse, and re-establishing the connectivity between the Rye Grass and Little Glass Butte lek complexes.

Amendment

The Proposed Action includes an amendment to the RMP that would allow permits to be issued for public use of juniper cut in the project area and as part of other BLM authorized habitat improvement, restoration, or juniper control projects in the broader amendment area (approximately 290,000 acres) south of U.S. Highway 20 and west of Oregon Highway 205. As with permits issued in other portions of the District, woodland product permits would be issued to the public when it meets the need of the project and is not in conflict with other BLM policy.

Harvest of juniper boughs is proposed for the entire proposed amendment area.

Future possible projects in the amendment area would be analyzed under a separate document following the NEPA process. Site specific analysis of public removal of juniper in those areas would occur within that document.

Project Design Elements

Design elements address resource concerns, and minimize or eliminate potential effects of implementing the proposed activity.

- Archaeological sites would be avoided within mechanical treatment and activity-generated fuels would not be piled within boundaries of archaeological sites. District archaeological would clear project area prior to implementation.
- Special Status plants would be avoided within mechanical treatment units. Fire intolerant sensitive plants would be protected by constructing burn piles in locations that would not impact those species. A BLM Botanist or other person designated by the BLM would identify areas where piles should not be constructed.
- No cutting of juniper with old-growth characteristics or obvious wildlife occupation (cavities or nests).
- Stumps would be cut to within 12 inches of the ground or no higher than surrounding vegetation to maintain visual aesthetics of the open, sagebrush-steppe community
- Prior to treatment, noxious weed populations in the area would be inventoried. Weed populations would be treated using the most appropriate methods in accordance with the Burns District Noxious Weed Management Program EA OR-020-98-05, or current policy and NEPA documentation.
- Risk of noxious weed introduction would be minimized by ensuring all equipment (including all machinery, ATVs, and pickup trucks) is cleaned prior to entry to the site,

minimizing disturbance activities, and completing follow-up monitoring, for at least 3 years. Should noxious weeds be found, appropriate control treatments would be performed in conformance with the Burns District Noxious Weed Program Management EA OR-020-98-05, or current policy and NEPA documentation.

- Cut juniper would be burned when soils are wet or frozen to reduce threat of soil sterilization and maintain existing shrub and herbaceous plant communities.
- Reclaimed areas associated with mining activity will be identified and avoided during treatments
- The duration of rest from grazing after burning would be determined by the Field Manager and an interdisciplinary team based on plant community response; however, rest from grazing is usually not required after pile burning due to the limited area impacted.
- Mixtures of native and desirable non-native grass, forb, and shrub seed may be applied to designated areas with ground-based methods. Candidate sites for seeding would be determined on a case-by-case basis as monitoring data are gathered.
- Prescribed burning would follow the Oregon State Smoke Management Plan to protect air quality and reduce health and visibility impacts on designated areas.
- The Greater Sage-grouse Habitat Improvement Project would have both implementation and effectiveness monitoring performed throughout project implementation and following completion of the project (Appendix B, Monitoring Plan).
- No work would be completed within 2 miles of sage-grouse leks between March 1 and June 15, to minimize impacts to greater sage-grouse leks and nesting birds.
- Pygmy rabbit surveys would be completed prior to implementation of Proposed Actions. If juniper is found to be invading a site with pygmy rabbits, trees would be cut and scattered by hand. No machine piles would be constructed within 100 feet of pygmy rabbit burrows.
- Tall stands of big sagebrush would not be impacted by project activities and burn piles would not be constructed within 100 feet of such stands.
- As soon as practicable after completion of all project activity within a specific area, routes damaged by vehicles should be maintained and brought back at least to their previous standard
- Rock aggregate used for road maintenance would be brought in from Sage Hen Materials Source or other off-site location and not from rock piles associated with the abandoned or reclaimed cinnabar mines.
- Agreements with landowner cooperators should include provisions for access across their lands to ensure efficient travel for project implementation.
- Project implementation would occur only when soils and road conditions are dry or frozen to prevent road damage and off-road impacts.

C. Alternative C - Proposed Action with no option for public removal of woodland products

This action alternative contains the same treatments and project design elements as Alternative B, but would not amend the RMP to allow BLM to issue permits to the public for removal of juniper boughs or project byproducts for firewood, posts, or poles. BLM would not have the option of using members of the public to reduce excessive concentrations of downed juniper.

D. Alternatives Considered but not Fully Analyzed

A Broadcast Burning Alternative was considered, but eliminated from detailed analysis, because it would set back the still functioning sagebrush community to an early seral grassland stage for several decades affecting sage-grouse habitat. The project area is also a low elevation site susceptible to rapid cheatgrass invasion and spread, and would likely have to be seeded following a broadcast burning treatment to protect against noxious weed and cheatgrass spread. This would have long-term (several decades) impacts to sage-grouse and sagebrush associated species, and not meet the objectives of this project. This Alternative would also not address the desire for public use of woodland products in the project area.

An Alternative removing fewer trees (e.g. every third tree) was considered, but eliminated from detailed analysis. Expansion juniper is common across the project area and surrounding landscape. Juniper density would be reduced under this alternative, but tree distribution across the project area would not be altered. The remaining juniper would still provide numerous, well-distributed predator perches and facilitate a rapid progression back towards a dominant woodland-type habitat. This Alternative would not restore the openness of the sagebrush steppe and would provide limited beneficial impacts to the sagebrush community and greater sage-grouse; and therefore, this alternative would not meet the purpose and need of the project.

A Removal of Grazing Alternative was considered, but also eliminated from detailed analysis. Evaluations of livestock grazing in Rimrock Lake and Roundtop allotments indicate adequate sagebrush and herbaceous vegetation are present and meet the Rangeland Health Standards for wildlife, including for sage-grouse. Prior to the Taylor Grazing Act of 1936 and improved livestock management, unregulated grazing likely removed the fine fuels necessary to carry fire across rangelands and kill expansion juniper. In the absence of fire, juniper was able to rapidly spread into previously open grassland and shrubland areas and dominate the habitat across much of southeastern Oregon. Current grazing management does not appear to be a required mechanism to promote juniper expansion on arid western rangelands (Soule' and Knapp, 1999). Burkhardt and Tisdale (1976) found little relationship between range condition of big sagebrush-grass stands and the rate of juniper invasion. Expansion of juniper into big sagebrush communities appears to be directly related to the cessation of periodic fires (Burkhardt and Tisdale, 1976), and is not directly influenced by livestock grazing. Although juniper expansion has occurred across the allotment, current grazing practices are not considered a causal factor and the cessation of such activities would not reduce encroached juniper. Therefore this alternative would not meet the purpose and need of the project.

CHAPTER III. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

A general description of the existing environment for the Greater Sage-grouse Habitat Improvement project area and RMP amendment area can be found in the Three Rivers Proposed RMP (PRMP)/FEIS. Terrain in the project area and amendment area ranges from playa lakebeds and small canyons with rock rims to small hills. Elevation in the project area ranges from 4,448 to 5,489 feet above sea level, and the amendment area ranges from 4,150 to 6,320 feet above sea level.

The IDT has reviewed and identified resources and issues affected by the Proposed Action and the alternatives. The following table summarizes the results of that review. Affected resources/issues are in bold.

Table 3. Resources/Issues Identified for Analysis

Resources/ Issues	Status	If Not Affected, why? If Affected, Reference Applicable EA Section
Air Quality	Affected	See Chapter III. 1. Air Quality
Water Quality (Surface and Ground)	Not Affected	Seasonal water is limited to ephemeral playa lake beds and small livestock water holes. All drainages within the project area are intermittent or ephemeral. The entire RMP amendment area lies within the Harney Basin, a closed internally drained watershed.
Migratory Birds	Affected	See Chapter III. 2. Migratory Birds
T&E, Wildlife/ BLM SSS and Habitat	Fish	Not Affected
	Plants	Not Affected
	Wildlife	Affected
Threatened or Endangered (T/E) Species or Habitat	Not Affected	Not Present (listed fish, wildlife, critical habitat, plants)
Noxious Weeds	Affected	See Chapter III. 4. Noxious Weeds
Cultural Resources	Affected	See Chapter III. 5. Cultural
Hazardous or Solid Waste	Not Affected	Project design elements avoid all impacts
Soils	Affected	See Chapter III. 6. Soils
Upland Vegetation	Affected	See Chapter III. 7. Vegetation
Wildlife	Affected	See Chapter III. 8. Wildlife
Grazing Management	Affected	See Chapter III. 9. Grazing Management
Recreation	Affected	See Chapter III. 10. Recreation
Visual Resources	Affected	See Chapter III. 11. Visual Resources
Social and Economic Values	Affected	See Chapter III. 12. Social and Economic Values
Fire Management	Affected	See Chapter III. 13. Fire Management
Access/Transportation	Affected	See Chapter III. 14. Access/Transportation
Biological Crusts	Affected	See Chapter III. 15. Biological Soil Crusts
Paleontological Resources	Not Affected	Not Present
American Indian Traditional Practices	Not Affected	No concerns have been disclosed.
Areas of Critical Environmental Concern	Not Affected	Not Present
Environmental Justice	Not Affected	The proposed action is not expected to have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.
Flood Plains	Not Affected	The proposed action does not involve occupancy and modification of flood plains, and would not increase the risk of flood loss.
Prime or Unique Farmlands	Not Affected	Not Present
Wetlands/Riparian Zones	Not Affected	Not Present
Wild and Scenic Rivers	Not Affected	Not Present
Wilderness/W. Study Areas	Not Affected	Not Present
Wild Horses	Not Affected	Not Present

The Environmental Consequences discussion describes all expected effects including direct, indirect and cumulative on resources from enacting the No Action or Action Alternatives. Cumulative effects are the impact on the environment that result from the incremental impact of past, present, and reasonably foreseeable future actions (RFFAs). Reasonably foreseeable future actions include, but are not limited to, federal and non-federal activities for which there are existing decisions, funding, or proposals identified by the bureau. Direct and indirect effects plus past and RFFAs become part of the cumulative effects analysis; therefore, use of these words may not appear. However, the environmental consequences section contains the analysis of cumulative effects by resource.

Cumulative actions must fall within the geographic scope and timeframe of the actions of the proposed project. The area considered for cumulative effects analysis may be different for each resource of concern. For the purposes of this EA, analysis of effects for each resource is limited to the project or amendment area boundary and to the duration of the treatments (approximately seven years) unless otherwise indicated in the Environmental Consequences section of the element. However, actions and events potentially contributing to cumulative effects within ten miles of the project boundary (unless otherwise stated) were considered. Actions beyond this distance and timeframe are too removed from this project to result in measurable cumulative effects to any resources of concern.

Table 4. Past actions within ten miles of the project boundary.

Wildfire Acres		Prescribed Fire Acres		Acres of roads: 1722
Year	Acres	Year	Acres	Acres of sagebrush mowing: 262-524
1985	615	2004	722	
1988	2,281	Juniper treatments		
1999	283	2001	504	
2001	529	2002	219	
2005	1,050	2005	421	
2007	9,870	2006	554	
TOTAL	14,628	TOTAL	1,698	

Reasonably foreseeable actions within the geographic scope and timeframe that may affect resources of concern include wind energy testing within the Wagontire Mountain right-of-way and mowing along roads to maintain existing fuel breaks. The wind energy testing projects would result in installation of two meteorological testing towers approximately nine miles south of the project boundary. Maintenance of existing fuel breaks (mowing vegetation along roads) would be completed over the next three to five years on approximately ten percent of the roads within ten miles of the project boundary. The only resources of concern *potentially* affected by all three projects (two meteorological towers, fuel break maintenance, and this project) would be Special Status Species - Fauna and Visual Resource Management. However:

- 1) The proposed locations of meteorological towers are between nine and ten miles south of the project area. The towers would be placed near the top of the rocky buttes and cover an area less than an acre each. Towers would be installed using Best Management Practices (BMPs), including bird diverters on the guy wires. The towers would disturb less than a tenth of an acre of vegetation, and be monitored and maintained for three years or less;

- 2) No permanent impairment to sage-grouse or pygmy rabbit habitat in the area of the met towers would occur as the met towers are temporary in nature and would have minimal surface disturbance;
- 3) The met tower locations also comply with IM-OR-2008-014 which requires met towers to be located outside a 2-mile radius from sage grouse leks or known concentration areas;
- 4) The met tower testing locations are in different water- and viewsheds than the project area;
- 5) Mowing for fuel break maintenance would occur within twelve to forty-eight feet of disturbed areas (roads) that were originally mowed within the last ten years. Mowing would impact less than 0.2 percent of the area within ten miles of the project boundary.

The environmental consequences and cumulative effects sections in the Three Rivers Proposed RMP/FEIS describe potential environmental consequences to the greater environment of the Greater Sage-grouse Habitat Improvement Project Area and Plan Amendment Area and are incorporated into this document by reference in accordance with the CEQ regulations § 43 CFR 1502.2. Additional project-specific descriptions of potential environmental consequences are provided in the text below.

A. Resources/Issues

1. Air Quality

Affected Environment

Air quality in the area associated with the Greater Sage-grouse Habitat Improvement Project Area and RMP Amendment Area consistently meet air quality standards. No area or community in Harney County is considered a non-attainment area for particulate matter meaning it is not in violation of the particulate matter (PM 2.5 and PM10) national ambient air quality standard. Weather, as influenced by wind, moves into the project and amendment areas generally from the southwest or west and exits the area to the northeast or east. Periods of degraded air quality can occur though typically these events are brief, lasting less than a day. These events are associated with development of a stable air mass and/or cold air inversion over the region. Smoke from wildfires and prescribed fires are also a cause of degraded air quality when they occur, primarily from particulate matter contained in smoke.

Environmental Consequences

Alternative A - No Action

Under the No Action Alternative no treatments would occur. If left untreated, juniper would expand into more areas and become dense stands that suppress shrubs and herbaceous vegetation. The potential for more severe wildfires to occur would be greater and require a longer recovery period. The impact to air quality would probably be greater from a wildfire occurring in dense juniper than in sagebrush-bunchgrass habitat. Wildfires in juniper stands burn longer, consume more biomass, and produce more smoke and particulate matter. The community

of Riley and surrounding rural residences could be impacted from higher concentrations of particulates in the air, resulting in respiratory discomfort.

Alternative B - Proposed Action – Treat juniper with option for public removal of wood

The Proposed Action would produce smoke from slash pile burning, and dust from mechanical treatments. Impacts to air quality from pile burning could range from reduced visibility, to pneumonic irritation, and smoke odor affecting people in proximity to the project area. These impacts generally last from one to three days, with most impact occurring during the actual ignition phase, lasting from one to a few days depending on number of slash piles ignited. Residual smoke produced from burnout of large fuels, or slower burning fuel concentrations, could occur lasting for one to three days following the ignition phase. Impacts to air quality from mechanical treatments would be airborne dust generated while operating equipment. These impacts would be limited to the immediate area around the equipment and disappear when operations stop.

The areas of greatest impact from pile burning would be those downwind and down drainage from the project area. A wind vector analysis and review of topographic features indicated these areas are typically west, southwest, south and southeast and east, respectively of the project area. Amount of impact would be dependent on atmospheric conditions at the time of ignition. Pile burning would be conducted when atmospheric stability and wind conditions promote smoke dispersion into the atmosphere and transport out of the area. In addition, burning would be planned when diurnal wind conditions limit the amount of smoke pooling in canyons and valleys. The highest impact area from mechanical treatments would be the immediate project area and on unimproved roads (i.e., dirt) used in association with the project. Public removal of cut trees would cause fewer disturbances to air quality than heavy equipment, and reduce the amount of biomass burned on site. This Alternative could potentially result in less air quality impacts than Alternative C, depending on the amount of cut juniper removed from the site by the public.

Prescribed fire projects are planned for the Three Rivers and Andrews Resource Areas, and may be implemented concurrently with this project. Prescribed fire projects implemented by other land management agencies or private parties are also possible, and combined impacts to air quality are possible and would be the same as those described above.

Effects to air quality associated with these actions are brief and dissipate within a few days, and there would be no combined effects of the proposed project with past actions.

Alternative C - Proposed Action with no option for public removal of wood

The effects on air quality would potentially be higher than Alternative B (more particulates put into the air), but the difference would be dependent upon the amount of cut juniper that is removed from the site under that alternative. Prohibiting the public to remove any cut juniper would leave more slash on site to be pile-burned. Since pile-burning treatments would involve more juniper slash than Alternative B, burning would occur over a longer period of time and emit more smoke particulates. However, effects to air quality would still last for only a few days

and there would be no combined effects of the proposed project with past or other ongoing actions.

2. Migratory Birds

Affected Environment

The project and amendment areas provide habitat for migratory land birds (birds that migrate that are not waterfowl or birds associated with wetland areas) that prefer sagebrush, grassland, and juniper woodland habitats. Existing habitat is primarily sagebrush-bunchgrass, although western juniper is well distributed throughout the area. Juniper occurs in high densities in localized areas. Since 1980, wildfires, suppression and rehabilitation actions have occurred on 14,600 acres within a ten-mile radius of the project area and a total of 36,000 acres across the amendment area. Large areas of once sagebrush-bunchgrass dominated habitat are now grasslands. Trees in rocky, fire-sheltered areas or other areas with low fuels survived the wildfires, and juniper expansion is still common across the greater landscape.

Migratory bird species use suitable habitat in this area for nesting, foraging, and resting as they pass through on their yearly migrations; however, no formal monitoring for migratory birds has been conducted. Grassland and sagebrush associated species present seasonally include horned lark (*Eremophila alpestris*), Brewer's sparrow (*Spizella breweri*), sage thrasher (*Oreoscoptes montanus*), loggerhead shrike (*Lanius ludovicianus*), and sage sparrow (*Amphispiza belli*). Woodland associated species that may be found within the amendment area or project boundaries include gray flycatcher (*Empidonax wrightii*), dusky flycatcher (*Empidonax oberholseri*), dark-eyed junco (*Junco hyemalis*), and chipping sparrow (*Spizella passerina*). Large, old juniper trees in the project area may support cavity nesting species, such as mountain bluebird (*Sialia currucoides*), northern flicker (*Colaptes auratus*), and American kestrel (*Falco sparverius*). Other species observed or expected to occur in the project area include American robin (*Turdus migratorius*), brown-headed cowbird (*Molothrus ater*), western meadowlark (*Sturnella neglecta*), and ferruginous hawk (*Buteo regalis*). In areas where juniper is in an intermediate stage of transition to woodlands, migratory bird diversity and richness is relatively high.

Environmental Consequences

Present and Reasonably Foreseeable Future Actions common to all alternatives

Reasonably foreseeable future actions and events that may contribute to cumulative effects in the area include livestock grazing, maintenance of fuel breaks along roads, and the installation of two meteorological towers. Livestock grazing authorized in the area is currently meeting Standards for Rangeland Health, including Standards for wildlife. Maintenance of fuel breaks would affect less than 0.2 percent of sagebrush vegetation within a ten mile radius of the project area. Fuel break maintenance would help to reduce risk of extensive loss of surrounding sagebrush vegetation in the event of a large wildfire. Installation and maintenance of meteorological towers would be temporary (up to three years), be located approximately nine

miles south of the project area, occur in a recently burned area, cause minimal ground disturbance (<0.1 acre), and include design features to minimize affects to birds.

Alternative A - No Action

With selection of the No Action Alternative, plant communities would continue to transition toward late stage juniper woodlands with deficient shrub and herbaceous understory. However, this complete transition would take many years, and may be altered by wildfire, as observed following the 2007 Round Top Butte Fire. Although juniper expansion may initially benefit migratory bird diversity by increasing habitat available for tree nesting species, extensive encroachment could lead to decreased diversity as large areas of sagebrush habitat are converted to dense stands of juniper with little understory (Miller et al. 2005).

Selection of this alternative would not impact migratory birds over the short-term (<10 years); however, as juniper advances into adjacent habitat, grassland and sagebrush associated species would begin to avoid the area. Dense juniper woodlands have a low risk of fire spread; however, potential for high severity stand replacing fires is greater and can cause plant and soil damage resulting in long recovery periods of several decades or more. Maintenance of fuel breaks along roads helps reduce the risk of a large fire, but would not be as effective in preventing the spread of a high intensity fire. Mowing sagebrush along roads for fuel breaks would retain the shorter structure vegetation preferred by some birds, such as horned larks, but effects would be limited due to the small amount (<0.2 percent) of habitat affected.

Alternative B - Proposed Action – Treat juniper with option for public removal of wood

Existing sagebrush would primarily remain intact. Removal of over ninety percent of juniper expansion would have impacts to migratory species associated with woodlands. Approximately five to ten percent of juniper would be retained on site, including older (pre-settlement) trees, trees with obvious signs of wildlife use (i.e. cavities, large nests), and trees within No Treatment areas. These trees tend to be larger and structurally complex, providing more dead wood for primary and secondary cavity excavators.

Although extensive juniper removal would displace or decrease the amount of habitat for species that prefer woodland habitat, juniper expansion across the greater landscape area provides considerably more habitat for woodland species than historical conditions. Juniper cutting would take place outside March 1 to June 15 and would not disturb or displace birds during breeding and peak nesting periods. Cutting after June 15 would cause displacement of birds or loss of nests for late-nesting or re-nesting birds. Juniper control that maintains intact sagebrush-bunchgrass habitat would improve conditions for sagebrush obligate species such as sage thrasher and sage sparrow. Treatments would also improve habitat conditions for species that have strong associations with sagebrush habitat such as Brewer's sparrow. Pile-burning would occur in the fall or winter, and would cause the few species that winter here to move into adjacent habitat during treatments.

Public removal of cut juniper would cause disturbance of foraging birds in the first few years during wood collection, but disturbance would be localized and would lessen as the easily

accessible juniper is removed and the remaining concentrations are piled and burned. Harvest of juniper boughs would cause some disturbance during collection, but this activity would occur for only a short duration (typically in the fall, after birds have fledged) and have undetectable overall effects to migratory birds or habitat.

Sagebrush and grassland associated species would likely benefit from the proposed action. Loss of foraging and nesting habitat for woodland associated species would occur, but considerable acreages of juniper trees are available across the greater landscape area. The combination of the proposed action with present and reasonably foreseeable future actions in the area is not expected to measurably affect migratory bird populations overall.

Alternative C - Proposed Action with no option for public removal of wood

The effects would be the similar to those described under Alternative B. However, since the public would not be authorized to harvest cut juniper or other woodland products, there would be fewer entries to the site and less potential for disturbance or displacement of migratory birds foraging or sheltering in the area. There would potentially be more small patches of habitat lost due to the additional piling and burning compared to Alternative B. This difference would generally be limited to edge habitat within 300 feet of roads, and affect less than four percent of the project area under this alternative.

3. Threatened, Endangered, and Special Status Species (SSS) - Fauna

Affected Environment

There are no federally listed Threatened or Endangered wildlife species known to occur in the area. The project area does support populations of SSS which are discussed below.

Greater sage-grouse (*Centrocercus urophasianus*)—

BLM has designated sage-grouse as a Special Status Species (BLM IM OR-2008-038), and the U.S. Fish and Wildlife Service declared it as a warranted federal listing but was precluded by higher priority species. There are four active lek (breeding areas) sites within three miles of the project area. Although the majority (87%) of the project area is classified as yearlong habitat, wildfires and juniper expansion are degrading suitability for sage-grouse. One of the lek sites is impacted by a power-line. A total of thirteen leks (including the four in the project area) occur within the amendment area, and approximately half the area is considered yearlong habitat. Greater sage-grouse are considered sagebrush obligates, relying on the plant for food and cover throughout the year. Sage-grouse may require an extensive home range that encompasses specific sagebrush habitat types required for leks, nesting, brood rearing, and wintering. Sage-grouse leks are generally located in open areas near sagebrush-dominated plant communities.

Sage-grouse generally use big sagebrush for nesting habitat, although some have been known to nest in low sagebrush and other habitats. For the brood-rearing stage and pre-nesting period for hens, areas rich in forbs are important. Low and stiff sagebrush flats within the project area could be optimal foraging areas during these life stages as these plant communities are generally rich in

forbs. In winter, sage-grouse congregate in areas where sagebrush is available above the snow or on windswept ridges, which are present in the project and amendment areas. By late fall, sage-grouse forage almost exclusively on sagebrush and do so until spring. Wyoming and other big sagebrush communities in the project and amendment area have the potential to provide quality wintering habitat as the snow depth rarely covers mature plants.

The project and amendment areas are being impacted by early to late stages of western juniper, meaning some sagebrush areas have little juniper present and some are nearly juniper woodlands. Sage-grouse likely avoid areas with juniper since juniper provides cover and perch sites for raptors and other avian predators. It is not known at what density juniper stocking is detrimental to sage-grouse, but areas with even a few juniper trees per acre (5% juniper cover) may degrade quality sage-grouse habitat (Freese 2009).

Wildfires, including the nearly 10,000-acre Round Top Butte Fire in 2007, have impacted over 14,000 acres of sagebrush stands within a five-mile radius of the project area. Extensive open grasslands created by these wildfires provide limited habitat to sage-grouse. Approximately 350 acres of sagebrush habitat impacted by a wildfire in 1988 is providing limited sagebrush cover, but remains marginal habitat for sage-grouse.

Pygmy Rabbit (*Brachylagus idahoensis*) –

This species is currently under review by the U.S. Fish and Wildlife Service (USFWS) to determine if the species warrants listing under the Endangered Species Act. Pygmy rabbit are the smallest rabbit in North America, and prefer sagebrush habitat, especially tall stands of big sagebrush. Pygmy rabbits depend on burrows, and are usually only found where there are friable, deep loamy or sandy loam soils. They also appear to avoid juniper stands, but it is not known at what density juniper stocking would be detrimental. Wildfires have impacted extensive sagebrush habitat in the project and surrounding area, and reduced potential habitat for pygmy rabbits.

Pygmy rabbits have been documented in the project area (Foster 2005, Foster 2006), and it is likely they occur in suitable habitat in the amendment area.

Bats –

Four sensitive species of bats are known to inhabit areas in and around the project area and amendment areas. These include pallid bat (*Antrozous pallidus*), spotted bat (*Euderma maculatum*), Townsend's big-eared bat (*Corynorhinus townsendii*), and fringed myotis (*Myotis thysanodes*). These bats use a variety of habitats for roosting and foraging (Verts and Carraway 1998). Roosting habitats include crevices in rock cliffs and rimrock, abandoned mines, abandoned structures, and in trees with loose bark such as juniper trees. Foraging habitats include open grasslands, shrub-steppe, and in and around trees. Most species fly from their day roosts to forage for insects and drink water, and then use a temporary roost to rest for a couple of hours during the night. After resting they return to foraging then return to their day roosts. There is little information on bats and their foraging patterns or roosting areas within the project or amendment area.

Environmental Consequences

Present and Reasonably Foreseeable Future Actions common to all alternatives

Reasonably foreseeable future actions and events that may contribute to cumulative effects in the area include livestock grazing, maintenance of fuel breaks along roads, and the installation of two meteorological towers. Livestock grazing authorized in the area is currently meeting Standards for Rangeland Health, including Standards for wildlife. Maintenance of fuel breaks would affect less than 0.2 percent of sagebrush vegetation in sage-grouse, pygmy rabbit, and bat foraging habitat within a ten mile radius of the project area. Fuel break maintenance would help to reduce risk of extensive loss of surrounding sagebrush vegetation in the event of a large wildfire. Installation and maintenance of meteorological towers would be temporary (up to three years), be located approximately nine miles south of the project area, occur outside potential pygmy rabbit and sage-grouse habitat (burned area), cause minimal ground disturbance (<0.1 acre), and include design features to minimize affects to wildlife.

Alternative A - No Action

Greater Sage-grouse –

Selection of this alternative would maintain the downward trend in sage-grouse habitat, potentially affecting their productivity in the area. Areas of potential sage-grouse habitat currently considered poor quality due to juniper expansion would remain unsuitable. As juniper expansion progresses, areas providing nesting, brood rearing, and wintering habitat for sage-grouse would experience a decrease in sagebrush and herbaceous cover and an increase in raptor perches. Without treatment, the entire project area may become unsuitable for sage-grouse due to advancing juniper.

Past projects, including juniper cutting around a lek and brush-beating along roads and in dense stands of sagebrush, have been implemented in the vicinity to improve sage-grouse habitat, and beneficial impacts would be limited to those areas.

Risk of a large, stand replacing wildfire would be higher under this alternative, and could result in widespread soil sterilization and plant mortality leading to considerably longer recovery periods that require additional intervention to prevent noxious weed and undesirable (e.g. cheatgrass) plant spread.

Pygmy Rabbit –

Selection of this alternative would continue the downward trend in pygmy rabbit habitat. As juniper continues to advance into suitable habitat for pygmy rabbit, individuals would be displaced from the area or be at increased risk of predation from raptors and terrestrial predators using juniper for hiding cover.

Risk of a large, stand replacing wildfire is also higher under this alternative compared to the action alternatives. Stand replacing wildfires burn with high severity and may cause widespread soil sterilization and plant mortality leading to considerably longer recovery periods. Additional intervention may be required to prevent noxious weed and undesirable (e.g. cheatgrass) plant infestation and spread.

Bats –

Roosting habitat for bats in cliffs, rock crevices, abandoned mines, and old-growth juniper trees would not be affected by this alternative, although over several decades young trees may develop cavities and deep furrows in the bark that provide potential roosting habitat for these species. These species forage in open sagebrush steppe as well as around woodlands, and foraging habitat would not be affected.

A large wildfire may be severe enough under existing or future conditions (dense juniper) to kill old-growth or mature juniper, which may affect some roosting habitat for bats. No measurable cumulative effects are expected to occur for bats under this alternative.

Alternative B - Proposed Action – Treat juniper with option for public removal of wood

Greater Sage-grouse –

The proposed action would interrupt the progression of juniper towards Phase III juniper woodland that would be at risk of high severity wildfires and complete loss of sagebrush and other vegetation critical for sage-grouse. Treatments would remove perches used by avian predators, such as red-tailed hawks, ferruginous hawks, and ravens, while maintaining or stimulating the herbaceous understory. All habitat components for sage-grouse would improve as a result of mechanical treatments, especially nesting and brood-rearing habitat. Areas of Wyoming and mountain big sagebrush and low/stiff sagebrush sites currently considered to be marginal or unsuitable for sage-grouse due to juniper expansion would return to functional condition. Disturbance during implementation would be limited to periods outside the breeding season when birds are concentrated near leks. Public removal of cut juniper may cause some short-term (lasting only a few hours during public removal) disturbance, but would primarily be limited to areas near roads. Disturbance would diminish over time as easily accessible juniper is removed by the public and remaining concentrations are jackpot burned or piled and burned. Sage-grouse would benefit from implementation of the proposed action.

The proposed action would build on recent treatments in the area that removed juniper or improved sagebrush structural diversity, including a five hundred acre juniper cutting project around a lek and brush-beating projects in the surrounding area. The expected cumulative loss of sagebrush vegetation would be minimal (<0.5 percent), and reduction in cover would last until new sagebrush plants grow into the shrub canopy over the next few decades. Overall, the cumulative effects of the proposed project with past treatments would be greater protection of sagebrush communities, maintenance of travel corridors, and improvement of several thousand acres of sage-grouse habitat.

Pygmy Rabbit –

This species would benefit from the proposed action because expansion juniper would be reduced and sagebrush would be retained throughout the project area. Surveys would be completed prior to treatment and efforts would be made to minimize impacts to areas supporting pygmy rabbits. Pygmy rabbits prefer tall stands of sagebrush and the proposed action includes design features to protect this habitat type. Limited disturbance may occur during public removal of cut juniper; however, disturbance would be short duration (lasting only a few hours during public removal) and diminish as easily accessible juniper close to roads is removed from the project area. Habitat for pygmy rabbit would improve as a result of reducing juniper cover across the project area.

The proposed action would build on recent treatments that removed juniper or improved sagebrush habitat diversity, including a juniper removal project around a lek in the project area and brush-beating projects in the surrounding area. The expected cumulative loss of sagebrush vegetation would be minimal (<0.5 percent), and last until new sagebrush plants grow into the shrub canopy over the next few decades. Overall, the cumulative effects would be the protection and improvement of several thousand acres of potential pygmy rabbit habitat.

Bats –

Roosting habitat for bats in cliffs, rock crevices, and abandoned mines would not be affected by this alternative. Bats that roost in trees may lose some potential habitat, although older, larger trees with cavities and deeply furrowed bark that provide suitable roosting habitat for bats would be retained on site. Potential bat roosting habitat would decrease compared to Alternative A. Foraging habitat for these species is not well known, but they appear to forage in a variety of habitat, including juniper woodlands and sagebrush steppe, and would not likely be impacted by the proposed level of reduction in juniper cover.

Alternative C - Proposed Action with no option for public removal of wood

Greater sage-grouse –

Effects would be similar to Alternative B; however, there would be reduced potential disturbance or displacement to birds in the area, especially during the nesting and early brood rearing period.

Slightly more juniper slash would be burned in piles (depending on the level of public removal of cut juniper), increasing the amount of sagebrush and other understory vegetation impacted compared to Alternative B. The difference would primarily be adjacent to roads and would not alter the available sagebrush and understory vegetation to the extent that sage-grouse are displaced or avoid the area.

Pygmy rabbit –

Effects would be similar to Alternative B; however, there would be reduced potential disturbance to pygmy rabbits or destruction of burrows in the area from public harvest of woodland products.

Slightly more juniper slash would be burned in piles (depending on the level of public removal of cut juniper), increasing the amount of sagebrush and other understory vegetation impacted relative to Alternative B. The difference would not affect currently occupied habitat (pygmy rabbits are not associated with juniper cover).

Bats –

Effects to these species would be similar to Alternative B. Slightly more juniper slash would be burned in piles (depending on the level of public removal of cut juniper), increasing the amount of sagebrush and other understory vegetation impacted compared to Alternative B. However, this difference would not measurably affect foraging or roosting habitat for bats.

4. Noxious Weeds

Affected Environment

The District weed database currently lists ten sites of spotted knapweed totaling 14.46 acres within the project area and five sites of diffuse knapweed totaling approximately 14 acres along the northern boundary, which is Highway 20. Treatments utilized include chemical, mechanical, and biological control methods.

There have been some systematic weed inventories conducted in the project area, mostly associated with the road network. There would be comprehensive botanical surveys conducted prior to implementation of this new proposed project. If noxious weeds are identified, appropriate weed treatments would occur prior to initiating work on this project.

The areas delineated in the amendment area are all relatively un-weedy. The majority of weeds in all of the additional areas occur primarily along the roads. All the areas touch major highways which do get new weed introductions and have ongoing weed sites, but are treated on an annual basis. The most common weeds in the Wagontire area include white top, medusa, and medusahead rye. The most common weeds in the Palomino Buttes area include white top, diffuse knapweed, and medusahead rye. The most common weeds in the Jack Mountain area include white top, Canada thistle, and perennial pepperweed. None would be considered abundant on BLM lands. Future juniper treatments in the amendment area would undergo a detailed, site-specific discussion of affected environment and analysis of effects under a separate NEPA document for all ground disturbances (including the potential impact of public harvest of woodland products).

Environmental Consequences

Alternative A - No Action

Under the No Action Alternative, there would be fewer disturbances in the area. This would limit the potential introduction of new weeds into the area. However, over time the risk of noxious weed establishment and spread would increase as junipers increase and cause continued

site degradation. These weakened plant communities create niches for noxious weed establishment and spread. Sagebrush-bunchgrass plant communities would continue to progress toward juniper woodland or shrub plant communities. Wildfires that occur in these communities tend to be severe enough to kill large numbers of understory plants, which create conditions for the area to be highly susceptible to noxious weed and cheatgrass invasion.

Alternative B - Proposed Action – Treat juniper with option for public removal of wood

Monitoring for noxious weeds would occur prior to project initiation and for at least 3 years post treatment. Any weeds found would be treated as described in the Burns District Noxious Weed Program Management EA OR-020-98-05.

Juniper can outcompete other native vegetation, creating new niches that can be occupied by invasive annual grasses, medusahead rye and cheatgrass. Management actions which promote healthy shrub-steppe and open woodlands reduce the threat of large-scale wildfires and help counteract this effect.

Initially, mechanical treatments, use of prescribed fire, and public removal of cut juniper adjacent to roads could open up areas for weed colonization by creating disturbed habitat favoring noxious weed invasion; however, an aggressive survey and treatment protocol by the BLM would help address newly invading noxious weeds before they can become established.

There would be some increased risk of new weed infestations from public gathering of juniper boughs, firewood, and other treatment byproducts. The public can not be effectively required to maintain clean relatively weed free vehicles like BLM or contractors. This increases the potential for weed introductions or spread. There would be minimal increases in the long-term risk of introduction of new weed populations or expansion of existing weed populations as a result of implementing the Proposed Action if the project design elements are followed. Monitoring for noxious weeds would occur for 3 years post-treatment and any weeds found would be treated using an integrated weed management approach, as outlined in the District's Noxious Weed Management EA.

Overall, the proposed project should result in healthier sagebrush communities. These vegetative communities would be more resistant to noxious weed introduction and spread than declining plant communities.

Alternative C - Proposed Action with no option for public removal of wood

Effects would be similar to Alternative B; however, risk of potential introduction and spread of noxious weeds would be reduced because the public would not be permitted to harvest cut juniper or other woodland products. Not authorizing public removal of cut juniper would decrease the amount of off-road vehicle travel that may occur under Alternative B.

5. Cultural Heritage

Affected Environment

Two thousand six hundred and forty four acres of the proposed project area have been inventoried for cultural resources, primarily in the late 1970s and early 1980s. All sites recorded during this survey were prehistoric scatters of stone tool manufacturing waste and broken flaked stone tools. Thirteen sites are known to occur in the project area and are either associated with playa lakes or obsidian cobble sources. Some may have buried remains as they are located in dunes. Potential for additional archaeologically important sites in the project area is high because of the large number of obsidian sources, depositional environments, ephemeral lakes and stream courses. In addition, the project area is within a number of Clovis spear-point bearing sites and probably located along a travel route that dates to at least 13,000 years ago. Sites within this travel route should be reexamined to establish presence of Clovis artifacts dating from the end of the Pleistocene and the possibility of associated extinct faunal remains of camel, horse, bison and elephants.

RMP Amendment Areas have many of the same types of cultural resources as the proposed project area. The places most likely to contain important cultural resources are those locations of permanent or ephemeral water, especially playa lakes. One aspect the amendment areas do not share with the proposed project area is obsidian sources. Prehistoric quarry activities and the sites they produce are not as predominant in the amendment areas. Future juniper treatments in the amendment area would undergo a detailed, site-specific discussion of affected environment and analysis of effects under a separate NEPA document for all ground disturbances (including the potential impact of public harvest of woodland products).

Environmental Consequences

Effects Common to All Alternatives:

For the purposes of this analysis, the cumulative effects analysis area for cultural resources is at the project area scale. All Action Alternatives and other ongoing and reasonably foreseeable future projects would not lead to cumulative effects to cultural resources because proposed projects would be localized or the sites would be completely avoided. Potential direct and cumulative effects to cultural resources would be mitigated through project specific cultural resource inventory and mitigation measures prior to any project implementation.

Alternative A - No Action

The potential impacts to cultural resources from the action alternatives would be avoided, including cultural surveys for potential future juniper management or wood byproduct collection projects.

Alternative B - Proposed Action – Treat juniper with option for public removal of wood

Chain saw cutting of juniper is not likely to affect cultural resources. In fact, cutting and leaving trees releases shrub, grass and forb plants that increase ground cover and decrease erosion and surface visibility further protecting cultural resources.

Machine piling of junipers in dense stands would affect cultural resources through subsurface compaction and displacement and breakage of surface artifacts. To mitigate the impact of machine piling, known sites should be avoided by heavy equipment.

Burning juniper piles when the ground is frozen or covered with snow would alleviate effects of high temperatures on surface and subsurface artifacts in cultural sites. If burning is conducted as designed in the Proposed Action, no affects to subsurface cultural resources are expected.

The option for woodcutting could increase ground disturbance in areas with dense stands of juniper because cross country vehicle traffic would increase to access firewood. Cultural resources could be affected by crushing, and horizontal and vertical movement of artifacts. Additional effects could be seen if vehicle traffic was intense enough to remove surface vegetation and contribute to surface erosion.

Past, ongoing, and current actions have little impact on this resource and project design features would keep impacts to a minimum.

Alternative C - Proposed Action with no option for public removal of wood

This alternative would result in fewer affects to cultural resources than Alternative B but greater than the No Action Alternative A. No impacts (e.g. crushing of artifacts during cross country travel) would occur from permitted public removal of woodland products. More cut juniper would be left on site to be piled and burned (depending on the amount of public harvest), which would result in more impacts (e.g. crushing and breakage) from heavy machinery compared to Alternative B. However, known cultural sites would be avoided.

6. Soils

Affected Environment

Several soil types are present within the project area. The most common soil types in the project area are Ninemile-Reluctan complexes which make up approximately 58 percent of the soils present. Borobey and Ninemile Very Stony Clay Loam soil types comprise 10 percent and 9 percent of the project area, respectively. Eight other soil types are found within the project area, but none account for more than 5 percent of the area.

Ninemile-Reluctan series complexes are characterized by shallow (11 to 16 inches in depth) claypan droughty loams. These series are found on tablelands, drainageways and hills. These soils are not well drained and have a heavy clay component. Soils in the Ninemile complex are found at elevations ranging from 4,300 and 6,800 feet and have low to moderate erosion potential from wind and water. Vegetation on Ninemile complexes usually consist of various sage species, Idaho fescue, and needlegrass.

The Borobey series is a sandy loam characterized by deep valley soils usually found on high stream terraces. Vegetation on these soils is usually comprised of Wyoming big sage, low sage,

needlegrass, and bluebunch wheatgrass. Erosion potential from water is low and moderate for wind.

Fires and fire suppression efforts have impacted several thousand acres of the project and amendment areas. These impacted areas were susceptible to soil erosion immediately after the fires, but even the most recent fires (within the past five years) now have good vegetative cover because of rehabilitation (e.g. seeding) efforts and natural plant recovery. Soils in the project and amendment areas are in ‘stable’ to ‘slight’ Erosion Condition Classes (USDI 1992, pg 2-18, 19).

Future juniper treatments in the amendment area would undergo a detailed, site-specific discussion of soil types and analysis of affects in the amendment area under a separate NEPA document for all ground disturbances (including the potential impact of public harvest of woodland products).

Environmental Consequences

Alternative A - No Action

As the transition continues from shrub-steppe communities toward juniper woodlands there would be reduced vegetation cover, litter and increased bare ground. The net result of change would be an increased vulnerability to accelerated erosion, site instability, and decreased watershed function.

Selection of the No Action Alternative would likely lead to combined impacts to soil resources from juniper expansion and vegetation loss. Juniper would continue to expand and there would be a loss of shrubs, grasses, and forbs. This loss of forage would lead to increased grazing pressure on remaining resources and more bare ground. Loss of vegetation increase the amount of soil exposed to wind and water effects, and would lead to increased risk of soil erosion.

Alternative B - Proposed Action – Treat juniper with option for public removal of wood

Pile burning may cause small areas of high-intensity soil scorching. Total area affected would be less than five percent of the project area. High-intensity fire would kill some plants and may alter physical soil characteristics over a small area of the piles. Areas of greatest impact would be directly below juniper trunks and large branches. Surface erosion could slightly increase on portions of burned areas, especially if there is an extreme rain event before vegetation starts to regenerate. However, the limited burn areas and retention of live root systems of herbaceous and root sprouting plants throughout the project area would reduce the possibility of any accelerated erosion. To reduce impacts from pile burning, piles would only be burned when soils are saturated, frozen, or covered in snow.

No cumulative effects to soils are expected under the Proposed Action , because the Proposed Action combined with all past and RFFA’s would disturb only a small fraction of the area, retain adequate vegetation cover, and have minimal impact on soils.

Alternative C - Proposed Action with no option for public removal of wood

This alternative would have the same impacts as Alternative B. Lacking removal of wood by the public, biomass left on site for pile burning would be maximized. Although more vegetation cover would potentially be removed due to additional piling and burning of cut juniper, the piles would only be burned under frozen or wet conditions, minimizing the effects to soil.

7. Vegetation

Affected Environment

Vegetation within the project and amendment areas is dominated by big sagebrush (*Artemisia tridentata vaseyana* and *wyomingensis*), low sagebrush (*A. arbuscula*) and early sagebrush (*A. longiloba*). The three types of sagebrush form a complex mosaic across the landscape in varying patch sizes. Presence of low or big sagebrush is dependent on soil type and depth. Western juniper (*Juniperus occidentalis*) is also common across the project and amendment areas.

Low sagebrush and early sagebrush are most often found on shallow soils with either a restrictive layer or bedrock within twelve inches of the soil surface. Low and early sagebrush sites tend to be low to moderately productive because of shallow soils. Low sagebrush occupies slightly lower productivity sites with shallower soils with more rock on the surface than early sagebrush. However, the two species appear similar to the casual observer.

Herbaceous species found in association with low and early sagebrush includes bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue (*Festuca idahoensis*), Thurber's needlegrass (*Achnatherum thurberianum*), bottlebrush squirreltail (*Elymus elymoides*), and Sandberg's bluegrass (*Poa secunda*). Forbs commonly found on the site include arrowleaf balsamroot (*Balsamorhiza sagittata*), taper tip hawksbeard (*Crepis acuminata*), false dandelion (*Agoseris glauca*), prairie lupine (*Lupinus lepidus*), Hood's phlox (*Phlox hoodii*), low pussytoes (*Antennaria dimorpha*), and cushion buckwheat (*Eriogonum ovalifolium*).

Deeper soil areas are dominated by one of three subspecies of big sagebrush including basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*), Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), and mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*). These sagebrush species are usually associated with deeper soils compared to low/early sagebrush species. Herbaceous plant composition is similar to other sagebrush types, but mountain big sagebrush plant communities tend to have a higher density and cover of large perennial grasses and deep-rooted perennial forbs.

Wyoming big sagebrush occurs on drier sites than basin big sagebrush and mountain big sagebrush. Soils are typically Aridisols with a restrictive layer at 12 to 24 inches (Winward 1983). The associated plant community is often less diverse than mountain or basin big sagebrush plant communities due to shallower soil. Winward (1983) noted relatively few perennial forbs in undisturbed Wyoming big sagebrush plant communities compared to other sagebrush types. Herbaceous plant species are similar to low sagebrush. Within in the project area the most common perennial grass associated with Wyoming big sagebrush is Thurber's needlegrass and the most common perennial forbs are Hood's and long-leaf phlox (*Phlox longifolia*). Cheatgrass (*Bromus tectorum*) is most common in the Wyoming big sagebrush plant

communities within the project area. However, there are few areas where cheatgrass dominates the plant community. Native perennial plant composition is strong enough in the project area to compete with cheatgrass following disturbance. Gray rabbitbrush, littleleaf horsebrush (*Tetradymia glabrata*) and granite prickly phlox (*Linathus pungens*) are shrubs found in association with Wyoming big sagebrush.

Mountain big sagebrush occurs on sites more productive than Wyoming big sagebrush. Soils are often deep, well drained on mountain slopes. Soils are classified as Mollisols. Plant diversity and productivity is greater than Wyoming big sagebrush. Herbaceous plant composition is similar to other sagebrush types, but mountain big sagebrush plant communities tend to have a higher density and cover of large perennial grasses and deep-rooted perennial forbs. Columbia (*Achnatherum nelsonii*) and western needlegrass (*A. occidentalis*) will often be found as soil depth and elevation increase. Gray rabbitbrush, wax current (*Ribes cereum*), antelope bitterbrush (*Purshia tridentata*), and mountain snowberry (*Symphoricarpos oreophilus*) are commonly found in association with mountain big sagebrush. Mountain big sagebrush plant communities have a greater grass and forb component than the drier Wyoming big sagebrush plant communities (Miller et al. 2005).

Western juniper is commonly found throughout the project area. Locally pockets of old-growth junipers occur, generally less than one acre and in areas with sparse surface fuels. These trees are generally characterized as having an irregularly shaped crown, partially dead areas of the canopy and main trunk, deeply furrowed bark, yellow to yellow-green lichen in canopy, cavities in trunk, and big limbs. Understory plants include low sagebrush, Idaho fescue, Sandberg bluegrass, and a number of perennial and annual forbs. Snags and downed logs rarely occur, and Miller and Rose (1999) found less than one log per acre. Snags or standing dead trees are primarily limited to old-growth areas.

Western juniper can also be found encroaching on deeper soil areas in the project area. These areas are often associated with mountain big sagebrush. Miller and others (2005) believe expansion of western juniper into mountain big sagebrush plant communities of eastern Oregon began in the late 1870s. Research conducted nearby on Steens Mountain in Harney County, Oregon, found that over 90 percent of the current standing trees began growth prior to 1900 (Miller and Rose 1995). The expansion of western juniper has occurred at the expense of associated vegetation. Miller and others (2000) identified three transitional phases of western juniper encroachment.

Phase I – western juniper is present but shrubs and herbs are the dominant vegetation that influence ecological processes (hydrologic, nutrient and energy cycles).

Phase II – western juniper is codominant with shrubs and herbs and all three vegetation layers influence ecological processes.

Phase III – western juniper is the dominant vegetation and the primary plant layer influencing ecological processes.

Most of the western juniper stands within the project area are in Phase II. Small, but equal portions of the project area are in Phases I and III. The total time to move from Phase I to Phase III varies by site, but Miller and Rose 1999 estimate a western juniper stand approaches canopy

closure within 70 to 90 years of tree establishment on productive sites and 120 to 170 years on drier sites. The project area would be classified as a drier site based on the plant communities present.

Western juniper has also been found to be expanding into low sagebrush sites. Although juniper expansion occurred simultaneously in other habitat types, the rate of encroachment is much slower in low sagebrush than on big sagebrush sites. Establishment of western juniper within the low sagebrush sites interrupts the short stature of the plant community.

Environmental Consequences

Alternative A - No Action

Plant communities would continue on a predicted successional transition to fully-developed juniper woodlands. As described in the section above, most plant communities are in early and mid-transitional stages of juniper woodland development.

"As plant communities proceed toward juniper woodlands, community structure and composition would change altering community processes such as hydrology, nutrient cycling, and energy flow. As woodlands move from mid- to late stages of development, thresholds are approached or crossed. These thresholds include 1) significant decline in shrubs, 2) a decline in fire potential, 3) reduced tree mortality to fire due to increasing tree size, 4) decline in berry production, and 5) a potential decline in herbaceous cover and diversity dependent on soils and other site factors" (Miller et al. 1996).

Although the potential for fire occurrence is reduced due to the lack of a contiguous understory to provide fuel to sustain a fire, a high severity stand replacing wildfire may occur under extreme situations, and cause extensive plant mortality and soil sterilization. The recovery period following a stand replacing fire would take several decades, increasing the risk of noxious weed and cheatgrass invasion.

Alternative B - Proposed Action – Treat juniper with option for public removal of wood

Removal of juniper by cutting and pile burning would create or maintain open sagebrush plant communities with composition of diverse associations of grasses and forbs. Juniper would be reduced to levels typical of more historic conditions. Reducing juniper stocking would result in increased plant species composition and structural diversity on the site. Cutting and burning of juniper would release herbaceous components of plant communities and many shrubs would be retained, and subsequently released from competition with juniper following treatment.

Intense heat resulting in some plant mortality would occur on some localized areas where piles are burned, even if soils are frozen. This effect would primarily be limited to areas directly beneath juniper trunks and large branches. Permitted public removal of cut juniper (primarily large branches and trunks) would reduce the potential for soil sterilization relative to Alternative C due to the reduction of juniper slash to be burned. There is adequate seed source of native perennial plant species to allow rapid colonization of localized areas that may be sterilized. The Proposed Action also includes seeding of native and desirable non-native grasses, forbs, and

shrubs if needed within the treated areas to accelerate plant community recovery. Potential benefits of nutrients released during burning would be reduced as some juniper is removed by the public. However, as evidenced in other public use sites, extensive amounts of juniper would still remain on site for later burning.

The proposed action would build on recent treatments to control juniper and increase structural diversity of sagebrush, including a five hundred acre juniper cutting project around a lek and brush-beating projects in adjacent areas. The immediate cumulative loss of sagebrush vegetation would be minimal (<0.5 percent), and the reduction in sagebrush cover would last until new sagebrush plants grow into pile-burned areas over the next few decades. Overall, the cumulative effects of the proposed project with past treatments and RFFA's would be greater protection of sagebrush communities and improved resilience to invasion and other adverse impacts.

Alternative C - Proposed Action with no option for public removal of wood

This alternative would have the same effect on vegetation as Alternative B with one exception. Intense heat resulting in some plant mortality would be increased in some localized areas where larger piles are burned due to a lack of permitted wood collecting by the public. This effect would primarily be limited to areas directly beneath juniper trunks and large branches adjacent to roads where cut juniper is easily accessible. Potential benefits of nutrients released during burning would increase as all slash would be pile burned.

8. Wildlife

Affected Environment

The GSHIP Project and RMP Amendment Areas support a diverse suite of wildlife species associated with sagebrush-steppe ecosystems. Generally, suitable habitat conditions are present for many species with little human disturbance in the project and amendment areas. Expansion juniper is degrading sagebrush habitat to various degrees throughout much of the area, and impacting sagebrush associated species. Wildfires have converted thousands of acreage of sagebrush-bunchgrass to grasslands and burned approximately eleven percent of the juniper within a five-mile radius of the project area, and twelve percent of the amendment area. The entire project area and over half the amendment area is classified as deer winter range and provides important winter food sources and cover. Elk use the area on a limited basis, mostly as a travel corridor between winter and summer range, and pronghorn may be found in the area throughout the year.

In dense stands of juniper, the winter range does not currently support populations of browse species such as sagebrush, bitterbrush, and currant. Juniper has out-competed key forage species in some areas and become woodlands. Browse species are declining in quantity, health and vigor, and palatability in areas with moderate to dense concentrations of juniper. Big sagebrush not only provides good winter forage for deer and elk, but also provides good cover in winter. Western juniper provides better cover under extreme winter conditions, but is lower quality forage. Several raptor species frequent the area, and there is habitat for many other bird species, reptiles, several small mammals, cougars, bobcats, and coyotes.

Environmental Consequences

Alternative A - No Action

Plant communities would continue to transition toward juniper woodlands with reduced herbaceous understory. Browse species (bitterbrush, big sagebrush) would continue to decrease in quantity, health, and vigor. This would decrease habitat quality for big game species as well as several bird and small mammal species that utilize these habitats. Thermal and hiding cover would increase under this alternative if a stand-replacing wildfire did not occur. Sage-brush and bunchgrasses would be greatly reduced by juniper encroachment and no longer provide habitat for sagebrush lizards and small mammals, which provide an important prey base for larger predators.

Alternative B - Proposed Action – Treat juniper with option for public removal of wood

Treatments would reduce juniper and cause an increase in grasses, forbs, and shrubby browse species increasing health, vigor, and palatability of winter forage for deer and pronghorn, and occasional elk that use the area.

Creating or maintaining a mosaic of habitat types from scattered juniper, big sage, low sage, and bitterbrush stands across the project area is expected to enhance wildlife habitat and increase species diversity. Approximately ten percent of juniper (e.g. pre-settlement trees and those with obvious signs of wildlife use, such as nest cavities) would not be treated, retaining thermal and hiding cover for mule deer and other wildlife species. Cut juniper may provide cover for some wildlife species, such as small mammals, and removal through burning or public use would cause impacts to these species. However, areas with only a few trees per acre of cut juniper would not be targeted for burning and would remain on site (these areas are not easily accessible to the public for removal due to the distance from a road. Extensive juniper stands across the greater landscape area (including Burns and Prineville BLM Districts) provide cover exceeding historic levels. Disturbance during treatment implementation and public removal following treatments would cause short-term (generally a few hours to less than a day following the disturbance) displacement of deer and other wildlife (depending on the species, length of disturbance, distance to the animals, etc.) in the immediate area.

The Proposed Action would improve sagebrush steppe habitat and help disperse utilization by both wildlife and livestock as desirable vegetation is reestablished over the next two or three growing seasons.

Present and reasonably foreseeable future projects in the area include livestock grazing and the installation of two meteorological towers near the project area. Livestock grazing authorized in the area is currently meeting Standards for Rangeland Health. Installment and maintenance of meteorological towers would create minimal ground disturbance, and be temporary in nature. These actions combined with the GSHIP project would not cause a decline in wildlife populations or loss of wildlife habitat.

Alternative C - Proposed Action with no option for public removal of wood

The effects would be the similar to those described under Alternative B. However, there would be less potential for disturbance or displacement of wildlife foraging or sheltering in the area since the juniper would be cut, piled, and burned over a relatively shorter time period (few weeks). Under Alternative B, public removal of cut juniper would occur over a longer (up to two year) period.

9. Grazing Management

Affected Environment

The project area includes Roundtop Butte (#7063) and Rim Rock Lake Allotments (#7006) (Affected Grazing Allotments, Map B – Project Area).

Roundtop Butte Allotment: The project area encompasses all of North and Galaxy Pastures and portions of Seeding and Roundtop Butte Pastures of Roundtop Butte Allotment. Grazing management for Roundtop Butte is described in an Allotment Management Plan (AMP) written in 1995. Livestock grazing rotations in the Galaxy and Roundtop Butte Pastures alternate between a graze⁶ and defer⁷ treatment every other year. Livestock grazing in North Pasture alternates between a defer and rest⁸ treatment every other year. Seeding Pasture is used every year during the month of May or June. An allotment evaluation conducted in 2010 indicated these grazing treatments have allowed Standards for Rangeland Health to be achieved. The evaluation also determined current grazing management is conforming to Guidelines for Livestock Grazing Management by providing periodic rest or deferment to rangeland vegetation.

Rimrock Lake Allotment: Rimrock Lake is a large, single pasture allotment containing 22,456 total acres of which 21,835 are BLM-administered lands and 621 acres are private land. Grazing management is described in the 1999 Rimrock Lake AMP. According to the plan, a reduction of 575 AUMs was implemented in voluntary nonuse. Currently the stocking level is 239 livestock which removes approximately 1,200 AUMs annually. Livestock grazing is postponed until June 1 to reduce utilization on forbs. The grazing season ends October 1 with a target utilization level of 30 percent. This grazing treatment provides for 5- to 7-inch residual grass and promotes an upward trend in sage-grouse habitat.

Environmental Consequences

Alternative A - No Action

Sagebrush/bunchgrass plant communities would continue to transition into western juniper woodlands. Continued juniper expansion would cause corresponding reductions in desired shrub and herbaceous plant cover and density. This would lead to reductions in key forage plant species production and increased competition for forage between wildlife and livestock. Grazing pressure would increase and repeat defoliation would likely occur on remaining desired forage

⁶ A graze treatment (approximately 05/01 to 07/01) occurs during the growing season of most plants.

⁷ A defer treatment (approximately 07/01 to 10/31) occurs after most plants have reached seed ripe.

⁸ A rest treatment provides plants a full year of growth in the absence of livestock grazing.

species. This would result in reduced plant vigor and production of these species, and open up niches for less desirable species such as cheatgrass. Reduced forage production would reduce carry capacity for all grazers (wildlife and livestock) on these sites. Overtime, reductions in livestock stocking rates would be necessary to continue to meet Rangeland Health Standards and allotment specific resource objectives across both allotments.

Alternative B - Proposed Action – Treat juniper with option for public removal of wood

Removal of western juniper would increase water infiltration, soil moisture, nutrient cycling and energy flow onto these sites. Herbaceous vegetation would respond positively to proposed treatments with increased production, plant cover and density. As a result, these plant communities would become more efficient at utilizing site resources, thus reducing potential for establishment of less desirable species such as cheatgrass. Increased forage production would increase carrying capacity for all grazers and reduce competition for forage between wildlife and livestock. This would promote enhanced livestock distribution and more even utilization patterns across the allotment. Overall, rangeland health would improve with juniper removal. Permitting public removal of woodland products would have no measureable effects to grazing management.

Project Design Elements include an assessment of the vegetation response to treatments to determine if rest from grazing is needed. RFFA's in the project area, such as sagebrush mowing for fuelbreaks along roads, would not affect the forage available to livestock. The Proposed Action in conjunction with past, ongoing, and future livestock grazing would not lead to cumulative impacts.

Alternative C - Proposed Action with no option for public removal of wood

Effects to grazing management would be equivalent to the Proposed Action.

10. Recreation

Affected Environment

Primary recreation activities in the project and amendment areas are dispersed camping, hunting, and hiking. These activities are usually associated with hunting big game such as elk, antelope, and mule deer. Upland game bird hunting also occurs occasionally. Other recreation activities are rock hounding, birding, photography, wildlife viewing, and driving for pleasure, which includes OHV use. However, most OHV use occurs on existing roads.

Environmental Consequences

Alternative A - No Action

Over several decades as juniper infill and expansion continues displacing sagebrush-bunchgrass plant communities Selection of the No Action Alternative would likely lead to degraded conditions for recreational hunting and wildlife viewing through loss of suitable habitat for big

game and subsequent decline in populations in the area, and loss of diversity of both wildlife and vegetation.

Alternative B - Proposed Action – Treat juniper with option for public removal of wood

Under the Proposed Action there may be short-term (2-4 years) impacts to recreational activities in the vicinity of the project area. Smoke and noise generated during project implementation could disrupt recreational activities in spring or fall seasons. Recreational activities related to driving for pleasure, big game hunting, and wildlife viewing would be enhanced as wildlife habitat improves.

There are no expected cumulative effects to recreation from the Proposed Action. Recreational use in the area is low compared to other areas on the District, such as the Steens Mountains, and the proposed juniper treatment is not expected to impact continued recreational use.

Alternative C - Proposed Action with no option for public removal of wood

The effects would be similar to Alternative B. Not allowing the public to remove wood from the project area would create more pile-burning but this would be temporary and not impact recreation use in the area.

11. Visual Resource Management

Affected Environment

The project area situated adjacent to Highway 20 between Riley and Glass Butte is in the VRM Class II. The interior portion of the Project Area falls within Class II and Class III VRM. Recent wildfires in the project and surrounding area have impacted viewsheds. A wildfire in 2007 burned across nearly 10,000 acres of the project and adjacent areas, including approximately two miles adjacent to U.S. Highway 20. Sagebrush and other shrubs were virtually eliminated in the burned area, but herbaceous vegetation has recovered. Several juniper trees were killed, but remain standing. Over ninety percent of the juniper killed is located several miles from the highway.

The amendment area is divided into three units (Map C – Amendment Area) and lies within three VRM classes (II, III, and IV). All three units have land adjacent to Highways 20, 205, or 395 and are in VRM Class II. Interior portions of all three units are in the VRM Class III, and Wagonfire and Palomino Buttes units also contain lands within VRM Class IV. Future juniper treatments in the amendment area would undergo a detailed, site-specific discussion of affected environment and analysis of effects under a separate NEPA document for all ground disturbances (including the potential impact of public harvest of woodland products).

The management objectives for VRM classes II and III are as follows:

Class II objectives are to retain the existing character of the landscape. The level of change to the landscape may be seen, but should not attract attention to the casual observer or should be mitigated to not attract the attention of the casual observer.

Class III objectives are to partially retain the existing character of the landscape. The level of change should be moderate, and management activities should not dominate the viewshed or should be mitigated so that it does not dominate the viewshed.

Environmental Consequences

Alternative A - No Action

There would be no effects anticipated to visual resources under the No Action Alternative unless another major wildfire event occurred in the area. A major wildfire event could change the visual resources in the project area. If no wildfires occurred, visual resources could be affected over the long-term (>50 years) due to the extensive loss of plant community diversity and structure on the landscape from expansion juniper.

Alternative B - Proposed Action – Treat juniper with option for public removal of wood

The proposed management actions as described meet the objectives of VRM Class II and Class III. The Class II VRM areas are adjacent to U.S. Highway 20 corridor. The project area borders approximately three and a half miles along Highway 20 west of Riley. Changes to the landscape from the highway would not be evident to the casual observer. The effects of juniper cutting would be temporary, lasting until cut trees are removed from the site by the public or burned. Stumps would be cut to blend in with surrounding vegetation heights. After three to four years, most needles would fall off and further reduce visual impacts from any remaining juniper.

Upon completion of the project, visual resources and the aesthetic character should be enhanced as regeneration of deciduous shrubs and grasses takes place and overall diversity increases. Positive effects to VRM would be noticeable after two to four years by retention of vigorous and healthy stands of open sagebrush communities.

The Proposed Action combined with other projects, including the installation of two meteorological towers in the buttes near the project, would not cumulatively affect VRM because these actions would not dominate the view or attract the attention of the casual observer to the extent it would raise the VRM Class.

Alternative C - Proposed Action with no option for public removal of wood

The effects would be similar to Alternative B. There would be more pile-burning since the public would not be allowed to remove cut wood. Burning would occur over a longer period of time and emit more smoke particulates. Since this would be temporary, the effects to VRM would be minimal and not cumulative with other past or ongoing actions.

12. Economic and Social Values

Affected Environment

Livestock raising and associated feed production industries are major contributors to the economy of Harney County. The highest individual agricultural sales revenue in the county is derived from cattle production (65%), which is inextricably linked to the commodity value of public rangelands. The cattle industry provided \$37,955,000 in sales in Harney County in 2009 compared to \$42,973,000 in 2008 [Oregon State University (OSU), Extension Service, 2010].

"Quality of life" is very individual when determining what is valued in a lifestyle and what features make up that lifestyle. Lifestyle features can be determined by historical activities of the area, career opportunities and the general cultural features of the geographical area. Quality of life issues are subjective and can be modified over time with exposure to other ways of living. Recreation is a component of most lifestyles in the area and includes driving for pleasure, camping, backpacking, fishing, hunting, hiking, horseback riding, photography, wildlife viewing, and sightseeing. These activities contribute to the overall quality of life for residents.

In addition to local recreation use, the undeveloped, open spaces in the county are themselves a tourist attraction and contribute a "sense of place" for many. The attachment people feel to a setting, typically through a repeated experience, provides them with this sense of place. Attachments can be spiritual, cultural, aesthetic, economic, social or recreational.

Hunting and other types of dispersed outdoor recreational experiences contribute to the local economy on a seasonal basis. Fee hunting and recreation alone contributed \$110,000 to Harney County in 2009 (<http://oain.oregonstate.edu>, 2009).

In addition, fire management programs on public and private lands can have a stabilizing influence on local employment and standards of living. Fire suppression activities provide an economic boost to local merchants through the purchase of supplies and services.

Environmental Consequences

Alternative A - No Action

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. There would be a loss of forage for livestock and wildlife due to juniper encroachment affecting the permittee and hunting and wildlife viewing opportunities. Wildfire suppression activities would provide a boost to the local economy through purchase of supplies and services. Suppression activities are unpredictable; therefore, the level of economic benefit to the community associated with this activity would be speculative.

Alternative B - Proposed Action – Treat juniper with option for public removal of wood

The Proposed Action would utilize service contracts to cut and pile juniper for burning. Purchase of supplies and equipment necessary for implementation of the Proposed Action from community merchants would constitute an economic benefit. Wildfire severity is expected to be

reduced by removing encroachment juniper lessening the threat of crown fires. As such, suppression costs would be less and economic benefits to the community would be reduced. Suppression activities are speculative; therefore, the level of economic benefit to the community associated with this activity would also be speculative.

Designated wood harvest areas in the project area would allow the public to utilize cut juniper for poles and firewood and juniper boughs for decorative uses. Improved rangeland health increases forage production for livestock and wildlife thereby increasing economic benefits to ranch operators and fostering more desirable recreation opportunities such as hunting and wildlife viewing.

Combined impacts from implementation of the Proposed Action and future actions are not expected to measurably affect the economics of the local economy or social values.

Alternative C - Proposed Action with no option for public removal of wood

Effects would be similar to Alternative B, except there would be no harvest of woodland projects by the public.

13. Fire Management

Affected Environment

The project area is within Silver Fire Management Unit (FMU) of the Burns Interagency Fire Zone (BIFZ). Over ninety percent of the amendment area also is within the Silver FMU, and the remaining ten percent is within the Lakes FMU. Based on the Three Rivers RMP (1992) Fire Management objectives are to:

- Minimize the potential for loss of life and property
- Maintain riparian vegetation in a healthy and vigorous condition
- Maintain high quality forage and cover for wildlife and domestic livestock
- Maintain or enhance cultural resources.

The Three Rivers RMP states a combination of prescribed fire and mechanical treatments will be utilized to achieve the desired conditions. The BIFZ Fire Management Plan (USDI-USDA 2009) states the appropriate management response will be utilized to suppress all wildfires. Actions utilized under an appropriate management response may include a full suppression response with the objective of keeping the fire within its current fire perimeter to monitoring the fire on a periodic basis to ensure the fire does not threaten human life or private property.

Following coarse-scale definitions developed by Hardy et al. (2001) and Schmidt et al. (2002), the natural (historic) fire regimes of major vegetative communities have been classified based on average number of years between fires (fire frequency) and fire severity (amount of replacement) on dominant overstory vegetation.

The five fire regime classifications for fire and fuels management purposes include:

I: 0 to 35-year frequency and low (surface fires most common) to mixed severity (less than 75 percent of the dominant overstory vegetation replaced);

II: 0 to 35-year frequency and high (stand replacement) severity (greater than 75 percent of the dominant overstory vegetation replaced);

III: 35 to 100+ year frequency and mixed severity (less than 75 percent of the dominant overstory vegetation replaced);

IV: 35 to 100+ year frequency and high (stand replacement) severity (greater than 75 percent of the dominant overstory vegetation replaced);

V: 200+ year frequency and high (stand replacement) severity.

There are three main Fire Regimes within the project and amendment areas. Drier Wyoming big sagebrush plant communities experience periodic fires once every 35 to 75 years and fires burn with high intensity (all aboveground vegetation removed). This would be classified as a FR IV. Mountain big sagebrush plant communities experience fires on a more regular basis than Wyoming big sagebrush plant communities. A fire would burn mountain big sagebrush stands once every 15 to 35 years, FR II. These fires also remove all aboveground vegetation and would be classified as stand replacing. Low sagebrush plant communities experience fire on a much longer return interval due to the low productivity of the site. Fires would burn through a low sagebrush plant community once every 150 to 200 years, FR V. The fire return interval (average number of years between fire events) is also dependent on the physical location of a plant community. A 100-acre patch of mountain big sagebrush within a large landscape of low sagebrush would probably burn on a less frequent basis than a landscape patch dominated by mountain big sagebrush alone.

Over the last 150 years the role of fire has been altered by a number of natural- and human-caused factors. Western juniper has encroached into mountain big and low sagebrush plant communities. Western juniper is readily killed by fire. Fire has become less frequent in most mountain big sagebrush plant communities over the last 150 years due to subtle changes in climate, introduction of domestic livestock and active fire suppression. This has allowed western juniper to establish and in some cases dominate mountain big sagebrush plant communities. The same condition has occurred in low sagebrush plant communities, but because of the inherently low site productivity, expansion has been much slower.

In contrast to the mountain big sagebrush and low sagebrush areas, Wyoming big sagebrush plant communities have experienced an increase in the level of fire over the last 150 years. Introduction of cheatgrass is the driving factor. Cheatgrass has invaded much of the Wyoming big sagebrush plant communities in the western United States. Cheatgrass is capable of growing in interspace areas that would be either bare ground or covered with microphytic soil crusts in high seral Wyoming big sagebrush plant communities. Cheatgrass provides a continuous fuel bed and allows fires to move through plant communities that would not carry fire except under extreme conditions once every 35 to 75 years. Once cheatgrass establishes and a fire burns

through the sagebrush plant community, annual grass dominates the site and facilitates more frequent fires. In areas of southeastern Oregon, fires are occurring once every 3 to 5 years. Under this fire return interval, all perennial plants are eventually removed from the plant community and only annuals persist. The project area has no large patches of annual plant dominated communities. However, existing Wyoming big sagebrush plant communities have a strong component of cheatgrass. If the area burns, the post-fire plant community could be dominated by cheatgrass. The plant community would be setup for frequent fires in the future and loss of desirable perennial plants.

Environmental Consequences

Alternative A - No Action

The fire return interval would increase as understory vegetation decreases over time. Fire regimes would shift toward an IV or V throughout the project area, resulting in stand replacing fires with high severity⁹ fire effects. Fires would be more difficult to suppress and costs of suppression would increase.

Alternative B - Proposed Action – Treat juniper with option for public removal of wood

The Proposed Action would restore fire regimes to more historic-like conditions to create a mosaic of plant communities and successional stages. Plant communities would be dominated by grasses and shrubs allowing for easier suppression compared to tree-dominated plant communities. The number of piles burned and suppression costs would be reduced; however, this is dependent on the amount of cut juniper removed from the area by the public.

Alternative C - Proposed Action with no option for public removal of wood

The effects would be the same as Alternative B; however, the public would not be permitted to remove cut juniper under this Alternative, which would result in more piles being burned and higher suppression costs. The difference in number of piles burned and suppression costs is unknown, but dependent on public demand for wood in the area.

14. Access/Transportation

Affected Environment

Access/Transportation – Direct access to the general area is via U.S. Highway 20. Primary access roads into the project area include the Gap Ranch-Wagontire Road and East Glass Buttes Road (No. 7242-0-OO). Local access in and around the project area is via roads and trails crossing BLM and private lands.

⁹ all or most organic matter is removed; essentially all plant parts in the duff layer are consumed. Soil heating may be significant where large diameter fuels or duff layers were consumed. The top layer of mineral soil may be changed in color; the layer below may be blackened from charring of organic matter in the soil (NWCG 2001).

The BLM has no formal legal access where these roads cross private lands. Some private lands are owned by grazing permittees who are project cooperators and generally allow access for administrative purposes.

None of the roads in the project or amendment area are surfaced and considered all season roads. With a few exceptions, such as East Glass Butte road, roads in the project and amendment area are best described as rough, primitive, two-track roads. These primitive roads are difficult to travel, especially when soils are saturated and not frozen.

Environmental Consequences

Alternative A - No Action

Under the No Action Alternative there would be no effects to private or BLM-administered lands as a result of human disturbance. No proposed treatments would occur. There would be no road damage associated with project implementation.

Alternative B - Proposed Action – Treat juniper with option for public removal of wood

Some project activities such as cutting, piling, and burning are necessary during late fall, winter and early spring when narrow windows are available between fire season and deep snow. During these times the road surface and soils may be saturated and unfrozen. In these cases, even light traffic can create ruts, drive-arounds, and other damage to the road and adjacent soils and vegetation. These ruts become channels for runoff causing additional damage to the road and off-site erosion and sedimentation. This can result in safety and liability issues associated with public use of the road.

Powdering of the road may occur during the dry periods when 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 the roads develop causing affects similar to those that occur from wet season traffic. Heavy traffic during the dry season also loosens the soil making it easier to erode away during the wet season.

Permitting the public to remove cut juniper would contribute to impacts on roads. Lands adjacent to roads would be impacted to the extent the public drives off-road to access cut juniper. Harvest of juniper boughs could add to the impact depending on public demand in this area. The project area is fairly remote, and public use for woodland products would likely be less than other woodcutting areas near the Burns-Hines area.

Other effects of project activities on transportation may include loss of public access from physical deterioration of roads to the point of being impassible.

Failure to secure landowner cooperation in the project or otherwise secure permission to cross private lands would require longer more circuitous access routes into some portions of the project area, increasing time and costs to implement the project.

In the last several years there has been an increased emphasis on intensive land treatment in the Burns District, southeastern Oregon and the Great Basin region. These treatments include fuels projects, seeding, brush-beating and other project work designed to benefit a variety of resources. Many elements of these treatments require travel on a road system that was not developed for travel during wet conditions. Over time, cumulative effects of these activities includes damage and loss of resources, higher transportation maintenance costs and loss of investment in the road system.

Project design elements are in place to minimize potential adverse impacts to roads, and restore roads as needed following treatments. The Proposed Action in combination with present and reasonably foreseeable future actions would not cause cumulative impacts to roads.

Alternative C - Proposed Action with no option for public removal of wood

The effects of this alternative would be similar to Alternative B except that there would be no contributed effects from public use of local roads to access juniper cutting areas. In addition, creation of off road trails to access individual cut trees for firewood, bough or post removal would not occur.

15. Biological Soil Crusts

Affected Environment

Identification of Biological Soil Crusts (BSCs) at the species level is often not practical for fieldwork; however, the use of some basic morphological groups simplifies the situation. Morphological groups are also useful because they are representative of the ecological function of the organisms (pg. 6-7, TR-1730-2). The basic morphological groups are as follows:

1. Cyanobacteria. - Perimorphic/cryptomorphic.
2. Algae. - Perimorphic/cryptomorphic.
3. Micro-fungi. - Cryptomorphic/perimorphic.
4. Short moss (under 10mm). - Hypermorphic.
5. Tall moss (over 10mm). - Hypermorphic.
6. Liverwort. - Hypermorphic
7. Crustose lichen.- Perimorphic.
8. Gelatinous lichen. - Perimorphic.
9. Squamulose lichen – Perimorphic.
10. Foliose lichen. - Perimorphic.
11. Fruticose lichen. - Perimorphic.

Morphological groups 1, 4, 5, 7, and 8 are likely the dominant groups represented in the project and amendment areas. Morphological group 2 is difficult to observe, but observation may be possible at some sites. Group 3 is very difficult to observe unless the fruiting bodies are present; these tend to be very minute and often require an organic substrate to induce fruiting. Groups 6, 9, 10, and 11 would be expected to be present, but far less frequent, within the project and amendment areas as a rule.

Environmental Consequences

Alternative A - No Action

Initially, there should be little affect to BSCs as a result of selecting the No Action Alternative. Eventually, juniper populations could increase to the point where understory vegetation would diminish and erosive factors would modify the soil and BSCs. If this occurs, natural recovery of BSCs could be slowed due to a potential reliance on recolonization from fewer remnant BSC populations.

Alternative B - Proposed Action – Treat juniper with option for public removal of wood

The Proposed Action would reduce the continued modification of vegetative communities in some portions of the project area. The BSCs may benefit from reduced overstory expansion and associated cover. The BSC benefits may be a function of light increase and/or moisture increase.

Prescribed burning in the form of pile or individual tree burning could have an effect on BSCs, but the scale of impact would be much less than a broadcast burn. By removing BSC cover through burning, some areas (especially areas with a major moss/shrub component), could experience prolonged BSC recovery periods. The BSCs in areas of naturally low fuels (low sagebrush sites) would have less likelihood of increased juniper density and would proportionately have less effects. Pile burning occurs under conditions (e.g. frozen soils) that reduce soil sterilization and impacts to BSCs.

The use of large track or wheeled machines to cut and pile brush and trees could cause localized compaction to the soil and BSCs.

Alternative C - Proposed Action with no option for public removal of wood

Alternative C would have the same impacts on BSCs as Alternative B with one exception, pile burning would include all remnant slash in lieu of public wood collecting and would have an increased impact (depending on the level of public removal of cut juniper) on BSCs even during proper burning conditions.

Climate Change

Instruction Memorandum OR-2010-012, “Analysis of Greenhouse Gas Emissions and Consideration of Climate Change in National Environmental Policy Act Documents” provided Oregon/Washington State Office (OSO) guidance on analyzing greenhouse gas emissions and addressing changing climate conditions in NEPA documents.

Changes in greenhouse gas levels affect global climate. Forster and others (2007) reviewed the literature on greenhouse gas emissions and climate change and concluded that human-caused increases in greenhouse gas emissions are extremely likely to have exerted a substantial warming effect on global climate. The U.S. Geological Survey summarized the latest science on

greenhouse gas emissions and concluded it is currently beyond the scope of existing science to identify a specific source of greenhouse gas emissions or sequestration and designate it as the cause of specific climate impacts at a specific location (USGS 2008).

The action alternatives of this project would treat juniper expansion in Phase I and Phase II stages of woodland succession through a combination of cutting and scattering slash or cutting and pile-burning slash. Carbon dioxide, a greenhouse gas, would be emitted during the treatment phase (fuel consumption and burning); after which new sagebrush and herbaceous vegetation growth would result in storage of carbon. Piling and burning juniper instead of broadcast burning in the project area as proposed would retain the existing carbon storage capability of sagebrush and herbaceous vegetation, as well as untreated presettlement trees and trees with obvious signs of wildlife use (i.e. cavities, raptor nests). This analysis considers the carbon dioxide loss and net changes in carbon storage in the short-term (three to seven years), and in the long-term (30 years) post harvest.

Juniper biomass varies considerably across the project area. Aboveground biomass of juniper in “cut and scatter treatments” (~7,300 acres) is approximately 0.43 tons per acre, and the areas planned for pile burning (~6,000 acres) are estimated to average from 5.48 (live crown) to 6.98 tons per acre¹⁰. The biomass consumed during pile-burning is estimated to result in direct emission of ten tons per acre of carbon dioxide¹¹. Therefore, the proposed action would result in the direct emission of a total of 54,400 tons of carbon dioxide from the 19,700 acre project area. This is a conservative estimate because much of the juniper proposed to be piled and burned is in the early stages of Phase II transition, with an estimated biomass between 0.43 and 5.48 tons per acre. Pile-burning would occur over a three to seven year period, consuming juniper slash from an estimated 700 to 1,500 acres each year and emitting 7,100 to 15,300 tons of carbon dioxide per year. This estimated emission level is well below the reporting levels of the EPA rule on mandatory reporting of greenhouse gases (40 CFR 98.2; 74 FR 56374, Oct. 30, 2009), and would only occur over a three to seven year period during project implementation.

Harvesting 13,300 acres of juniper and pile-burning up to 6,000 acres of juniper within the project area would result in a loss of carbon storage capacity in aboveground vegetation, but may not have much effect on belowground carbon pools (Rau et al. 2010). The retention of sagebrush, herbaceous vegetation, presettlement juniper, and the subsequent growth of new plants would maintain carbon pools. Herbaceous vegetation would begin to re-occupy pile-burned areas within three to five years, while the sagebrush would likely take fifteen years of more before it starts to provide canopy cover. This vegetation growth would help to offset the carbon loss from juniper cutting, and return the site to conditions more typical of those present prior to Euro-American settlement of the area.

Fuel consumption during project implementation would be minimal, not contributing a meaningful amount to the carbon calculation. All trees targeted for treatment (up to 13,300 acres)

¹⁰ Estimates based on Stereo Photo Series for Quantifying Natural Fuels Database provided by the USDA Fire and Environmental Research Applications Team. Accessed online: http://www.fs.fed.us/pnw/fera/research/fuels/photo_series/

¹¹ Assuming estimates of 0.5 tons of carbon per ton of tree biomass (*in* Birdsey 1992), and 3.7 tons of carbon dioxide emitted per ton of carbon burned (based on atomic weight of carbon and weight of oxygen)

would be cut by a five to ten person crew with chainsaws. The crew would travel to and through the site using one to three trucks. One or two grapple-equipped excavators or other heavy machinery capable of piling juniper trees would be used to pile approximately 2,400 acres of trees. Pile burning would be completed over several days by personnel with drip torches containing a gas/diesel mixture to ignite the piles (up to 6,000 acres), or over a couple of days with a helicopter and helitorch.

These carbon input and sequestration assumptions and potential effects on climate at any significant or practically measurable scale, daily, seasonally, annually, or a longer time scale for Harney County, Oregon, the Pacific Northwest, or larger region would be undetectable and indistinguishable from other simultaneously occurring carbon fluxes.

Cumulative Impacts

Council on Environmental Quality Addendum

As the Council on Environmental Quality (CEQ), in guidance issued on June 24, 2005, points out, the "environmental analysis required under NEPA is forward-looking," and review of past actions is required only "to the extent that this review informs agency decision-making regarding the Proposed Action." Use of information on the effects on past action may be useful in two ways according to the CEQ guidance. One is for consideration of the Proposed Action's cumulative effects, and secondly as a basis for identifying the Proposed Action's effects.

The CEQ stated in this guidance that "[g]enerally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions." This is because a description of the current state of the environment inherently includes the effects of past actions. The CEQ guidance specifies that the "CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions."

The second area in which the CEQ guidance states that information on past actions may be useful is in "illuminating or predicting the direct and indirect effects of a Proposed Action." The usefulness of such information is limited by the fact that it is anecdotal only, and extrapolation of data from such singular experiences is not generally accepted as a reliable predictor of effects. However, "experience with and information about past effects of individual past actions" have been found useful in "illuminating or predicting the effects" of the Proposed Action in the following instances: the basis for predicting the effects of the Proposed Action and its alternatives is based on published research and the general accumulated experience of the resource professionals in the agency with similar actions.

The environmental consequences discussion described all expected effects including direct, indirect and cumulative on resources from enacting the proposed alternatives. A distinction between direct and indirect effects is not made and in many cases cumulative effects are only described as effects. All effects are considered direct and cumulative; therefore, use of these words may not appear. In addition, the Introduction Section of this EA, specifically the Purpose of and Need for Action, identifies past actions creating the current situation. The cumulative effects analysis with RFFA's is presented in the beginning of Chapter 3.

A lease for a right-of-way for geothermal energy has been issued in the project area; however, lease issuance alone does not authorize any ground-disturbing activities to explore for or develop geothermal resources without site-specific approval for the intended operation. The geothermal energy development is more speculative at this time and any proposed future ground disturbance would have to be fully analyzed in a separate NEPA process, and include cumulative impact analysis with other actions such as those analyzed in this project. Therefore, if there are no effects from sale of a lease there cannot be cumulative effects.

The only other known RFFA within the geographic scope and timeframe of this analysis is continued livestock grazing. Currently, the allotments within the project area are meeting Standards and Guides. Implementation of the alternatives would not result in cumulative effects because of the project design elements in place and the different, localized, and temporary impacts expected for known RFFAs. The proposed project focuses on extensive juniper removal through chainsaw cutting and pile burning, while none of the RFFAs within the geographic scope of the project would disturb juniper habitat.

CHAPTER IV: Consultation and Coordination

A. Agencies and Individuals Consulted

Burns Paiute Tribe
Harney County Court
Oregon Department of Fish and Wildlife
Oregon Natural Desert Association

B. Interdisciplinary Team

Lindsay Davies - Fisheries/Riparian Specialist (*Fisheries, Water Quality, Wetlands/Riparian Zones, SSS – Fauna: Fish*)
Doug Linn - Botanist (*Soils, Biological Soil Crusts, SSS – Flora*)
John Bethea – Outdoor Recreation Planner (*Recreation, Visual Resources*)
Jason Brewer - Wildlife Biologist (*Migratory Birds, Wildlife, SSS – Fauna: Avian*)
Rachel McNeley - Rangeland Management Specialist (*Grazing Management*)
Rob Sharp - Rangeland Management Specialist (*Grazing Management*)
Skip Renschler - District Lands and Realty Specialist (*Access/Transportation*)
Lesley Richman - Noxious Weed Specialist (*Noxious Weeds*)
Dan Ridenour - Fuels Planner (*Fire Management, Air Quality*)
Jeff Rose - Fire Ecologist (*Vegetation*)
Jon Reponen – District Forester/Fuels (*Woodlands*)
Scott Thomas - District Archaeologist (*Archaeological, Cultural Heritage*)
Bill Dragt – Natural Resource Specialist (*Hazardous Materials, Minerals*)
Rhonda Kharges – (*Social/Economics, Environmental Justice, NEPA*)

C. Advisory

Laura Dowlan - Outdoor Recreation Planner (*Wilderness*)

Kelly Hazen - Natural Resource Specialist (*GIS*)

Jim Buchanan - Resource Area Field Manager

Rhonda Purdy - Rangeland Management Specialist (*Grazing Management*)

References

- Adams, A.W. 1975. A brief history of juniper and shrub populations in southern Oregon. Oregon State Wildlife Commission Research Division. Wildlife research report No. 6, Corvallis, OR.
- Azuma, D.L., Hiserote, B.A. Dunham, P.A. 2005. The western juniper resource of eastern Oregon, 1999. Resource Bulletin. PNW-RB-249. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 18 p.
- Bates, J.D., R.F. Miller and T.S. Svejcar. 1999. Plant Succession in Cut Juniper Woodlands (1991-1998). In Range Field Day Annual Report June 1999. Agricultural Exp. Station. OSU and USDA Research Service.
- Birdsey, R.A. 1992. Carbon storage and accumulation in the United States Forest Ecosystems. United States Forest Service, General Technical Report WO-59. 55 p.
- Bunting, S.C., J.L. Kingery, and E. Stand. 1999. Effects of succession on species richness of the western juniper woodland/sagebrush steppe mosaic. Pages 76-81. In S.B. Monsen, S. Richards, R.J. Tausch, R.F. Miller, and C. Goodrich (compilers) Proceedings Ecology and Management of pinon-juniper communities within the Interior West. USDA Forest Service, RMRS-P-9.
- Burkhardt, J.W., and E.W. Tisdale. 1969. Nature and successional status of western juniper vegetation in Idaho. *Journal of Range Management* 22:264-270.
- Burkhardt, J.W., and E.W. Tisdale. 1976. Causes of Juniper Invasion in Southwestern Idaho. *Ecology* 57(3): 472-484.
- Commons, M.L., R.K. Baydack, and C.E. Braun. 1999. Sage grouse response to pinyon- juniper management. Pages 238-239 in Monsen, S. B. and R. Stevens, eds. Proceedings: Ecology and management of pinyon juniper communities within the interior west. U.S.D.A. U.S. Forest Service Rocky Mountain Research Station RMRS-P9, Fort Collins, Colorado.
- Forster, P., V. Ramaswamy, P. Artaxo, T. Berntsen, R. Betts, D.W. Fahey, J. Haywood, J. Lean, D.C. Lowe, G. Myhre, J. Nganga, R. Prinn, G. Raga, M. Schulz, R. Van Dorland. 2007. Changes in atmospheric constituents and in radiative forcing. Fourth assessment report of Working Group I of the Intergovernmental Panel on Climate Change. *In*: S. Solomon et al. (Editors), *Climate Change 2007: The Physical Science Basis*. Cambridge University Press, Cambridge, U.K
- Foster, M. 2005. Final Report: Pygmy rabbit surveys Burns/Prineville Districts. Contract #HAC058U00, Task Order #1. 28 p.
- Foster, M. 2006. Final Report: Pygmy Rabbit Surveys Burns/Lakeview Districts. Contract #HAC058U00, Task Order #2. 36 p.

- Freese, M.T., R.M. Miller, S.L. Petersen, W.D. Robinson, and A.C. Yost. 2009. Linking greater sage-grouse habitat use and suitability across spatiotemporal scales in central Oregon: a report to the Bureau of Land Management and Oregon Department of Fish and Wildlife April 2009. 123 p.
- Hagen, C.A. 2005. Greater sage-grouse conservation strategy assessment and strategy for Oregon: a plan to maintain and enhance populations and habitat. Oregon Department of Fish and Wildlife, Salem, USA.
- Hardy, C.C., Schmidt, K.M., Menakis, J.M., Samson, N.R. 2001. Spatial Data for National Fire Planning and Fuel Management. *International Journal of Wildland Fire* 10:353-372.
- Miller R.F., Bates, J.D., Svejcar, T.J., Pierson, F.B., and Eddleman, L.E. 2005. Biology, Ecology, and Management of Western Juniper. Technical Bulletin 152. Oregon State University, Agricultural Experiment Station. Corvallis, OR.
- Miller, R.F. and Rose, J.A. 1995. Historic expansion of *Juniperus occidentalis* (western juniper) in southeastern Oregon. *Great Basin Naturalist* 55:37-45.
- Miller, R.F. and Rose, J.A. 1999. Fire history and western juniper encroachment in sagebrush steppe. *Journal of Range Management* 52:550-559.
- Miller, R.F., Svejcar, T.J. and Rose, J.A. 2000. Impacts of western juniper on plant community composition and structure. *Journal of Range Management* 53:574-585.
- Miller, R.R., and R.J. Tausch. 2001. The role of fire in pinon and juniper woodlands: a descriptive analysis. Pages 15-30. *In* K.E.M. Galley and T.P. Wilson (editors). *Proceedings of the Invasive Species: the Role of Fire in the Control and Spread of Invasive Species*. Miscellaneous Publication No. 11, Tall Timbers Research Station, Tallahassee, Fl.
- Rau, B.M., R. Tausch, A. Reiner, D.W. Johnson, J.C. Chambers, R.R. Blank, and A. Lucchesi. 2010. Influence of prescribed fire on ecosystem biomass, carbon, and nitrogen in a pinyon-juniper woodland. *Rangeland Ecology Management* 63:197-202.
- Roberts, C., and J.A. Jones. 2000. Soil patchiness in juniper-sagebrush – grass communities of central Oregon. *Plant and Soil* 223:45-61.
- Schaefer, R.J., D.J. Thayer, and T.S. Burton. 2003. Forty-one years of vegetation change on permanent transects in northeastern California: implications for wildlife. *California Fish and Game* 89:55-71
- Schmidt, Kristen M.; Menakis, James P.; Hardy, Colin C.; Hann, Wendel J.; Bunnell, David L. 2002. Development of Coarse-Scale Spatial Data for Wildland Fire and Fuels Management. RMRS-87. USDA Forest Service, Rocky Mountain Research Station.

- Schroeder, M. A., J. R. Young, and C. E. Braun. 1999. Sage grouse (*Centrocercus urophasianus*). No. 425 in: The birds of North America, A. Poole, and F. Gill, editors. The Academy of Natural Sciences, Philadelphia, Pennsylvania; The American Ornithologists' Union, Washington, D.C., USA.
- Soule', P., and P. Knapp. 1999. Western juniper expansion on adjacent disturbed and near-relict sites. *Journal of Range Management* 52:525-533.
- Suring, L.H.; Wisdom, M.J.; Tausch, R.J. [and others]. 2005. Modeling threats to sagebrush and other shrubland communities. In: Wisdom, M.J.; Rowland, M.M.; Suring, L.H., eds. *Habitat threats in the sagebrush ecosystem: methods of regional assessment and applications in the Great Basin*. Lawrence, KS: Alliance Communications Group: 114–149.
- U.S. Department of Interior. Bureau of Land Management. 1990. The juniper resources of eastern Oregon. BLM Information Bulletin, OR-90-166.
- _____. 1992. Three Rivers Resource Management Plan, Record of Decision, and Rangeland Program Summary. BLM Burns District Office. Hines, OR. 206 p.
- _____. 1994. Sage grouse in the high desert of central Oregon. U.S. Department of the Interior. Prineville District Office. Prineville, OR. 58 pp.
- _____. 2007. Sage-grouse guidelines. BLM Instruction Memorandum. OR-2007-073. 2 pp.
- _____. 2008. Wind energy testing and monitoring proposals in sage-grouse habitat. BLM Instruction Memorandum. OR-2008-014. 2 p.
- _____. 2008. Final state director's special status species list. BLM Instruction Memorandum. OR-2008-038. 4 p.
- _____. 2010. Analysis of greenhouse gas emissions and consideration of climate change in National Environmental Policy Act documents. BLM Instruction Memorandum. OR-2010-012. 9 p.
- _____. 2001. BLM and USGS. Technical Reference 1730-2. Biological Soil Crusts: Ecology and Management. 111 pp.
- U.S. Department of Interior. United States Geological Service. 2008. The challenges of linking carbon emissions, atmospheric greenhouse gas concentrations, global warming, and consequential impacts. USGS Memorandum to U.S. Fish and Wildlife Service. 2 p.
- USDI-USDA. 2009. BLM and USFS. Burns Interagency Fire Zone Fire Management Plan. 105p.

Verts, B.J., L.N. Carraway. 1998. Land Mammals of Oregon. University of California Press, Berkeley and Los Angeles, California.

West, N.E. 1999. Juniper-pinyon savannas and woodlands of western North America. Pages 288-308. *In* R.C. Anderson, J.S. Fralish, and J.M. Baskin (editors). Savannas, Barrens, and Rock Outcrop Plant Communities of North America. Cambridge University Press, London, England.

Winward, A. 1983. Using sagebrush ecology in wildland management. Pp. 15-19 *in* K. L. Johnson, ed. First Utah shrub ecology workshop. Utah State Univ. Logan, UT.

APPENDIX A – MAPS

Appendix B - Monitoring

Greater Sage-grouse Habitat Improvement Project Monitoring Plan

1. Introduction

This monitoring plan describes the activities that the Three Rivers Resource Area staff and Burns Interagency Fire Zone personnel would perform to ensure that all prescribed burning and mechanical treatments conform to project design criteria and meet objectives established in Chapter II of the Environmental Assessment OR-08-025-036. The plan guides implementation within 1-year of implementing and effectiveness monitoring for a period of up to 15 years after completion of all treatments described in the Proposed Action. This monitoring would be completed by appropriate staff such as a wildlife biologist, range conservationist, and/or fire ecologist. Implementation monitoring assesses whether a project is implemented as designed while effectiveness monitoring is employed to address questions about the accomplishment of specific treatment objectives and the long-term effectiveness of project design elements. This monitoring plan satisfies the monitoring needs described in Volume I of the Proposed Three Rivers Resource Management Plan and Final Environmental Impact Statement, as well as the prescribed fire monitoring requirement described in the Interagency Standards for Fire and Fire Aviation Operations 2003 (USDI – USDA).

This plan is not a decision document. If monitoring should determine that treatments outside the scope of the Proposed Action are necessary, a separate site-specific environmental analysis and decision document may need to be prepared.

2. Coordination

Since many different resources would be monitored, respective managers, and specialists would be involved with various aspects of the monitoring program. Scheduled monitoring visits and data collection would be dependent on treatment objectives, timing of implementation activities, and the responses of specific resources to fire and fire surrogates. For this reason, close and frequent coordination between resource specialists, implementation specialists, and management is essential.

3. Roles and Responsibilities

The following is a list of key personnel, and their responsibilities, involved in coordinating and implementing the Greater Sage-grouse Habitat Improvement Project Monitoring Program.

Three Rivers Resource Area Field Manager

- 1) Updates the District Fuels Planner and/or Interdisciplinary Team (IDT) of any relevant issues raised by members of the public or stakeholders pertinent to monitoring program.

Deputy Fire Staff

- 1) Would serve as a liaison between the Burns BLM line officers, State Office and research personnel, and all other agency personnel.

District Fuels Planner

- 1) Tracks and manages budget for monitoring activities on an annual basis.
- 2) Works with specialists to develop data collection protocols.
- 3) Ensures that information is forwarded to appropriate line officers, resource specialists, research personnel, and personnel from other agencies.
- 4) Works with IDT (resource specialists).
- 5) Works with burn supervisors.
- 6) Works within Fire/Fuels and District organizations to secure critical personnel and resources for monitoring program.

Resource Specialists (Archaeologist, Botanist, Fire Ecologist, Wildlife Biologist, Noxious Weeds, Livestock Grazing, Aquatics, Forestry)

- 1) Conducts resource specific implementation and effectiveness monitoring.
- 2) Maintains monitoring documentation and forward documentation to the District Fire Ecologist if necessary.

Project Prescribed Burn Supervisor

- 1) Conducts all implementation monitoring associated with prescribed burning that is not conducted by an onsite resource advisor.
- 2) Ensures monitoring is documented and forward results to the District Fire Ecologist if necessary.

Project Resource Advisor

- 1) Conducts all prescribed fire implementation and effectiveness monitoring that is not conducted by the Project Prescribed Burn Supervisor or specific resource specialists.
- 2) Works with IDT (resource specialists).
- 3) Works with burn supervisors during burn plan development and prescribed fire implementation.
- 4) Works with burn supervisors during burn plan development and prescribed fire implementation if necessary.
- 5) Ensures monitoring is documented and forward results to the District Fuels Planner if necessary.

Juniper Pretreatment Contracting Officer's Representative

- 1) Conducts all implementation monitoring associated with mechanical pretreatments that are not conducted by an onsite resource advisor.
- 2) Ensures monitoring is documented and forwards results to the District Fuels Planner if necessary.

Allotment Administrator (Range Management Specialist)

- 1) Conducts implementation monitoring to ensure that the desired post-fire understory vegetation response is achieved.
- 2) Maintains monitoring documentation and forwards documentation to the District Fuels Planner if necessary.
- 3) Coordinates and communicates with allotment permittee(s) and adjacent landowners when necessary.
- 4) Ensures that pastures are rested for appropriate periods following prescribed fire treatments and that alternative forage is secured.

Results and Documentation

Monitoring results would be utilized to: 1) document fire effects; 2) evaluate the success or failure of treatments and project design elements; and 3) assess the potential for future treatments and project design elements. Monitoring results and documentation would be maintained by individual resource specialists in paper files, electronic databases, and possibly in a Geographic Information System. Results may also be kept in a prescribed fire project file or tracked with the FIREMON Fire Effects Monitoring and Inventory Protocol Database and Analysis Tools by the District Fuels Planner or Fire Ecologist.

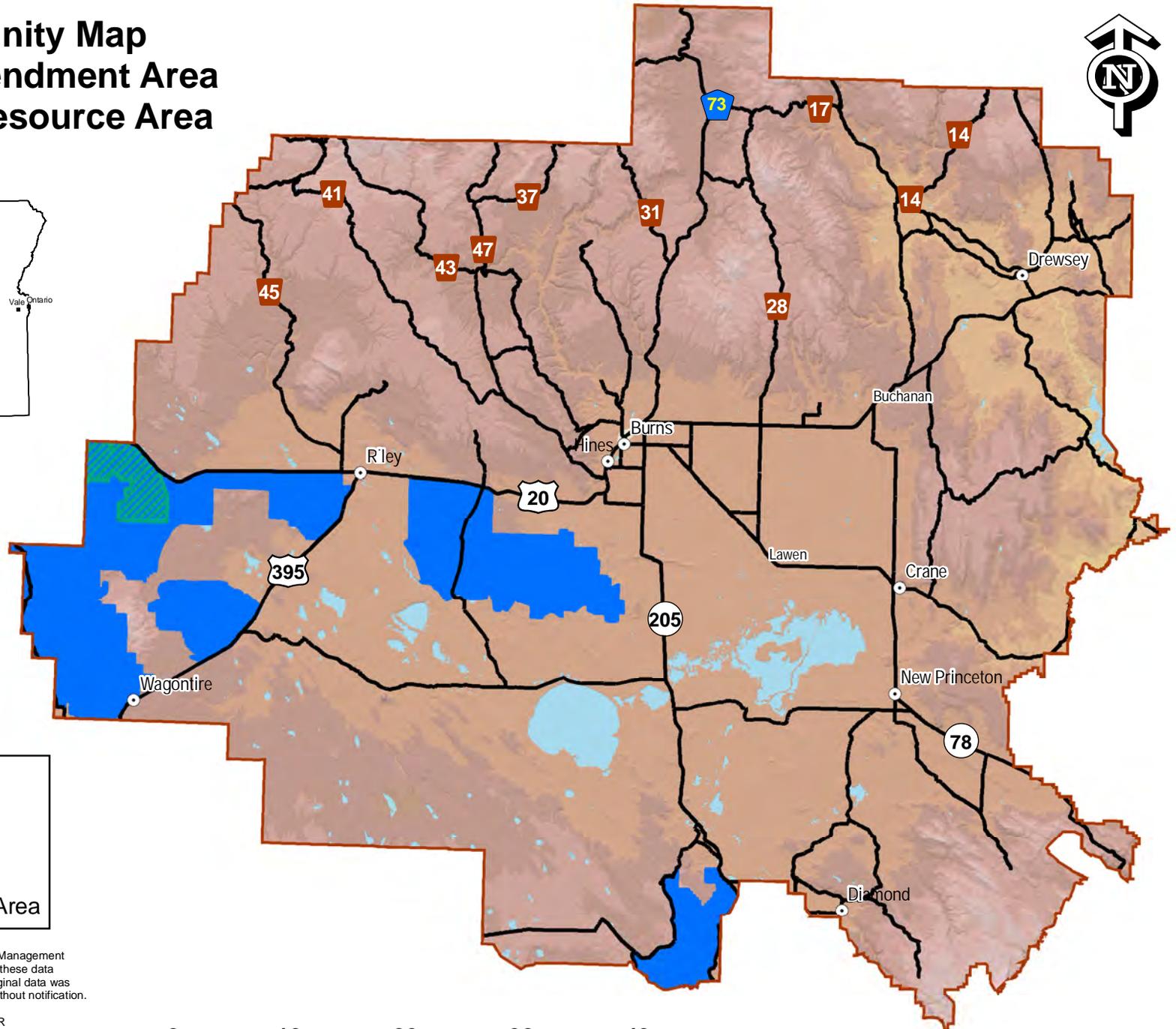
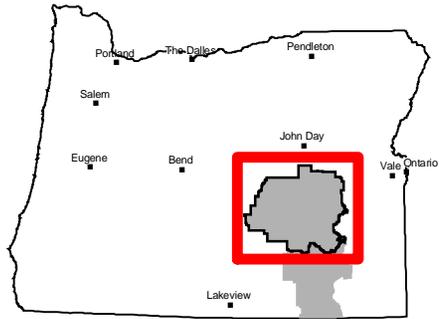
Table 1. Greater Sage-grouse Habitat Improvement Project Monitoring Program.

Element	Implementation or Effectiveness Monitoring	Objective	Methods	Responsibility	Timing
Noxious Weeds	Effectiveness	Determine if noxious weeds become established in areas of disturbance and control of invasions with herbicide.	Post-treatment surveys. Invasive species identified would be treated in accordance with EA OR-020-98-05.	Noxious Weed Control Specialist	At 1-year intervals for a period of 10 years after implementation
Noxious Weeds	Implementation	Verify that all vehicles and equipment are cleaned prior to and following operation as per Interagency Standards for Fire and Aviation Operations, (Redbook) guidelines.	Apply Interagency Standards for Fire and Aviation Operations, (Redbook) during equipment inspections.	Prescribed Burn Supervisor, Mechanical Pretreatment COR	Immediately after implementation and throughout the life of the project
Cultural Resources	Implementation	Verify that appropriate project design elements are employed to protect cultural resources are implemented.	Monitor implementation activities such as line construction, prescribed fire ignition, leave island designation, and mop-up with visual observation, photography, and written description.	Archaeologist	During Implementation
Cultural Resources	Effectiveness	Evaluate the effectiveness of project design elements at protecting cultural resources.	Conduct monitoring visits at a sample of cultural resources (no more than 10% of total sites in Project Area) and compare post-burn conditions to conditions described in cultural resource databases. Possibly conduct pre-burn vs. post-burn artifact analyses.	Archaeologist	Within 1-year of treatment, with visits every 3 years if necessary

Table 1. Greater Sage-grouse Habitat Improvement Project Monitoring Program.

Element	Implementation or Effectiveness Monitoring	Objective	Methods	Responsibility	Timing
Fuels Management	Implementation	Determine if weather conditions and prescribed fire parameters are within the range of variability.	Would monitor any site or time specific weather and fire criteria as identified in the project burn plan.	Prescribed Burn Supervisor	During implementation
Smoke Plume (Air Quality)	Effectiveness	Determine trajectory and vertical dispersion of smoke plumes.	-Visual observation of smoke plume from ground level. -Assessment of wind speed and direction on day of implementation.	Prescribed Burn Supervisor	During and immediately after implementation
Hazardous Materials	Effectiveness	Ensure that all fuel spills are contained without harm to personnel or the environment.	Immediately control and/or clean spill through use of hazmat spill kit. Report large spill (> 42 gallons) to hazmat coordinator.	Prescribed Burn Supervisor Mechanical Pretreatment COR	During implementation
Wildlife Biology – Big Game Cover	Implementation	Determine if adequate big game cover remains in treatment units after implementation.	Visual estimate	Wildlife Biologist	During and immediately after implementation
Wildlife Biology –SSS	Implementation	Ensure that structures or areas with SSS habitat value are protected in treatment units.	Monitor activities such as line construction, prescribed fire ignition, and mop-up with visual observation, photography, and written description.	Wildlife Biologist	During and after implementation
Vegetation - SSS	Implementation	Determine if SSS are avoided in treatment units as necessary.	Monitor over time with photo points.	Botanist	During implementation and 2 years after implementation
Vegetation –Sagebrush Juniper Expansion Treatment	Effectiveness	Determine if acreage treatment target of 90% in sagebrush/bunchgrass plant communities is attained.	Visual estimate, possibly using GPS delineation or aerial observation.	Resource Advisor	During or immediately after implementation

Map A - Vicinity Map Project and Amendment Area Three Rivers Resource Area



	Major Roads
	Project Area
	Amendment Area
	3 Rivers Resource Area

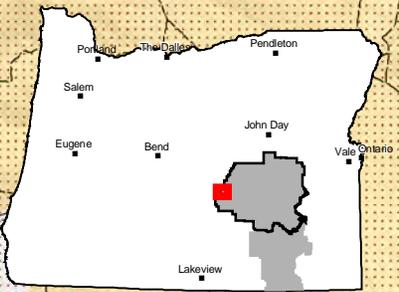
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability or completeness of these data for individual or aggregate use with other data. Original data was compiled from various sources and may be updated without notification.

US DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Burns District, Oregon
/workarea/Jdbrewer.BLM
July 21, 2010



0 10 20 30 40
Miles

Map B
Greater Sage-grouse Habitat
Improvement Project Area
Three Rivers Resource Area



Greater Sage-grouse Habitat
Improvement Project

SHEEP LAKE-SHIELDS

Prineville
District

Burns
District



HAT BUTTE

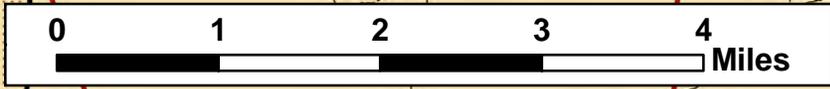
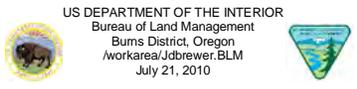
ROUNDTOP BUTTE

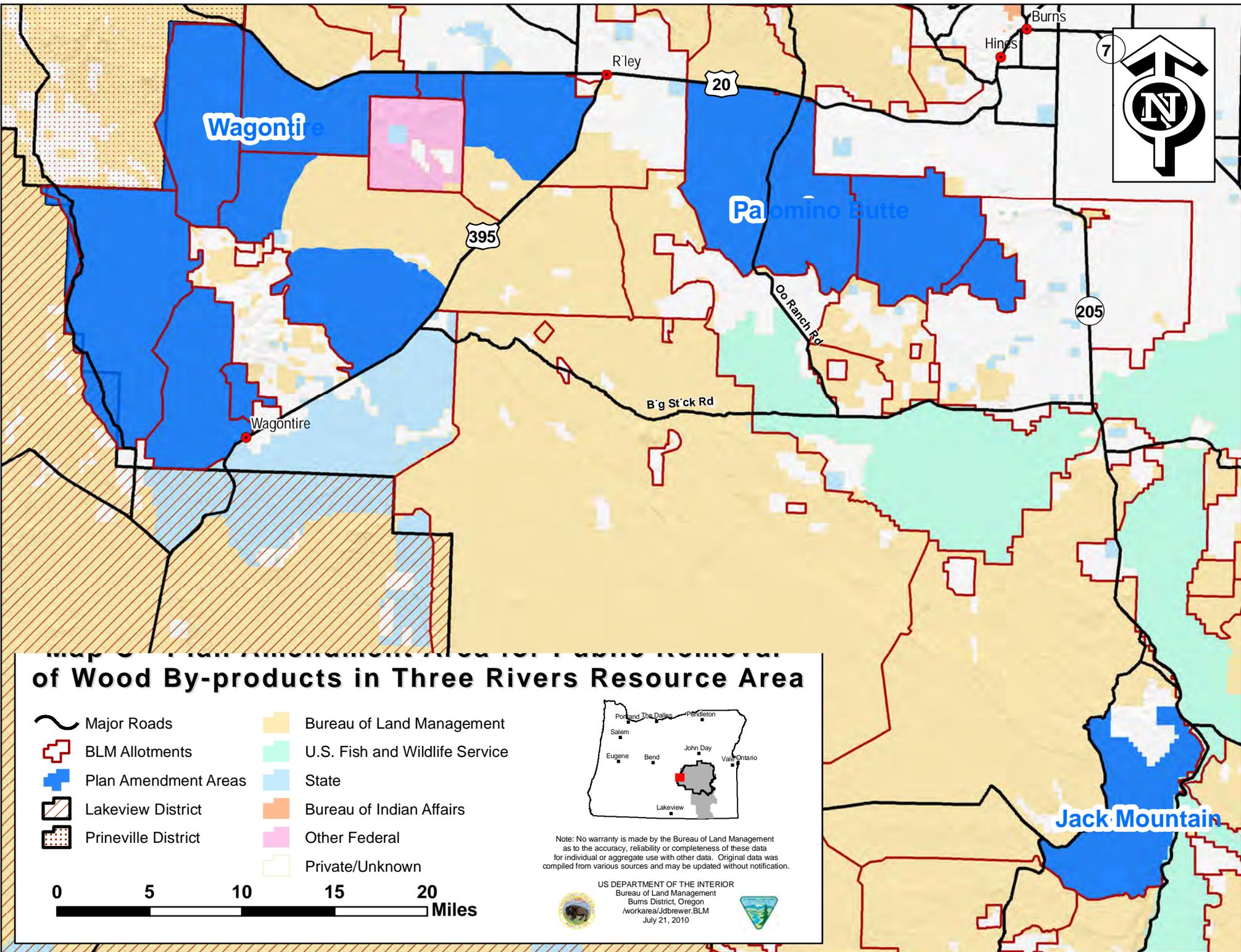
RIMROCK LAKE

EAST WAGONTIRE

-  Pasture Boundary
-  BLM Allotments
-  Project Area
-  Prineville District
-  Bureau of Land Management
-  Private/Unknown

Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability or completeness of these data for individual or aggregate use with other data. Original data was compiled from various sources and may be updated without notification.

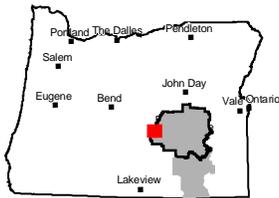




Map 3 Plan Amendment Areas for Public Removal of Wood By-products in Three Rivers Resource Area

- Major Roads
- BLM Allotments
- Plan Amendment Areas
- Lakeview District
- Prineville District
- Bureau of Land Management
- U.S. Fish and Wildlife Service
- State
- Bureau of Indian Affairs
- Other Federal
- Private/Unknown

0 5 10 15 20 Miles



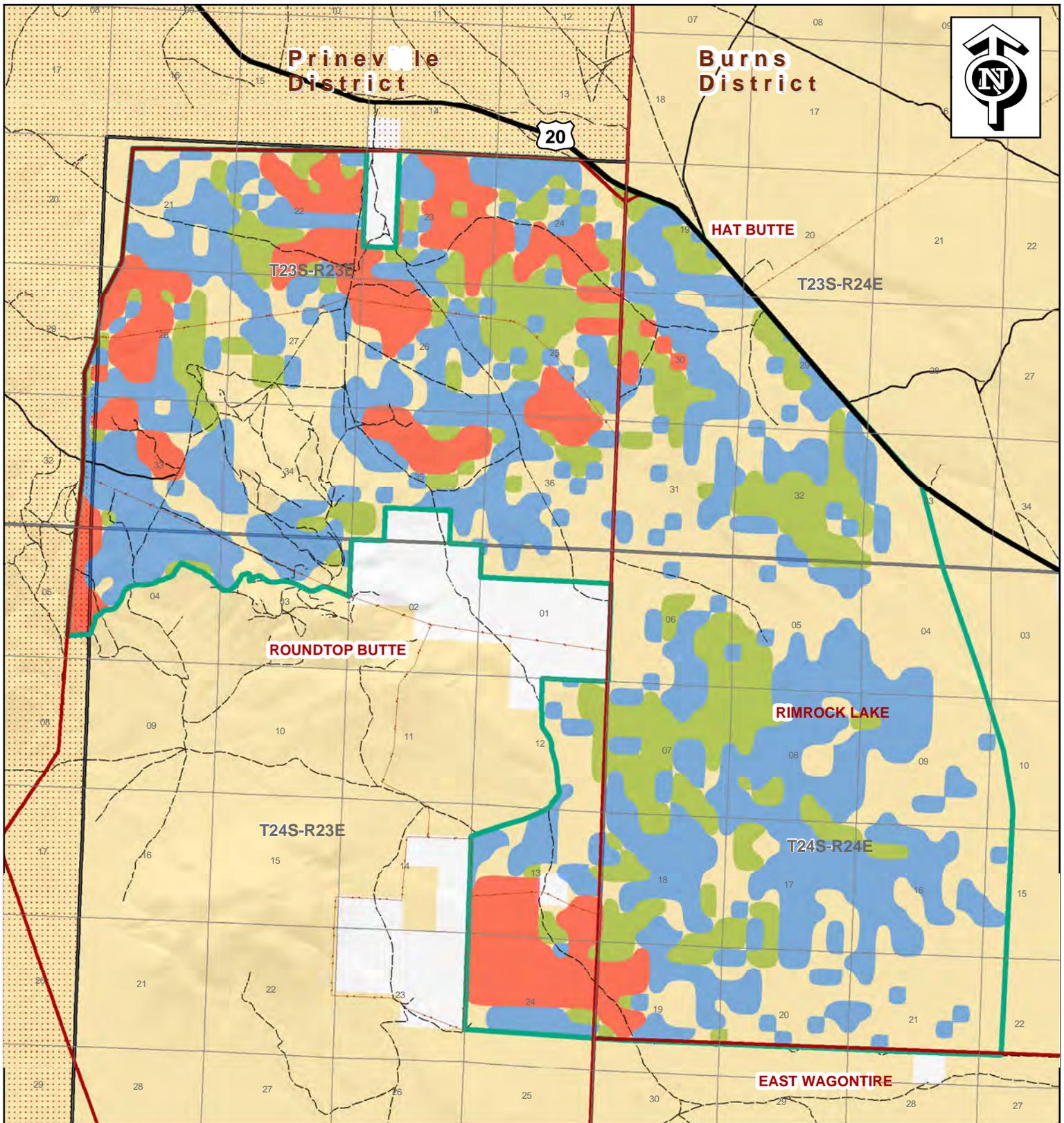
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability or completeness of these data for individual or aggregate use with other data. Original data was compiled from various sources and may be updated without notification.



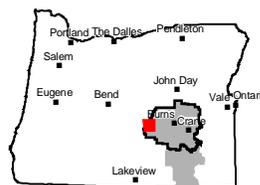
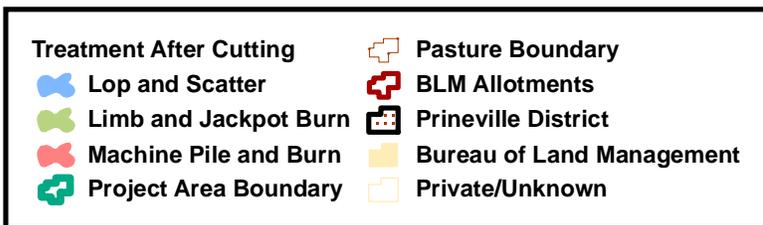
US DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Burns District, Oregon
/workarea/jdbrewer:BLM
July 21, 2010



Jack Mountain



Map D - Treatment Areas in the Greater Sage-grouse Habitat Improvement Project Area - Three Rivers Resource Area



Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability or completeness of these data for individual or aggregate use with other data. Original data was compiled from various sources and may be updated without notification.



US DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Burns District, Oregon
/workarea/jdbrewer/
July 21, 2010

