DRY LAKE ALLOTMENT RANGELAND RESTORATION PROJECT

ENVIRONMENTAL ASSESSMENT OR-06-025-013

Bureau of Land Management
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TABLE OF CONTENTS

Chapter I. Introduction: Purpose of and Need for Action....1

A. Purpose and Need....3
B. Conformance with Applicable Land Use Plans....5

Chapter II. Alternatives Including the Proposed Action....5

A. No Action Alternative....5
B. Proposed Action....5

Chapter III. Affected Environment....10

A. Critical Elements....11

1. Air Quality....11
2. Water Quality....12
3. Wetlands and Riparian Zones....12
4. Migratory Birds....13
5. Special Status Species - Flora....13
6. Special Status Species – Fauna and Fish....13
7. Noxious Weeds....16
8. American Indian Traditional Practices....16
9. Cultural Heritage....17

B. Noncritical Elements....19

1. Soils....19
2. Biological Soil Crusts....20
3. Vegetation....21
4. Wildlife....23
5. Fisheries....24
6. Grazing Management....24
7. Recreation/Off-Highway Vehicles....25
8. Economic and Social Values....25
9. Visual Resources....25
10. Forestry/Woodlands....26
11. Fire Management....27
12. Transportation/Roads....28

Chapter IV. Environmental Consequences 29

A. No Action: Critical Elements 29

1. Air Quality 29
2. Water Quality 29
3. Wetlands and Riparian Zones 30
4. Migratory Birds 30
5. Special Status Species - Flora 31
6. Special Status Species – Fauna and Fish 31
7. Noxious Weeds 32
8. American Indian Traditional Practices 32
9. Cultural Heritage 33

B. No Action: Noncritical Elements 33

1. Soils 33
2. Biological Soil Crusts 33
3. Vegetation 33
4. Wildlife 34
5. Fisheries 35
6. Grazing Management 35
7. Recreation/Off-Highway Vehicles 35
8. Economic and Social Values 35
9. Visual Resources 36
10. Forestry/Woodlands 36
11. Fire Management 37
12. Transportation/Roads 37

C. No Action: Cumulative Effects 37
D. Proposed Action: Critical Elements 39

1. Air Quality 39
2. Water Quality 39
3. Wetlands and Riparian Zones 40
4. Migratory Birds 40
5. Special Status Species - Flora 42
6. Special Status Species – Fauna and Fish 43
7. Noxious Weeds 45
8. American Indian Traditional Practices 45
9. Cultural Heritage 45

E. Proposed Action: Noncritical Elements 46

1. Soils 46
2. Biological Soil Crusts 46
3. Vegetation 47
4. Wildlife 49
5. Fisheries 49
6. Grazing Management 50
7. Recreation/Off-Highway Vehicles 50
8. Economic and Social Values 50
9. Visual Resources 51
10. Forestry/Woodlands 51
11. Fire Management 52
12. Transportation/Roads 53

F. Proposed Action: Cumulative Effects 53

Chapter V. Consultation and Coordination 55

A. Agencies and Individuals Consulted 55
B. Adjacent Private Landowners and Permittees Contacted 55
C. Participating Bureau of Land Management Employees 55

References 56

Appendix A Activity Descriptions

Appendix B The Five Fire Regimes and Condition Classes

DRY LAKE ALLOTMENT ECOLOGICAL RESTORATION ENVIRONMENTAL ASSESSMENT

OR-06-025-013

CHAPTER I. INTRODUCTION: PURPOSE OF AND NEED FOR ACTION

The Burns District Bureau of Land Management (BLM) proposes to implement an ecological restoration project on BLM-administered publicly owned rangelands within Dry Lake Allotment #7009 in the Three Rivers Resource Area. There are an additional 350 acres of BLM-administered rangelands on Bulger Creek in the project area that occurs adjacent to Dry Lake Allotment on the Bulger Allotment. The area to be covered in this assessment is located in Harney County north of Hwy 20, on the west side of Silver Creek, south of Nicoll Creek, and east of Bulger Creek ((T. 22 S., R. 24 E., Sections 10, 13-15, 23-26, and 36, and T. 22 S., R. 25 E., Sections 1, 2, 8-34, and T. 23 S., R. 25 E., Sections 3-6). Elevation ranges from approximately 4,340 feet on the south end of the project area to 5,300 feet on the northwest end. The project area lies approximately 35 miles west of Burns, Oregon (see attached maps). The project would be implemented over a 5 to 10-year period. Various forms of prescribed fire would be the primary management tools employed during the project.

The dominant plant communities proposed for treatment are mountain big sagebrush-bunchgrasses and low/stiff sagebrush-bunchgrasses. There are approximately 5,100 acres classified as mountain big sagebrush-bunchgrasses communities and 15,200 acres classified as low/stiff sagebrush-bunchgrasses communities in the project area. Ponderosa pine-bunchgrass communities are a minor component of the area proposed for treatment. There are approximately 600 acres classified as ponderosa pine-bunchgrass communities in the project area. However, there is another 1,120 acres within the project area that currently supports ponderosa pine trees or is capable of supporting pine trees. Other important plant communities proposed for treatment include quaking aspen, mountain mahogany, and bitterbrush. Aspen stands occur sporadically across the landscape primarily in more productive sites within mountain big sagebrush-bunchgrass and ponderosa pine-bunchgrass communities. Mountain mahogany plant communities are a minor component of the project area. There are approximately 430 acres within the project area where mountain mahogany is classified as the climax potential plant community. Mountain mahogany also exists sporadically throughout much of the mountain big sagebrush-bunchgrass and ponderosa pine-bunchgrass communities. There are approximately 1,900 acres within the project area that support bitterbrush plant communities. These communities are dispersed throughout the higher elevations of the project area in the mountain big sagebrush-bunchgrass and ponderosa pine-bunchgrass communities. Due to past livestock grazing practices, fire exclusion, and the absence of other management practices; conifers (western juniper and ponderosa pine) have encroached upon upland and riparian plant communities and are out of balance from their historical compositions. In this document, western juniper will be addressed separately from all other conifers.

Western juniper is encroaching upon all plant communities in the project area to various degrees. In the past 130 years, western juniper has been expanding 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). The rapid expansion of western juniper range and a concurrent increase in the density of existing stands in southeastern Oregon began shortly after population expansion by Euro-Americans in the late 19th century. Recent inventories of western juniper in eastern Oregon indicate that juniper forests, woodlands, and savannahs cover an area of over five million acres (Gedney et al. 1999). Harney County is one of four counties in the State of Oregon that contain more than one half million acres of western juniper forest and woodlands. Historic accounts, relict woodlands, and tree-age class ratios all generally suggest that juniper woodlands and juniper savannahs once existed in more open conditions (Burkhardt and Tisdale 1976, Miller and Rose 1995). 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, water and nutrient cycles, and wildlife habitat (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).

The density, patch size, and health and vigor of mountain big sagebrush-bunchgrasses and low/stiff sagebrush-bunchgrasses communities are declining as a result of encroaching juniper, and in some cases, pine trees. Much of the historical and existing mountain big sagebrush-bunchgrass communities are in a mid to late transitional phase to a closed western juniper woodland. Ponderosa pine has also encroached upon this plant community to a limited degree. Historically, higher elevation forest fringe ecological sites were open shrub-grassland communities supporting only two to five ponderosa pine trees per acre (Munger 1917, Erickson and Conover 1918). Current conditions support an average of 10 to 40 ponderosa pine trees per acre in some of the mountain big sagebrush-bunchgrass areas within the project area. Most of the low/stiff sagebrush plant communities within the project area are in relatively good condition and are not receiving any real threat from juniper encroachment. However, there are some areas within these communities where juniper encroachment has begun to be detrimental to the habitat function and overall health of these communities. The low/stiff sagebrush-bunchgrass communities that are being encroached upon by juniper are generally in an early to mid-transitional stage of progression toward juniper woodlands.

The density, patch size, and health and vigor of mountain mahogany and bitterbrush plant communities are also declining as a result of encroaching juniper and pine trees. Mountain mahogany and bitterbrush plant communities are sporadically located throughout the northern half of the project area. Many of these sites are in a latter transitional stage toward fully-developed juniper woodlands. Ponderosa pine stands have also encroached upon these plant communities and in some cases are dominating them.

The sites that are considered true forested sites are overstocked[1], which has resulted in a reduction of grasses, forbs, and shrubs. These sites make up approximately 3 to 5 percent of the project area. Ponderosa pine stands have become overstocked with small diameter and young trees. These stands have also been encroached upon by western juniper. These overstocked stands are susceptible to mountain pine beetle and western pine beetle infestations. In general, when ponderosa pine basal area reaches 150 $feet^2$/acre, susceptibility of trees to mountain pine beetles is considered high (Sartwell and Stevens 1975). Stocking levels in the stands within the project area range from 140 $feet^2$ to 200 $feet^2$/acre. Heavily overstocked and diseased stands of ponderosa pine are vulnerable to major crown fires[2] that can threaten human life and property, as well as cause extreme forms of resource damage.

The density and patch size of aspen stands and riparian species in the project area have declined due to pine and juniper invasion. A recent study (Wall et al. 2001) of 91 aspen stands in the northwestern Great Basin found that three-fourths of the stands contained populations of recently established western juniper. Twelve percent of the stands were completely replaced by western juniper and 23 percent were dominated by western juniper. In the project area, juniper and in some cases ponderosa pine have invaded all of the aspen stands, and have begun to dominate most of the aspen sites. Expansion of juniper and pine into stands of quaking aspen can have deleterious effects on hydrologic systems and on wildlife habitat (Larsen 1993 and Maser et al. 1984). Aspen-mountain big sagebrush habitat provides forage for 117 wildlife species in the northern Great Basin (Maser et al. 1984). Deteriorated stands of deciduous hardwood species and associated riparian vegetation can reduce streambank stability, accelerate erosional processes, and generally reduce a watershed's capability for water storage and release.

The plant communities associated with the project area are fire-dependent or fire-tolerant, and are generally well beyond their historical fire return intervals. The project area has high wildlife habitat values due to the habitat diversity created by the juxtaposition of the different plant communities. Greater sage-grouse are present in the project area. The project area is classified as mule deer and elk winter range. Antelope, bobcats, several species of raptors, and many migratory birds and small mammals use the area as well.

A. Purpose and Need

The primary purposes of the Dry Lake Allotment Ecological Restoration Project are to restore and/or increase system functionality (i.e., capture and storage of water, soil nutrient retention), restoration of shrub-steppe, forested, mountain mahogany, aspen and riparian plant communities and to reduce hazardous fuels. Associated benefits of enhancing ecosystem functionality and the restoration of associate plant communities include improvement of sage-grouse, big game, and other Special Status and locally important species habitat, and improved forage for livestock and wildlife.

[1] ***Overstocked:*** Having a tree density in excess of the range of historic variability.
[2] ***Crown fire*:** A fire that advances by moving among the crowns or canopies of trees and shrubs.

The need for action is based on the current condition of rangeland plant communities and hazardous fuels in the project area. Specifically:

- There is a need to reduce the influence of western juniper and ponderosa pine expansion within ecological communities in the project area. Invasion of western juniper and other conifers upon sagebrush steppe, grassland, and riparian ecosystems is resulting in reduced density and diversity of shrubs, diminished perennial herbaceous components, diminished soil moisture, and the acceleration of erosional processes.

- There is a need to maintain or enhance important wildlife habitats (aspen, mountain mahogany, bitterbrush, riparian, and sagebrush communities) that are degraded, being overtaken, or lost due to encroachment and competition from western juniper and ponderosa pine. Big game and sage-grouse habitat values have been degraded by juniper and ponderosa pine expansion within the project area. Plant forage species for mule deer, Rocky Mountain elk, and antelope have been reduced or eliminated in plant communities undergoing conversion to juniper woodlands. Sage-grouse are generally associated with low and big sagebrush communities for feeding, nesting, and loafing throughout the year. Wildlife biologists have determined that western juniper and other conifer expansion into sagebrush bunchgrass communities is detrimental to sage-grouse habitat, because invading juniper and other conifers reduce food sources for sage-grouse and provide perches for sage-grouse predators (Crawford et al. 2004).

- There is a need to restore fire as a natural process within the fire-dependent plant communities of the project area to an extent feasible under the constraints of human safety, private property values, and resource values. The historic fire regime and landscape ecology within the project area have been altered by human related factors.

- There is a need to reduce overstocked ponderosa pine stands to improve forest health. Overstocked forested stands are resulting in a decrease in forest health by increasing competition for water, nutrients, sunlight, increasing the susceptibility to insect damage, diseases, other pathogens, and stand replacement wildfires.

- There is a need to reduce accumulations of hazardous fuels within the project area to levels where cost-effective resource protection is possible and safety for firefighters is improved.

Chapter 3 (Affected Environment) presents the baseline environmental conditions and a more detailed description of relevant resource components of the project area.

B. Conformance with Applicable Land Use Plans

This proposal is in compliance with management direction established in the Record of Decision for the Three Rivers Resource Management Plan/Final Environmental Impact Statement (RMP/FEIS) (Chapter 2, Wildlife Habitat and Forestry and Woodlands, September 1992). This Environmental Assessment (EA) is also consistent with the Objectives and Desired Future Conditions for the Silver Fire Management Unit (FMU) set forth in the Burns Interagency Fire Zone Fire Management Plan (2004). An FMU is an established unit with specific fire management and land use objectives that prioritizes and guides suppression efforts and tactics. This EA is in compliance with the Dry Lake Allotment #7009 Management Plan and is in conformance with State, Tribal, and local laws, regulations, and land use plans.

CHAPTER II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

A. No Action Alternative

Under this alternative no landscape level treatments described in the proposed action would be implemented. Management under the no action alternative would continue under the current Three Rivers RMP and all other relevant policy direction.

B. Proposed Action

The proposed action was developed by a BLM Interdisciplinary Team (IDT), with representatives from all affected resources. The proposal is to utilize various methods of prescribed fire and mechanical treatments within the Dry Lake Project Area to accomplish objectives described within the purpose and need section. The project area and proposal are grouped into four dominant vegetative community treatments: low/stiff sagebrush flats, mountain big sagebrush-bunchgrasses communities, ponderosa pine-bunchgrass communities, and aspen stands. Mountain mahogany and bitterbrush communities are lumped in as inclusions with the mountain big sagebrush and ponderosa pine plant communities. Appendix A provides a more detailed description of the activities and methods that would be utilized under the proposed action.

Low/Stiff Sagebrush Flats Treatment

There are approximately 15,200 acres classified as low/stiff sagebrush sites within the project area. Some of these sites have had some level of juniper encroachment on them. The proposal is to treat 70 to 90 percent of the low and stiff sagebrush flats that have been encroached upon by juniper. Plant communities that are not being affected by juniper encroachment would not be targeted for treatment. The objective in these areas is to improve sage-grouse habitat and protect the integrity of the low/stiff sagebrush flats.

The proposal in these plant communities is to remove the competitive influence of encroaching juniper. Encroaching juniper trees would be cut and left. Downed juniper may or may not be jackpot burned[3] after the vegetation has cured. This determination would be based upon whether or not downed juniper would create enough fuel buildup to create a potential wildfire hazard. Single-tree burning[4] may occur on a limited basis as an alternative method to cutting.

Broadcast burning[5] may occasionally be utilized within low sagebrush communities, as low sagebrush inclusions are sometimes intermingled with surrounding stands of mountain big sagebrush within the planning area. Larger tracts of low sagebrush-bunchgrass plant communities would not be targeted by a broadcast burning activity. The smaller tracts of low and stiff sagebrush sites that are included within broadcast burn units would not be targeted. However, the prescribed fire may or may not run through these communities. Pretreatment of these areas may be performed to further protect these sites from the broadcast fire. The recommendation to pretreat and the type of pretreatment would be identified by an IDT before and during onsite project layout.

Mountain Big Sagebrush/Bunchgrass Communities Treatment

There are approximately 5,100 acres in the project area that are classified as mountain big sagebrush-bunchgrass plant communities. Scattered ponderosa pine woodlands, mountain mahogany stands, and bitterbrush stands are intermixed within some of the mountain big sagebrush-bunchgrasses plant communities. These plant communities are being encroached upon and in some cases dominated by juniper. Pine has also expanded, to a limited degree, outside its historical niche in the higher elevation sites within these communities. The objective in these areas is to restore and enhance existing mountain big sagebrush-bunchgrass, mountain mahogany, bitterbrush, and pine woodland communities, and improve wildlife habitat. The proposal in all of these plant communities is to remove the encroaching juniper and pine trees. The management objective is to treat between 70 and 90 percent of the mountain big sagebrush-bunchgrass communities that are being encroached upon by juniper and/or ponderosa pine.

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[3] ***Jackpot Burning*:** Prescribed burning of concentrations of woody fuels during the late fall, winter or spring, preferably when the ground is partially frozen or wet. This method would burn the fine fuels, limit the ability of the fire to spread and prevent soil sterilization from excessive heat. It is conducive to maintaining the herbaceous plant species growing under the downed junipers. (For more detail see Appendix A - Activity Descriptions)

[4] ***Single-tree Burning*:** Prescribed burning of individual trees during the late fall, winter or spring, preferably when the ground is partially wet or frozen. This method would burn the fine fuels, limit the ability of the fire to spread and prevent soil sterilization from excessive heat. It is conducive to maintaining the herbaceous plant species growing under the junipers. (For more detail see Appendix A - Activity Descriptions)

[5] ***Broadcast Burning*:** Prescribed burning at a time when the fire would carry through the unit, burning most of the available fuels. This would be applied in the late summer or fall when the fire would be controlled by preestablished control lines with ignition patterns in concert with the terrain features and wind direction as well as using natural barriers, and or diurnal temperatures and humidity changes. (For more detail see Appendix A - Activity Descriptions)

The proposal in these plant communities consists of an array of management actions in order to reduce the influence of encroaching juniper and pine. The two principal treatments used to treat the majority of these communities would be 1) cutting encroaching juniper followed by jackpot burning after juniper has cured or 2) prescribed broadcast burning. In areas targeted for a broadcast burn, the objective is to burn 40 to 60 percent of the mountain big sagebrush-bunchgrass communities in early or mid-transition toward a juniper woodland and 90 to 100 percent of mountain big sagebrush plant communities in late transition toward a juniper woodland. Any remaining encroached juniper may be cut and jackpot burned within treated areas and within the areas which are left unburned by the broadcast prescribed burn.

Lesser amounts of juniper and pine cutting, piling and burning, girdling, or cutting and leaving may be employed to decrease the risk of fire effects on desired vegetation. The cutting and leaving activity would only be used in sparse fuels where it is determined that it would not be a hazard. In areas where pine has expanded outside its historical niche, understory thinning and piling of pine, ranging from complete removal to a 22-foot spacing, may occur. These areas would be identified during onsite project layout. Where piling does occur, the construction of piles would move slash away from desired vegetation to the extent practical. Piling would be done by hand or mechanized equipment other than a dozer (excavator, feller buncher, etc.). All piles would be burned after the vegetation cured, but before the rest of the unit is broadcast burned.

Mountain mahogany and bitterbrush plant communities that are greater than an acre in size may receive some form of pretreatment prior to any broadcast burning. Pretreatment would primarily consist of cutting and jackpot burning, blacklining, or cutting and pullback, or piling via hand or mechanized equipment, prior to the broadcast burn. The recommendation to perform pretreatment and what type of pretreatment would be determined by resource advisors during onsite project layout.

Forested Areas Treatment

There are approximately 600 acres within the project area dominated by ponderosa pine-bunchgrasses plant communities. These stands have become overstocked due to the absence of fire and other management practices. Other important plant communities occurring within these sites include quaking aspen and mountain mahogany communities. Juniper has encroached upon these plant communities. The objective in these areas is to improve forest health, reduce fuel loading and the risk of stand replacement fires, and improve wildlife habitat. The proposal is to thin the understory of overstocked pine stands and remove the encroaching juniper. Several untreated islands would be left to provide quality thermal and hiding cover for wildlife. These islands would be determined during onsite project layout. Approximately 70 to 90 percent or 420 to 540 acres of these communities would be treated. All juniper trees except those displaying old growth characteristics or obvious wildlife occupation would be cut and piled. Understory pine trees would be thinned using a variable tree spacing creating basal areas ranging from 50 to 150 feet^2/acre. All slash would be piled either by hand or machine depending on feasibility and resource concerns. All piles would be burned after the vegetation cured.

A prescribed underburn on forested units may be completed 5 to 7 years after mechanical treatment. A 5 to 7-year period would allow adequate time for the residual trees to respond to the thinning treatments, thus they should be in good condition by the time we would utilize prescribed fire. The recommendation to underburn would be made by resource professionals based on monitoring data gathered after mechanical treatments. Raking of deep duff around old growth ponderosa pine trees, large snags, and large downed woody debris may occur prior to burning if necessary.

Aspen Treatment

There are a few aspen stands found within the project area. All aspen stands that exist within the project area are being encroached upon by juniper and in some cases ponderosa pine. The proposal in these treatment areas is to remove the encroaching vegetation. Mechanical cutting would be the primary tactic used in these communities. Broadcast burning may be utilized in addition to mechanical treatments or as a substitute for mechanical treatments in an effort to cut down on juniper and pine seedling establishment. Ponderosa pine trees less than 10 inches Diameter Breast Height (DBH) would be cut, limbed, and piled. Ponderosa pine trees in the 11 to 19-inch DBH size range may be cut and limbed. Only the limbs would be piled on these trees, leaving the bole to serve as downed woody debris. Ponderosa pine trees in the 20 to 26-inch DBH size range would either be girdled to provide snag habitat or left onsite. The few pine trees larger than 26 inches DBH would be left onsite. All junipers except those showing old growth characteristics or obvious wildlife occupation would be cut and piled. All piling in aspens stands would be done by hand. Piles and downed juniper would be burned after the cut vegetation has cured and during a time of year that would protect the soil resource and minimize fire spread. Aspen stands could be fenced to protect aspen suckers from browsing animals. This would be determined through monitoring. If a fence is determined to be needed, it would be removed after new suckers attain a height where the apical bud is 7 feet or higher or above the reach of most grazing animals as determined by rangeland monitoring.

Project Design Elements

- Protect cultural resource values throughout the life of the project. Archaeological sites would be avoided within the mechanical treatment units, and activity generated fuels would not be piled within site boundaries. Sites with combustible constituents would be protected during deployment of prescribed fire by blacklining resources and use of appropriate ignition techniques. The District Forestry/Fuels Archaeologist would review burn plans and make recommendations prior to project implementation.

- Protect Special Status plant species throughout the life of the project. Special Status plants would be avoided within mechanical treatment units if necessary.

Fire intolerant sensitive plants would be protected during deployment of prescribed fire by blacklining resources and use of appropriate ignition techniques. The District Forestry/Fuels Botanist would review burn plans and make recommendations prior to project implementation.

- Experimental plots may be established in limited portions of some of the Special Status plant populations to provide an increased understanding of plant response to various treatments.

- Protect Special Status wildlife species (terrestrial, avian, and aquatic) and their habitat throughout the life of the project. Structures or areas with Special Status Species (SSS) habitat value identified during wildlife surveys would be protected or avoided during project implementation. The District Forestry/Fuels Wildlife Biologist would review burn plans and make recommendations prior to project implementation.

- Maintain suitable big game hiding and thermal cover within forested and mountain mahogany enhancement treatment units.

- Avoid mechanical cutting of juniper or ponderosa pine with old growth characteristics or obvious wildlife occupation (cavities or nests). Consider protection of such trees during all prescribed fire operations.

- Existing snags and large downed woody debris in the forested areas would be retained to the extent practical. Snags and downed woody debris would be created if necessary in the mechanical treatment units. A minimum of one snag per acre would remain in the mechanical units following treatment. Snags would be created by girdling medium to large diameter ponderosa pine or Douglas-fir trees. Large downed wood may be protected by foaming, blacklining, or constructing handline around specific areas.

- Prior to treatment of prescribed fire and mechanical treatment units, noxious weed populations in the area would be inventoried. Weed populations identified in or adjacent to the project area would be treated using the most appropriate methods in accordance with the Noxious Weed Management Program EA/Decision Record (DR) OR-020-98-05.

- The risk of noxious weed introduction would be minimized by ensuring all equipment (including all machinery, 4-wheelers, and pickup trucks) is cleaned prior to entry to the site, minimizing disturbance activities, and completing follow-up monitoring, for at least 3 years, to ensure no new noxious weed establishment. Should noxious weeds be found, appropriate control treatments would be performed in conformance with the aforementioned Weed Program Management EA/DR.

- Piles and cut juniper would be jackpot burned when soil moisture is high or under frozen soil conditions to reduce the threat of soil sterilization and to maintain the existing shrub and herbaceous plant communities to the extent practical.

- Livestock grazing would not occur for two growing seasons (May 1 to June 30) in pastures treated with prescribed broadcast fire. An additional year of rest from grazing prior to burning is necessary to allow for the development of a fine fuel ignition source.

- Livestock grazing may not occur for a period of up to two growing seasons (May 1 to June 30) in pastures that have been treated with prescribed jackpot burning.

- Sites that lack sufficient understory species, such as fully-developed juniper woodlands, or areas that have burned at a high severity may require seeding following a prescribed fire treatment to attain the desired post-fire response. Mixtures of native and nonnative grass, forb, and shrub seed may be applied to designated areas with aerial or ground-based methods. Candidate sites for seeding would be determined on a case-by-case basis as monitoring data is gathered.

- Following accomplishment of the mountain big sagebrush community treatment objectives, treated mountain big sagebrush communities must attain 12 to 15 percent cover before any additional broadcast burning treatments of mountain big sagebrush dominated ecological sites can be considered in the project area.

- Prescribed burning would follow the Oregon State Smoke Management Plan in order to protect air quality and reduce health and visibility impacts on designated areas.

- Dispersed campsites identified within the project area would not be intentionally burned during broadcast burn operations. Protection would be considered for leave islands of sufficient size around identified campsites to protect cultural and recreation values.

CHAPTER III. AFFECTED ENVIRONMENT

A general description of the existing environment for the project area can be found in the Three Rivers RMP/FEIS. The terrain in the Dry Lake Project Area ranges from flats to steep canyons. All aspects can be found within the project area, but the majority of the project area has a southern aspect. Elevation ranges from 4,340 feet to 5,300 feet in the project area.

The following critical elements of the human environment have been analyzed in the Three Rivers RMP/FEIS, and are not known to be present in the project area or affected by enacting either alternative, and therefore, will not be addressed further in this document: Wilderness, Wilderness Study Areas, Areas of Critical Environmental Concern, Wild and Scenic Rivers, Flood Plains, Paleontology, Prime or Unique Farmlands, and Hazardous Materials. The following critical element is not discussed in the Three Rivers RMP/FEIS:

Environmental Justice: Executive Order 12898 requires that Federal agencies adopt strategies to address environmental justice concerns within the context of agency operations. Implementation of the proposed action would not result in disproportionately adverse effects on minority or low-income populations.

The following critical elements are present and are analyzed in the document: air quality, water quality, wetlands and riparian zones, migratory birds, SSS flora and fauna, noxious weeds, American Indian Traditional Practices, and cultural heritage. Noncritical elements which are present and analyzed in this document are soils, biological soil crusts, vegetation, wildlife, fisheries, grazing management, recreation/Off-Highway Vehicles, visual resources, economic and social values, forestry/woodlands, fire management, and transportation/roads.

This section describes affected environmental components not site-specifically described in the Three Rivers RMP/EIS. The discussion is divided into critical and noncritical elements.

A. Critical Elements

1. Air Quality

Air quality in the area associated with the Dry Lake Project is generally good. There are no areas or communities in Harney County considered a nonattainment area for particulate matter, meaning there is not a violation of the particulate (PM10) national ambient air quality standard. Weather, as illustrated by wind, moves into the project area generally from the southwest or west and exits the project area to the northeast or east. Periods of degraded air quality can occur though typically these events are short lived. These events are associated with the development of a stable air mass and/or cold air inversion over the project area. Smoke from wildfires and to a lesser degree prescribed fires can be a significant cause of degraded air quality, primarily from particulate matter contained in smoke.

2. Water Quality

The proposed project includes portions of Silver Creek and South Fork of the Crooked River subbasins. Streams in the project area have been evaluated for water quality impairment as directed by the Oregon Department of Environmental Quality (ODEQ). Nicoll Creek and Silver Creeks are on the ODEQ 303(d) list for water quality impairment for exceeding the 68 ºF water temperature standard for salmonid rearing. No other pollutants were documented in the streams within the project area.

3. Wetlands and Riparian Zones

Nicoll Creek – Nicoll Creek flows through the project area for approximately 4.7 miles. Of this, BLM-managed land accounts for approximately 1-mile. In June of 2005, a multi-disciplinary IDT conducted a Proper Functioning Condition (PFC)[6] Assessment along the BLM-managed reaches of Nicoll Creek. The team considered this section of the creek to be in PFC, and in an upward trend.

In 2005, the riparian vegetation resources along Nicoll Creek were evaluated using the 2000 Alma Winward Greenline method. The Greenline Stability was ranked High, the Successional Status was rated at Potential Natural Community, and the Cross Section Successional Status was rated as late seral. Currently, Nicoll Creek has a narrow channel with vigorous deep rooted herbaceous vegetation within the riparian zone. The channel is confined within an old terrace and is in the process of developing a wider flood plain. There is a minimal amount of juniper encroachment within the riparian zone along this creek.

Silver Creek - Approximately 3 miles of Silver Creek flows through the project area across BLM-administered lands. Two miles were listed as PFC during the 1998 PFC Assessment and .8 miles were listed as Functioning at Risk (FAR), with a downward trend, in 2000. The portion of Silver Creek rated as FAR was limited by the type or amount of riparian vegetation present. This had resulted in a confined channel with decreasing channel complexity. There is a small amount of juniper encroachment within the riparian zone along this creek.

Bulger Creek – A 1-mile section of Bulger Creek flows through the project area. This section of Bulger Creek is administered by the BLM. This is a perennial creek that is confined within a steep narrow canyon. Juniper and ponderosa pine have encroached to varying degrees within this riparian zone. Site-specific levels of encroachment are unknown at this time.

[6] ***Proper Functioning Condition Assessment:*** A methodology for assessing the physical function of riparian and wetland areas. There are three main ratings; Proper Functioning Condition (PFC), Functioning at Risk (FAR) upward or downward trend and nonfunctioning.

4. Migratory Birds

There has been no formal monitoring of migratory birds in the project area. Numerous migratory birds including ground nesters, cavity nesters, and shrub and tree nesters are known to use the project area for nesting, foraging, and resting as they pass through on their yearly migrations. Brewer's sparrow, sage sparrow, and loggerhead shrike, all of which are Birds of Conservation Concern for the Great Basin Region, are expected to inhabit the project area. These species nest in habitats with varying degrees of sagebrush density. Habitat quality in the project area for these species has been degraded by juniper encroachment, and in some cases, ponderosa pine. Species of Conservation Concern for the Great Basin Region associated with forested habitats are unlikely to occur or occur on a sporadic basis due to the project area's limited forested components.

5. Special Status Species - Flora

Portions of the project area have been surveyed by BLM for the presence or absence of Special Status plant species. Other areas within the project area currently require botanical surveys. These surveys would be conducted in the appropriate season prior to any project implementation.

Known Special Status plant populations occur in the project area. Deschutes milkvetch (*Astragalus tegetarioides*) occurs in the project area. This species is recognized Federally as a species of concern and is a candidate for State listing. The BLM recognizes the species as sensitive, and the Oregon Natural Heritage Plan list it as an L1 species. An L1 species refers to taxa that are threatened with extinction or presumed to be extinct throughout their range. There are approximately 114 acres of known populations of *A. tegetarioides* within the project area. There is a good likelihood of discovering more populations of *A. tegetarioides* during botanical surveys. Site visits in 1994, 1995, and 1998 indicate that the populations are stable and healthy. Population estimates for the known sites occurring within the allotment, on both BLM and Forest Service-administered land, concluded that roughly 12,000 plants exist in these sites.

6. Special Status Species – Fauna and Fish

Special Status Fauna

The bald eagle (*Haliaeetus leucocephalus*), a Federally listed threatened species, occurs in the proposed project area. The Silver Creek communal winter roost area is in the bottom of Silver Creek Canyon, which lies on the northwestern boundary of the project area. The roost is approximately 14 acres in size in which most of it falls within the project area and the remainder is adjacent to the project area.

There are approximately 100 ponderosa pine trees along the 1-mile stretch of Silver Creek that constitutes the roosts, 22 that have a DBH greater than 12 inches. The largest trees in the stand have had bald eagle use in the winter.

Columbia spotted frogs (*Rana luteiventris*), a Federal Candidate for listing as Threatened or Endangered, occur in the vicinity of the project area on Nicoll Creek. There have been no known sightings of Columbia spotted frogs on BLM-administered lands within the project area. However, potential habitat for Columbia spotted frogs does exist on public lands within the project area. Potential habitat includes slow moving or still water around springs, creeks, ponds behind beaver dams, and other ponds. Spotted frogs bury themselves in soft mud substrates during the late summer through winter months and emerge in late winter-early spring for breeding. Some research suggests that after breeding the frogs disperse to habitats near their wintering areas and remain there, digging into the soft substrate until the next breeding season.

Greater sage-grouse (*Centrocercus urophasianus*), an SSS, and their habitat are known to occur within the project area. SSS are species that have had increased monitoring due to population concerns. Sage-grouse are classified by Oregon BLM as a sensitive wildlife species.

Greater sage-grouse are considered to be sagebrush obligates, relying on the plant for food and cover throughout the year. Sage-grouse may require an extensive home range with specific sagebrush habitat types required for mating or lekking, nesting, brood rearing, and wintering. In general, sage-grouse populations usually demonstrate seasonality in the use of those habitats, with specific areas that are used as mating/lekking habitat, nesting habitat, brood-rearing habitat, and wintering habitat. Sage-grouse generally lek in open areas near sagebrush-dominated plant communities.

At this time there is one known lek complex, consisting of two lek sites (Dry Lake Leks 1 and 2), found within the project area. These leks sites are located on the northeast portion of the Native Pasture. Dry Lake Lek 1 was discovered in 1987 and 32 males were observed. It was counted again in 1999 during an Oregon Department of Fish and Wildlife (ODFW) lek searching flight where they observed nine males. They also discovered the Dry Lake Lek 2 site on this flight, in which they observed two males.

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 prenesting period for hens, areas that are rich in forbs are important.

The 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. By late fall, sagebrush is almost exclusively the only item in the diet and remains so until spring. The mountain big sagebrush communities in the project area have the potential to provide quality wintering habitat as the snow depth rarely covers the mature plants.

Approximately 10 percent of the project area is divided between unsuitable habitat and unsuitable habitat due to juniper encroachment. The unsuitable areas are those areas within the project area that are forested. These spots are located on the northern boundary of the project area, and will likely never have the potential to provide habitat for sage-grouse. The areas classified as historical habitat, but currently unsuitable due to juniper encroachment occur on the southern portion of the project area. These are areas where mountain big sagebrush-bunchgrass communities and low sagebrush flats have been encroached upon and outcompeted by western juniper. The remainder of the project area (approximately 90 percent) is classified as yearlong habitat. However, much of the habitat that falls into this category of yearlong habitat is actually not functioning as sage-grouse habitat at all due to juniper and pine encroachment upon sagebrush plant communities. Approximately 35 percent of the yearlong habitat should in fact be classified as historical habitat currently unsuitable due to juniper and pine encroachment.

Special Status Fish

Nicoll and Silver Creeks are the only known fish bearing streams within the project area. These creeks provide habitat for Great Basin redband trout (*Oncorhynchus mykiss ssp*.) - a Bureau tracking species in Oregon.

This species prefers cold, clear, fast flowing water with clean cobbles and gravels and spawn during the spring. These trout are adapted to the dry, hot summers of eastern Oregon and can withstand short periods of time at peak water temperatures of 24-27 °C (75-80 °F), which would be lethal to most other trout (Bowers et al. 1979). These creeks also provide habitat for Malheur mottled sculpin (*Cottus bairdi*) - a Bureau sensitive species in Oregon. Habitat requirements are similar to redband trout as this species also prefers cool, clear, fast flowing water with clean cobbles and gravels. In the Harney Basin, Malheur mottled sculpin are most common in smaller or isolated creeks (Markle and Hill 2000).

Silver Creek was historically stocked with nonnative rainbow trout. Introgression resulting from Great Basin redband trout interbreeding with stocked hatchery rainbow trout can reduce the native redband offspring's ability to survive harsh Great Basin conditions. Introduced nonnative fish also feed on or compete with native redband for resources. Stocking was discontinued in Silver Creek in 1974. Current population or genetic surveys have not been completed at this time.

7. Noxious Weeds

There are no recorded noxious weed sites in the proposed Dry Lake Project Area. There have been no systematic weed inventories conducted in the proposed Dry Lake Project treatment area. There are a number of known noxious weed sites in relatively close proximity to this area. Species include Canada thistle, bull thistle, whitetop, perennial pepperweed, spotted, diffuse, and Russian knapweed. They occur primarily along roads and have been treated on a regular basis. Botanical clearances have been conducted on previous juniper thinning treatments in the project area. Those surveys did not identify any noxious weeds in this area.

8. American Indian Traditional Practices

The Dry Lake Allotment Ecological Restoration project planning area lies within the traditional territory of the Burns Paiute (or *Wada Tika*) Tribe of the Northern Paiute Indians. The Burns Paiute Tribe was Federally recognized in 1972. Federal agencies are required to consider the impact of their actions on cultural uses of the natural environment such as those practiced by present-day communities of American Indians. The BLM and Burns Paiute Tribe signed a Memorandum of Understanding in 2001 that outlines a means for consultation and coordination between the BLM and Tribe during the environmental planning process.

Resources of contemporary Tribal interest may include traditional cultural properties (NPS 1990), areas important for the practice of Indian religion, Indian sacred sites on Federal lands, and areas that support cultural uses of the natural environment (i.e., subsistence use of plants or animals). Presently, consultation with the Burns Paiute Tribe has not resulted in the identification of any specific places within the Dry Lake Project Area that have been determined to be important for traditional Indian land-uses. The Tribe has, however, expressed a concern regarding the population and distribution of culturally important plant species on all parts of the Three Rivers Resource Area during previous consultation. Stream bottoms along Silver Creek and Nicoll Creek provide habitat suitable for hardwood shrubs of interest to the Tribe such as chokecherry, willow, and quaking aspen. Upland areas with shallow and rocky soils may support key edible species such as bitterroot or biscuitroot.

9. Cultural Heritage

The Dry Lake planning area has most likely been occupied by humans to some extent for the last 12,000 years. Upland ecosystems in the Harney Basin played an important role in hunter-gatherer subsistence-settlement patterns during the ethnographic and prehistoric periods (Couture 1986, Jenkins and Connolly 1990). Cross-dating of time-sensitive artifacts recovered from the planning area suggests that the most intensive period of prehistoric occupation occurred between 4000 and 900 years before present (Thomas 1981, Heizer and Hester 1978).

Camp Currey was established near the eastern boundary of the Dry Lake planning area in 1865 (Bright 1979). Camp Currey is one of three Civil War period military camps that were installed in Harney Basin to defend an influx of Euro-Americans from Indian attacks. Following the construction of Fort Harney in 1867, the Willamette Valley Cascade Mountain Military Wagon Road passed by the planning area after it was built between Albany and Fort Boise (Jackson and Lee 1978). This Federally subsidized land grant road passed down Silver Creek on the northeastern perimeter of the planning area, through Camp Currey, and turned east out of Silver Creek toward Fort Harney and Crane.

In the latter 19th and early 20th centuries (ca. 1890-1920), the Dry Lake planning area may have played a role in Bill Brown's horse producing ranch. Bill Brown was believed to own more horses than anyone in Oregon and earned the title "Horse King," due to the thousands of horses he raised and sold to the U.S. military during World War I. At one time, Bill Brown owned approximately 40,000 acres in the area and maintained a winter headquarters at what later became Camp Gap Ranch. He also may have resided to the north on Silver Creek according to some local informants (Mayo 1980).

Camp Gap Ranch was developed by the Civilian Conservation Corps (CCC) at the Bill Brown winter headquarters site in 1936 and was operated by the CCC until 1941. The men stationed at Camp Gap Ranch constructed improvements on rangelands in the area such as reservoirs, fences, roads, and spring developments. After the CCC abandoned Camp Gap Ranch, the United States Army conducted maneuvers around Silver Creek Valley during World War II (Brimlow 1951). A munitions/supply storage site was situated in the Potato Hills to support the training efforts (Mayo 1980). There is believed to have been a military aircraft crash within the Dry Lake planning area during this period.

A total of 16 cultural resource properties have been documented during the nine cultural resource inventories that have been conducted within the Dry Lake planning area since 1979. These surveys were completed in response to habitat restoration, range improvement, and fuels reduction projects and covered approximately 1,700 acres within the current planning area. Fourteen of the documented properties are related to pre-contact occupations of the planning area, one is a post-contact historic property, and one displays pre-contact and post-contact historic elements. The National Register of Historic Places (NRHP) eligibility status of nearly all the documented cultural resource properties in the planning area remains undetermined at this time. The historic post-contact period property was evaluated as not eligible for inclusion to the NRHP. For management purposes, properties with an undetermined eligibility status are afforded the same protection as eligible properties during all Federal undertakings.

The most frequently occurring type of cultural resource in the project area is lithic dominated archaeological sites, known as "lithic scatters." Such deposits are the archaeological signature of pre-contact era hunter-gatherer occupations that can span several thousand years. Lithic scatters typically include obsidian, chert, and basalt artifacts and are often visible at the surface of the ground. There are 14 cultural resource properties documented in the Dry Lake planning area that display a pre-contact period component. Sites of this type in the planning area range between .1 and 9.0 acres in size and several display potential for patterned subsurface components.

Historic post-contact era cultural resource properties may include standing buildings and/or archaeological features such as foundations or structural ruins, privy pits, refuse dumps, and blazed trees. Sites with historic components in the planning area are most likely associated with early 20th century ranching and/or New Deal era development/World War II period activities. Remains of a World War II era airplane crash are thought to be present in the planning area near Rimrock Hill. There are two cultural resource properties that have been identified within the planning area that display a historic period component. Post-contact era cultural resource properties in the Dry Lake planning area range between 1.1 and 3.7 acres in size.

There are less than 25,000 acres within the Dry Lake planning area that are considered "High Probability" for the occurrence of cultural resources. Several cultural resource properties documented in the vicinity of the planning area contain or are adjacent to accumulations of hazardous fuels. Prior to project implementation, a Class II cultural resource inventory and consultation with the Burns Paiute Indian Tribe would be required to comply with the terms of the Protocol for Managing Cultural Resources on Lands Administered by the BLM in Oregon. The Protocol describes how the BLM and the Oregon State Historic Preservation Office would cooperate under a national Programmatic Agreement to meet the requirements of Section 106 of the National Historic Preservation Act.

B. Noncritical Elements

Noncritical elements that are not known to be present or would not be affected in any way by implementation of the proposed action are Lands and Realty, Minerals, Reclamation, and Wild Horses and Burros.

Wilderness Characteristics: An intensive inventory evaluating the presence of wilderness characteristics on BLM-administered lands within and in the vicinity of the project area was completed in November of 1980. The final intensive inventory decision found that wilderness characteristics were not present (Wilderness Inventory – Oregon Washington, Final Intensive Inventory Decisions, November 1980) on these lands. In January of 2007, inventory maintenance was completed by an IDT who reviewed current conditions and documented changes that had occurred since the original inventory was completed. No changes to conditions were identified that would modify the findings of the 1980 inventory; therefore, wilderness characteristics have been determined not to be present. Therefore, this element will not be addressed further in the document.

Noncritical elements of the human environment which may be affected by the proposed action and/or alternatives are:

1. Soils

The soils in the project area have a similar genesis. All are developed from volcanic parent material and in the Mollisol soil order. Because the area has an extended period of the year where the soils are dry, they are classified in the suborder as Xerolls. This dry period begins in June and may extend through September. These soils are formed primarily in late-Pleistocene loess and may contain an accumulation of carbonates in the lower part of the B horizon.

Two soil types have been classified as Haploxerolls. The Lambring and Westbutte soil series are both classified as Loamy-skeletal, mixed, superactive, frigid Pachic Haploxerolls. Texture of the surface soil horizons is loam-skeletal and there is at least 35 percent rock fragments in those horizons. These soils support large perennial bunchgrasses, antelope bitterbrush, mountain big sagebrush, and scattered western juniper.

The other six soil series found on the project area are all classified as Argixerolls. Three of the soils are generally deeper than the other three Argixerolls. The Viatle (Loamy-skeletal, mixed, superactive, frigid Typic Argixeroll), Reluctan (fine-loamy, mixed, superactive, frigid, Aridic Agrizeroll), and Royst (clayey-skeletal, smectitic, frigid Pachic Argixeroll) soil series are all moderately deep, well-drained soils. Classification as an Argixeroll indicates that there is thin argillic (clayey) horizon in the surface soil. The Viatle and Royst soil series have at least 35 percent rock fragments by weight in the surface horizon.

The Reluctan soil series has less rock in the surface horizon and the rocks are generally smaller in size than in the Reluctan and Viatle series. These Argizerolls support mountain big sagebrush, large perennial bunchgrasses, antelope bitterbrush, and snowberry. These soil series may have western juniper and ponderosa pine growing onsite.

There are four soil series that are classified as Lithic Arizerolls. These soils are generally shallow (< 24 inches deep) and contain higher levels of clay in the surface horizons than the deeper soil series. The Ninemile (clayey, smectitic, frigid Lithic Argizerolls), Ateron (clayey-skeletal, smectic, frigid Lithic Argixeroll), Teguro (loamy, mixed, superactive, frigid Lithic Argixeroll), and Merlin (clayey, smectitic, frigid Lithic Argixeroll) soil series are similar in appearance and similar plant composition. Low sagebrush dominates these soil types and a variety of large and small bunchgrasses. Older western juniper trees can be found on these soils, protected from previous wildfires by the sparse vegetation. These soils tend to be saturated during the late winter and early spring months.

2. Biological Soil Crusts

Biological soil crust data specific to the northern Great Basin has been lacking in the past. Research conducted by Ponzetti and McCune in 2001 provides insight concerning biological soil crust communities in the Three Rivers Resource Area. Factors influencing distribution of biological soil crusts include, but are not limited to the following: elevation, soils and topography, and percent rock cover.

Elevation - Biological soil crust cover is usually greatest at inland elevations under 3,100 feet. Lichen and moss components generally decrease with elevation until vascular plant cover dominates the site.

Soils and Topography - Shallow soils support greater total biological soil crust cover than deep more productive soils. As coarse soil texture increases, total biological soil crust cover decreases. In more unstable soil types the representation of morphological groups such as short and tall moss may be exclusively under vascular plant cover.

Percent rock cover – Embedded rocks provide armor for the microbiota contained within the soil interspaces. North and east slopes generally favor crust development due to the moisture and temperature requirements for optimal physiological activity. Calcareous and gypsiferous soils can support higher species richness.

Common genera of biological soil crusts that could occur in the project area include: *Bryum, Cladonia, Collema, Didymodon, Lecanora, Megaspora, Peltigera, Psora,* and *Tortula*. This is not an all inclusive list of potential genera.

Identification of biological soil crusts at the species level is often not practical for fieldwork. 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 (Page 6, TR-1730-2). Using a classification scheme proposed in 1994 microbiota such as biological soil crusts can be divided into three groups based on their physical location in relation to the soil: hypermorphic (aboveground), perimorphic (at ground), and cryptomorphic (belowground).

The morphological groups are:

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, 8, and 9 would likely be the dominant groups represented in the project area. Groups 10 and 11 may also be represented as the site-specific conditions required for their growth may exist in sufficient quantity.

3. Vegetation

The project area occupies a transition from sagebrush-dominated vegetation to ponderosa pine forest. Shallow soil areas are dominated by low sagebrush (*Artemisia arbuscula*) and stiff sagebrush (*A. rigida*). Mountain big sagebrush (*A. tridentata* ssp. *vaseyana*) occupies deeper soil areas with ponderosa pine (*Pinus ponderosa*) occurring on northern aspects and in drainages. Quaking aspen (*Populus tremuloides*) occur in small stands, on very deep soils, generally on north and east aspects or in areas where soil moisture is increased due to other topographic features. Ancient western juniper stands occur on shallow soil areas, usually just below the forest boundary. However, western juniper has encroached out into more productive mountain big sagebrush and into ponderosa pine stands. Ponderosa pine and quaking aspen communities will be addressed in the forestry/woodlands section.

Low sagebrush and stiff sagebrush plant communities occupy approximately 68 percent of the project area. These two plant communities are structurally very similar. Associated plants include Idaho fescue (*Festuca idahoensis*), bottlebrush squirreltail (*Elymus elymoides*), Sandberg's bluegrass (*Poa secunda*), and prairie junegrass (*Koeleria macrantha*). Bigger perennial bunchgrasses may also be present, but usually at very small densities. These communities contain a very diverse perennial and annual forb component. Large, deep-rooted forbs such as western hawksbeard (*Crepis occidentalis*), tapertip hawksbeard (*C. accuminata*), serrated balsamroot (*Balsamorhiza serrata*), lupine (*Lupinus* sp.), and milkvetch (*Astragalus* sp.) are commonly found. Shorter growing forbs such as Hood's phlox (*Phlox hoodii*) and buckwheat (*Eriogonum* sp.) are also a common component of these plant communities. Many native annual forbs can be found in these sites. Blue-eyed Mary (*Collinsia parviflora*), annual phlox (*Microsteris gracilis*), bushy birdsbeak (*Cordylanthus ramosus*), and annual alyssum *(Alyssum alyssoides*) are the most common annuals, but the composition also changes with annual variations in climatic conditions. Cheatgrass (*Bromus tectorum*) can be found throughout, but only on disturbed areas. This annual grass and numerous annual forbs would persist in areas where disturbance is frequent, i.e., rodent dens and roadsides. Low sagebrush and stiff sagebrush plant communities vary primarily in soil surface characteristics. Stiff sagebrush plant communities would occur in areas with a heavy surface rock component while low sagebrush plant community may have rock on the surface, but to a lesser degree. Juniper has invaded these plant communities in the project area to some degree.

Mountain big sagebrush plant communities occupy approximately 23 percent of the total project area. These communities are dominated by sagebrush with a perennial grass and forb understory. The composition and extent of the understory herbaceous plant community varies depending on soil type, aspect, and past management actions. Large perennial bunchgrasses dominate the understory in most cases. Bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue, Thurber's needlegrass (*Achnatherum thurberianum*), Sandberg's bluegrass and bottlebrush squirreltail are the most common perennial bunchgrasses. Several other perennial bunchgrasses tend to occur in specialized habitats. Forbs similar to low and stiff sagebrush plant communities are found in mountain big sagebrush plant communities. However, less low-growing, mat-forming forbs occur in mountain big sagebrush communities. Cheatgrass can be found in mountain big sagebrush plant communities within the project area, but does not dominate the plant community unless there is frequent disturbance.

Western juniper occurs throughout the project area in two general types. Old to ancient trees can be found on shallow soil areas where fire spread was limited by sparse understory. These are sites where juniper was found historically and would be considered the climax species on the site. On these sites larger trees exhibit old growth characteristics outlined by Weichler et al. 2000. Trees have rounded canopies with dead patches. Some trees have large lower branches with yellow lichen (*Letharia* sp.) and some have deep furrows in the bark with cavities common in the trunk. This western juniper type generally occurs with low or rigid sagebrush on these sites. Over the last 120 years, western juniper density and cover has increased to some degree on these sites.

The other places that western juniper occur on the project area is where juniper has encroached upon other plant communities. Approximately 90 percent of the juniper occurring in the project area would be considered this type of juniper. Most of the juniper encroachment in the project area has occurred in mountain big sagebrush/bunchgrass and low sagebrush/bunchgrass communities. Western juniper has encroached into these sagebrush plant communities to varying degrees. Woodlands are in the mid to late transitional stage as outlined by Miller and others (2005). Sagebrush and other shrubs are the first group of plants to be impacted by western juniper. As the density of juniper increases, the density of the shrubs decreases. Herbaceous vegetation also decreases on shallower soil areas. On deeper soil sites, herbaceous vegetation would remain in the understory even as shrubs are eliminated from the community. Western juniper has also increased in the transitional areas where sagebrush changes into forest. However, Rose and Eddleman (1989) found that western juniper would initially dominate these sites, but as ponderosa pine establishes it would overtop the juniper and dominate the site, also resulting in conversion from sagebrush/bunchgrass to ponderosa pine forest.

4. Wildlife

Wildlife in addition to migratory birds and SSS occurring in the project area include mule deer, Rocky Mountain elk, pronghorn antelope, badger, black-tailed jackrabbit, cottontails, cougar, bobcat, coyote, reptiles and amphibians, many other bird species, and a myriad of small mammal species. Only the big game species will be covered in depth in this section. The project area falls within ODFW's Silvies River Hunt Unit for all big game species.

Pronghorn can be found throughout the nonforested portions of the project area. However, they prefer the more open habitats such as the low and stiff sagebrush flats, grasslands, and generally open rolling terrain. Pronghorn populations in and around the project area are in good shape and numbers have been stable for quite some time.

Mule deer and Rocky Mountain elk use the project area yearlong. Approximately 75 percent of the project area is classified as either mule deer or elk winter range. Approximately 60 percent of the planning area is classified as deer winter range. Deer are largely dependent on sagebrush for their winter diet. Bitterbrush and other shrubs are also important browse species that deer forage on in the fall and winter. Approximately 40 percent of the project area is classified as Rocky Mountain elk winter range. Winter range for both deer and elk is being degraded across the project area as juniper and ponderosa pine encroachment continues to take place upon important plant communities. Much of the winter range within the project area does not currently support browse. These are areas where juniper and/or pine have encroached upon and outcompeted these key forage species, thereby leaving these areas dominated by woodlands. There are several other areas within the planning area where juniper is in an intermediate transitional stage toward becoming fully-developed woodlands. In these areas browse species are declining in quantity, health and vigor, and palatability. There are a few other areas within the project area where browse species are healthy and plentiful. These areas offer highly palatable and protein rich winter forage, providing plenty of protein and nutrients, for both deer and elk. Overall the project area has a relatively small percentage of winter range that is currently not being degraded by juniper and/or pine encroachment. There is an abundance of thermal and hiding cover within the project area. Juniper, forested sites, and big sagebrush are the major cover types used for hiding and thermal cover during the winter months to help animals reduce heat loss during cold winter nights. Mountain mahogany and aspen stands also serve as hiding or thermal cover, but they occur on a less frequent basis.

5. Fisheries

Existing conditions for fisheries are the same as existing conditions of Special Status fish species discussed above.

6. Grazing Management

The project area includes all BLM-managed lands within the Dry Lake Allotment #7009. There is one grazing permit within the allotment held by Hotchkiss Company. Permitted season of use is from April 1 through October 15; however, use generally occurs from mid-April through late August. This allotment is made up of four pastures, with the Rye Grass Pasture being excluded from livestock grazing every year. Native Pasture makes up the majority of the land base within the allotment and is typically grazed from late April through early August every year. In late July/early August, gates are opened to Creek Pasture and cows are allowed to drift into it for a period of no longer than 1-week.

From here gates are opened into Lower Silver Creek Pasture where cows again can spend no more than 1-week. The 2006 Allotment Evaluation specifies that gates are to be left open on the Lower Silver Creek Pasture so that the cattle can pass through on their way out of the allotment and not be held up. Gates have not been left open on this pasture in the past, but this will be more vigorously enforced in the future. The 2006 Allotment Evaluation recommends providing periodic growing season rest by constructing a fence through the Native Pasture (north to south) that would split it into two pastures. The two pastures could then be used on a graze/defer rotation.

7. Recreation/Off-Highway Vehicles

The primary recreation activities in the project area are dispersed camping and hiking. These activities are usually associated with hunting big game such as mule deer, Rocky Mountain elk, and pronghorn antelope. Upland game bird hunting also occurs occasionally in the project area. Other recreation activities are rockhounding, photography, wildlife viewing, and driving for pleasure.

8. Economic and Social Values

Livestock and feed production industries are major contributors to the economy of Harney County. The highest individual agricultural sales revenue in Harney County is derived from cattle production, which is inextricably linked to the commodity value of public rangelands. According to information derived from Harney County the "…cattle industry is counted on to provide an average of $28,000,000 per year to the economy of the county," (www.harneycounty.com 2003). In addition, nearly half of the county taxes come from the ranching community (ibid).

Fire and forestry management programs on public and private lands can have a stabilizing influence on local employment and standards of living. Hunting and other types of dispersed outdoor recreation also contribute to the local economy on a seasonal basis. The undeveloped, open spaces in the county, including the project area, are a tourist attraction and contribute to a share of revenue for local business.

9. Visual Resources

The project area is remote and is not visible from any highway. Ninety-five percent of the project area is classified as a Visual Resource Management (VRM) Class III. Management direction from the Three Rivers RMP for a VRM Class III calls for partial retention of the landscape character. The remaining 5 percent of the project area is classified as a VRM Class IV. Management direction from the Three Rivers RMP for a VRM Class IV allows for modification of the landscape character.

10. Forestry/Woodlands

There are two types of forests/woodlands in the project area:

The north end of the project area can generally be described as being ponderosa pine woodland. These stands are characterized by scattered large diameter ponderosa pines dispersed into the mountain big sagebrush/bunchgrass/mountain mahogany communities. There are about one or two trees per acre which are generally greater than 24 inches DBH and more than 250 years old. Locally dense pockets of such large pines occur, generally less than 5 acres in size. Throughout the areas invaded by ponderosa pine, most of the pine range in DBH from 1 to 20 inches. These trees are generally less than 100 years old and can be characterized as being open grown and limby, with black bark and limbs most of the way to the ground. Establishment of these younger trees are due to fire suppression, climate change, and past management actions. These trees are considered to be far more common than their historical stocking levels. Ponderosa pines and western junipers of similar age have invaded the mountain big sagebrush-bunchgrass and mountain mahogany communities and are beginning to dominate the sites. Past management in the area has been limited to livestock grazing and fire suppression. Snags and downed logs occur infrequently. Health and vigor of the pine trees in these units is generally poor to fair.

Ponderosa pine forests occur in small stands and scattered pockets on the north end of the project area and total about 600 acres. The vast majority of these stands can be characterized as having an overstory that is lightly stocked with large diameter (>24-inch DBH) ponderosa pine. Throughout the project area, the understory trees are substantially overstocked with far more trees per acre than what historically existed. The dense understory varies from small pine reproduction (0-5-inch DBH) to pole timber (5-11-inch DBH) and areas of small sawtimber (11-21-inch DBH). Past management in the area has been limited to fire suppression, with no tree harvest or thinning. Overall, health and vigor of all the stands is poor. Stocking levels are substantially higher than historical levels and has led to increased stress on trees and increased susceptibility to pathogens.

Pockets of bark beetle killed pines are common. The numbers of snags are generally low with a few large diameter old pine snags. Locally there are pockets of beetle killed pole sized snags. The majority of the forested areas have deep duff (4-8 inches deep) with minimal herbaceous and grass cover.

Small areas of quaking aspen can be found on deeper soil areas of the project area. Quaking aspen stands found within the project area are small isolated pockets, often less than an acre in size, generally occurring on north and east-facing slopes. Most of these stands have been heavily impacted by the encroachment of juniper and other conifers and are shrinking in size due to ongoing mortality and no reproduction. Where live aspen still do exist, they are of generally low vigor with skeletons of dead aspen trees quite common. Little to no suckering is occurring in the understory. Mature quaking aspen, juniper, and other conifers are suppressing the suckering process.

11. Fire Management

The Dry Lake Allotment is located in the Silver FMU. Suppression of wildfires is the primary fire management goal for this FMU. A number of fuel types are present in this FMU. Vegetation of the project area is primarily dominated by sagebrush communities and ponderosa pine. However, western juniper has encroached upon all the plant communities occurring in the project area to varying degrees. Several western juniper cuts have occurred in the western end of the project. The goal of these projects was to restore mountain big sagebrush ecosystems and meadow plant communities. The Cecil Fire burned in one of the existing juniper cuts in the project area. Consumption of the downed trees was almost complete and resulted in severe fire effects. The area has numerous roads that help in the suppression operations.

A Fire Regime Condition Class (FRCC) analysis was conducted for the Dry Lake Allotment (refer to Appendix B for a more detailed definition and description of fire regimes and condition classes). The FRCC is a measurement used to determine how departed a geographic unit or plant community is from its historical fire regime or plant community structure. A Condition Class 1 represents an area that's composition and structure of vegetation and fuels are similar to the natural (historic) regime. In other words, a Condition Class 1 represents what you would expect to find at the site prior to European settlement in the area. The risk of loss of key ecosystem components is low. A Condition Class 2 represents an area that’s composition and structure of vegetation and fuel are moderately altered from the natural regime. The risk of loss of key ecosystem components is moderate. A Condition Class 3 represents an area that’s composition and structure of vegetation and fuel are highly altered from the natural regime. The risk of loss of key ecosystem components is high. Four Biophysical Settings (BpS), otherwise known as vegetation classifications, were analyzed. Low sagebrush BpS was the largest of the four, comprising 69 percent of the project area. Mountain big sagebrush and ponderosa pine BpSs were the next two most common settings at 23 and 7 percent, respectively. Curlleaf mountain mahogany was the smallest BpS at 1 percent of the project area.

Analysis indicated that the low sagebrush BpS was classified as Fire Regime IV (35-100+ year frequency and low to mixed severity) and Condition Class 2. The mountain big sagebrush BpS was classified as Fire Regime II (0-35 year frequency and high severity) and Condition Class 3. Ponderosa pine BpS was classified as Fire Regime I (0-35-year frequency and low to mixed severity) and Condition Class 3. The small mountain mahogany BpS was classified as Fire Regime V (200+ year frequency and high severity) and Condition Class 3. Grouping all the BpSs in the analysis, the project area was classified as Fire Regime III (35-100+ year frequency and high severity) and Condition Class 2.

The ponderosa pine, mountain big sagebrush, and mountain mahogany BpSs were all classified as Condition Class 3 indicating that they are highly departed from their historic condition. To move the ponderosa pine areas back toward Condition Class 1, activities should concentrate on restoring fire effects through the modification of the fuel structure. Thinning and post cutting fuels management (burning or biomass utilization) would be appropriate treatments.

Mountain big sagebrush plant communities would require modification of plant species composition, fuels and fire effects to move these areas back toward Condition Class 1. The low sagebrush plant communities would also require a similar modification to move from Condition Class 2 to Condition Class 1. In these plant communities removal of western juniper through cutting and prescribed burning would help to move these areas toward the appropriate Condition Class. Prescribed burning could include broadcast burning and/or pile and jackpot burning to manage the post cutting fuels.

The mountain mahogany plant communities occupy a very small part of the project area, but are important for many wildlife species. The FRCC analysis indicates that restoration of the vegetation and fuels structure would be required to change the condition class of this BpS. This could be achieved by the removal of western juniper through cutting and jackpot burning of the cut trees. Mountain mahogany areas are embedded in the other plant communities. Treatments could be combined with the adjacent areas to help achieve landscape objectives.

The dominance of low sagebrush BpS in the project area skewed the analysis toward Fire Regime III, Condition Class 2. However, the analysis suggests that to change the condition class of the project area restoration of fire effects, vegetation composition and fuels would be required.

12. Transportation/Roads

General access to the project area is via U.S. Hwy 20, the Silver Creek Road, Harney County Road No.138, and Forest Road No. 4510. Local access into and around the project area is via roads and trails crossing BLM, private, and National Forest lands. These roads all originate off Forest Road 4510.

The BLM has no formal legal access where one key access road leaves Forest Road 4510 in Section 10, T. 22 S., R. 25 E. and crosses private lands owned by Hotchkiss Company, Inc. Hotchkiss is the grazing permittee in the Dry Lake Allotment, project cooperator and generally allows access for administrative purposes.

Other than Forest Road 4510 all roads in the project area are generally not designed or constructed routes and are best described as rough, primitive, two-track roads and trails. These routes are rarely maintained and are not surfaced, making them difficult for travel when soils are saturated and not frozen.

CHAPTER IV. ENVIRONMENTAL CONSEQUENCES

This chapter analyses the effects of the no action and the proposed action alternatives for both critical and noncritical elements of the affected environment. For the purpose of this analysis, the term "short term" refers to a period of time that is equal to or less than 15 years. The term "long term" refers to a period of time that is greater than 15 years.

A. No Action: Critical Elements

1. Air Quality

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

2. Water Quality

Riparian vegetation plays an important role in maintaining water quality. Water quality can be degraded by changes in chemical/nutrient content, temperature, turbidity, and levels of sedimentation. Juniper expansion in the uplands and the riparian areas can lead to degraded water quality from increased erosion and overland flow, streambank instability, degraded channel morphology, loss of storage capacity, and reduced potential for groundwater recharge.

The resulting impact can lead to increased sedimentation and changes to nutrient cycles associated with deciduous and herbaceous vegetation. The no action alternative could lead to water quality degradation over time.

3. Wetlands and Riparian Zones

Under this alternative, juniper may increase or become established in riparian areas. This would decrease riparian vegetation diversity, and the productivity and function of riparian areas. The loss of desired riparian species (e.g., willow, sedge, alder, dogwood) to juniper could lead to deterioration of stream channel integrity and bank stability. High water events could lead to further degradation of channel integrity and water quality.

Juniper invades riparian areas by shading out or outcompeting desired riparian species. Juniper expansion into riparian areas and stream corridors would not likely lead to immediate degradation of riparian zones; rather it would likely be a slow process that would compound over time.

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

This alternative would maintain current condition and trend of riparian areas, unless or until an event such as high severity wildfire or flood occurs. Over time, riparian condition would trend downward.

4. Migratory Birds

Under the no action alternative, no disturbance to migratory birds would occur due to human activity. Plant communities would continue to transition toward juniper woodlands and overstocked conifer stands, with reduced herbaceous understories. When western juniper density and cover increase to the point that shrub and herbaceous understory are suppressed, avian species diversity decreases (Reinkensmeyer and Miller 2000). Avian species diversity is also likely to decrease as conifer stands continue to increase in basal area. Mountain mahogany and aspen stands would also continue to be encroached upon and outcompeted by juniper and pine trees, which would likely lead to the eventual loss of these habitats. A loss of these habitats would also lead to a loss in avian species diversity. This alternative would favor the relatively few species, such as gray flycatcher, dusky flycatcher, and Oregon junco, which prefer juniper woodlands and densely overstocked conifer stands. Brewer's sparrows, sage sparrows, and loggerhead shrikes would be negatively impacted as a result of the no action alternative in the long term. Habitat quality in the project area for these species has already been degraded by juniper and other conifer encroachment and would continue to decline as these juniper and pine continue to encroach upon the sagebrush plant communities that these species favor. Overall, the net effect of the no action alternative is likely to be a decrease in avian species diversity.

5. Special Status Species - Flora

Populations of Special Status plant species described in Chapter 3 of this document could be affected by transitioning plant communities and remain susceptible to large-scale, high-intensity wildfires. Under the no action alternative restoration of plant communities would not occur. Reestablishment of historic fire regimes, which could maintain or create habitat for Special Status plants would also not occur. In fire-adapted ecosystems, many plant species have co-evolved with and adapted to fire. The no action alternative may have no effect on Special Status plant species populations in the Dry Lake Allotment on many sites. However, as juniper encroachment increases on soils with a restrictive layer, forb cover tends to decrease (Miller et al. 2000). Test plots and studies may help verify this issue. However, it is predicted that Special Status plant species will reduce in composition as a result of the no action alternative.

6. Special Status Species - Fauna and Fish

Special Status Fauna

There are no known effects to bald eagles and their habitat under this alternative. The no action alternative would have effects on Columbia spotted frogs and sage-grouse and/or their habitat. There would be no known effect on spotted frogs or their habitat as a result of human actions under the no action alternative. As juniper and pine encroachment continues on the uplands and into the riparian areas there would likely be a reduction in habitat quality and habitat availability due to lack of adequate riparian vegetation and decreased water availability. The decrease in water availability would likely occur as juniper expansion on the uplands and into the riparian areas continues.

There would be no known effect on sage-grouse habitat as a result of human actions under the no action alternative. Areas of potential sage-grouse habitat, that are currently nonfunctional under the influence of juniper and pine encroachment, would remain in existing conditions. As juniper and pine encroachment progresses, areas that are offering nesting, brood rearing, and wintering habitat for sage-grouse would experience a decrease in sagebrush and herbaceous cover and an increase in predatory raptor perches. Eventually these areas would also become nonfunctional as sage-grouse habitat. In the long term, a large percentage of the project area may become unsuitable for sage-grouse due to the advancing juniper and pine encroachment under this alternative.

Special Status Fish

Juniper dominance on a site has been shown to decrease shrub and herbaceous vegetation cover (Roberts and Jones 2000). With this loss, soil is more prone to increased soil crusting, decreased infiltration and increased erosion (Pierson et al. 1994). Under the no action alternative, increased runoff and erosion from surrounding hillsides is likely to occur, causing chronic sediment delivery to stream channels. Chronic sediment inputs reduce spawning habitat and reproductive success of fish by smothering eggs or trapping newly-hatched fish in the gravels below the streambed surface. Elevated sediment also reduces available habitat for both fish and macroinvertebrates (which is an important food source for fish). Increased sediment reduces pool habitat, which is important for cover, over-wintering habitat, and thermal refuges during temperature extremes.

Selection of this alternative would maintain the current condition and trend, precluding an event such as catastrophic fire or flood. There would be no immediate effects to fish habitat, however, over time erosion levels/water quality would be in a downward trend which would have negative effects to fish habitat.

7. Noxious Weeds

The risk of noxious weed establishment and spread would increase under the no action alternative as juniper continues to degrade habitat, creating niches for noxious weed establishment, and by the accumulation of fuels increasing the likelihood of a large-scale wildfire. Sagebrush-bunchgrass plant communities would continue to progress toward juniper woodlands or a mixture of juniper, pine, and shrubland plant communities. Wildfires that occur in these communities tend to be severe enough to kill large numbers of understory plants. These conditions are conducive to noxious weed invasion.

8. American Indian Traditional Practices

Under the no action alternative, floral resources important within the traditional practices of the Burns Paiute Indian Tribe would remain in their present condition in the short term. However, in the long term these floral resources would decrease in abundance as juniper and ponderosa pine continue to encroach upon these plant communities. Habitats that may be important to the continuation of Burns Paiute traditional practices in the area would remain in jeopardy of disturbance by large-scale intense wildfire events and wildfire suppression.

9. Cultural Heritage

Under the no action alternative management, there would be no effect on cultural resources identified in the Dry Lake planning area as no fuels reduction, watershed enhancement, or habitat improvement activities are likely to be implemented. However, with no implementation of fuels reduction activities, archaeological and architectural resources would continue to be in jeopardy of damage or destruction by large-scale wildfires and fire suppression activities.

B. No Action: Noncritical Elements

1. Soils

Under the no action alternative the amount of bare ground, or exposed soil surface, would increase as the density and cover of western juniper increases, reducing associated understory shrubs and herbaceous plants. Work done on juniper woodlands occurring on Steens Mountain has found that as much as 0.2 tons of soil may be lost per acre following a 2-year rain event (Miller et al. 2005). Continued loss of soil would result in the decline of site productivity and reduced the ability of the site to respond to wildfires.

2. Biological Soil Crusts

The risk of wildfire as an effect of selecting the no action alternative could threaten remnant biological soil crusts in dense juniper stands. Wildfire risk is much less of an issue where soils are not very productive and shallow; this is a function of the natural lack of fuels. Since biological soil crusts are generally more common in less productive soils with large interspaces between vascular plants, the larger percentage of biological soil crusts should not be affected by large-scale fires.

3. Vegetation

Under the no action alternative there would be a continued increase in western juniper cover and density into big sagebrush, low sagebrush, quaking aspen, mountain mahogany, and riparian plant communities. The increase in cover and density would further deplete the understory woody and herbaceous plant community. Reducing the understory vegetation would increase the amount of bare ground exposed to wind and rain, increasing erosion. The reduction in understory vegetation would be most evident in areas dominated by big sagebrush and having shallow soils or a restrictive layer within 18 inches of the soil surface (Miller et al. 2000). In these areas western juniper and understory vegetation are forced to root in the same soil volume. Western juniper is a much more effective competitor for resources, and its roots would dominate the soil horizon. The effect would be less dramatic on deeper soils. However, on these sites western juniper would eliminate the associated woody plants because of rooting patterns.

Associated shrubs would explore the deeper soil horizons with the western juniper. Competition for resources would be intense, deeper in the soil. Under these conditions shrubs would be eliminated from the plant community before herbaceous vegetation. The herbaceous vegetation would persist for a longer period of time than the woody plants because they root in the upper soil horizons. Sites with deep soils (greater than 24 inches) may develop dense western juniper woodlands with canopy cover approaching 75 percent and maintain a diverse herbaceous plant cover for a longer period of time. This condition would occur on a small percentage of the project area because of the shallow soils present.

Under the no action alternative, an increase in western juniper would also occur in the low sagebrush plant communities. Effects of increasing western juniper would be slower to develop because of lower site productivity. Shrubs would be reduced, but western juniper cover and density would not reach that of big sagebrush plant communities. In most cases the influence of western juniper is limited to the area directly below the tree. Low sagebrush sites may also contain trees greater than 200 years old. The low fire return interval of these sites allows western juniper to establish and grow to a very old age (>500 years). The increase in western juniper on these sites increases the risk of widespread, high intensity fires that may kill a large number of these ancient trees.

4. Wildlife

Under the no action alternative, no disturbance to wildlife would occur due to human activities. Plant communities would continue to transition toward juniper woodlands and overstocked conifer stands with reduced herbaceous understories. Pronghorn would be negatively affected by the expansion of juniper and pine into the sagebrush communities as they prefer open habitats. Browse species (bitterbrush, big sagebrush, chokecherry, etc.) that elk and especially deer rely upon in the winter would continue to decrease in quantity, health, vigor, and palatability. Mountain mahogany and aspen stands would also continue to be encroached upon and outcompeted by juniper and pine trees, which would likely lead to the eventual loss of these habitats. This would cause a decrease in habitat quality for big game species as well as several bird and small mammal species that utilize these habitats. This loss and degradation of habitat may eventually reduce the habitat capacity for supporting current big game populations. Thermal and hiding cover would increase under this alternative if a stand-replacement wild fire did not occur. Habitat quantity and quality for the relatively few species that prefer dense juniper woodlands or dense ponderosa pine communities would increase. Overall, habitat diversity within the project area would decrease as a result of the no action alternative, thus causing an associated decrease in wildlife diversity occurring on the project area.

5. Fisheries

Impacts of the no action alternative on fisheries would be the same as those impacts of the no action alternative on Special Status fish species discussed above.

6. Grazing Management

Observations from field visits and professional judgment have determined that western juniper is showing a marked increase on many of the upland mountain big sagebrush-bunchgrasses and low/stiff sagebrush-bunchgrasses communities within the project area. Rangeland trend condition and photo analysis have also demonstrated the increase of western juniper on these communities. As grass species decline in abundance, there is increased use by livestock on remaining plants. As the remaining plants decrease in vigor, they make available more nutrients for tree species and the downward cycle would continue unless reductions in livestock use were implemented. The no action alternative also leaves open the opportunity for heavy buildup of large woody fuel and the chance for intense wildfire. These intense wildfires can completely kill grass species that would not be killed under more moderate fuel loads, thus making more extreme livestock reductions necessary after intense wildfires. With the increase in juniper and subsequent decrease in the shrub and herbaceous components, comes an increase in competition for remaining forage between livestock and wildlife (i.e., elk, mule deer, antelope). As this competition increases, livestock reductions would have to be made to continue managing for rangeland health. Even if livestock were reduced or removed, as juniper reaches the closed canopy woodland stage across a landscape wildlife habitat value would continue to decline.

7. Recreation/Off-Highway Vehicles

There would be no immediate effects to recreational activities under this alternative. Under the no action alternative, there are more likely to be brief disruptions to recreational activities in the vicinity of the project area from fire suppression and smoke during the summer and fall seasons. A stand replacing fire could have major effects on future recreational opportunities.

8. Economic and Social Values

Under this alternative, no service contracts would be granted and no supplies would be purchased from local vendors for the purpose of project implementation. Woodland harvest areas would not be made available for public use.

The value of livestock in the project area may eventually decline under the no action alternative as forage productivity is reduced over time. The local economy may also be affected as big game hunting opportunities in the project area are reduced as habitat quality deteriorates.

9. Visual Resources

There would be no effects anticipated to visual resources under the no action alternative in the short term unless a major wildfire event occurred in the area. A major wildfire event would drastically change the visual resources in the project area. In the long term, visual resources would be negatively impacted due to the loss of plant community diversity and structure on the landscape.

10. Forestry/Woodlands

Within the ponderosa pine woodland areas:

Mountain mahogany, bitterbrush, and sagebrush plant communities would continue to decrease and would die from being overtopped by invading ponderosa pine and junipers. These invading ponderosa pines and junipers would continue to thrive at unprecedented population levels. It is highly likely that any wildfire would become an unnatural stand replacement fire, destroying valuable habitats and vegetative resources.

Within the ponderosa pine forest areas:

Implementation of the no action alternative would have a continued impact on the stands. The large diameter ponderosa pine trees in the overstory would continue to die from western pine beetle and pine engraver attack and not be replaced by other medium to large trees (Cochran et al. 1994). The ponderosa pine understory would remain stagnant with a slow growth rate while continuing to suffer pockets of heavy mortality from mountain pine beetle and pine engraver (Obedzinski et al. 1999). Overall, tree vigor would remain low, mortality high, and the large diameter ponderosa pine component would be diminished and not replaced for decades, assuming the project area does not experience a catastrophic wildfire.

The remnant aspen stands would continue to suffer mortality from being overtopped by invading ponderosa pine and junipers (Wall et al. 2000). The few aspen suckers would continue to be heavily browsed and the aspen clones would face eventual stand death. A stand replacement wildfire would likely benefit the aspen stands. A large-scale fire would likely kill the majority of the aboveground trees, but should promote massive sprouting throughout the stand. However, protection of sprouting trees from browsing animals would be problematic.

11. Fire Management

Under the no action alternative the plant communities would continue to move through Condition Class 2 into Condition Class 3 (Appendix A). In Condition Class 3 the risk of large high intensity wildfire increases dramatically and negative effects to human life and the environment reach their maximum.

The size of most wildfires would remain small as western juniper increases because of the reduction in understory herbaceous plants and shrubs. However, under severe conditions the risk of larger fires increases because of the increased continuity of fuels. Fires under these conditions have the potential to burn large areas and are difficult to suppress. Suppression actions under these conditions would rely primarily on indirect attack. This suppression tactic relies line constructed (hand, cat, etc.) at some distance from the fire and unburned fuel between the fireline and flaming front is burned out. This tactic increases the area burned. The accumulation of fuels would also require a greater mop-up effort following control of wildfire. Mop-up refers to the work after the fire has been controlled to assure the fire will not flare up again and escape control lines.

Areas where western juniper has been previously cut would continue to present a hazard if wildfire ignites or moves into a cut area. After 5 to 7 years the needles would fall off the cut western juniper reducing the flashy nature of the fuels, but the boles and branches would remain for many years and continue to present risks to firefighters. The high concentration of fuel would also increase the intensity of the fire negatively affecting the soil surface and plants directly below the fuel concentration.

12. Transportation/Roads

There would be no known impacts on transportation/roads as a result of the no action alternative unless there is a wildfire event. Wildfire suppression activities could have effects on roads within the project area if a major wildfire event occurred. However, road damage caused by fire suppression is generally rehabilitated following the fire if funds are available.

C. No Action: Cumulative Effects

At a watershed scale, the effects of the no action alternative could be considered cumulative with the effects on similar areas in the same watershed that are receiving no landscape level treatments. The project area falls almost entirely within the Silver Watershed Basin. The Silver Watershed Basin encompasses 1,085,901 acres made up of various ownerships. The BLM administers 676,389 acres within the watershed.

Most of the BLM-administered land within the watershed is located south of Hwy 20 in Wyoming big sagebrush plant communities. The project area does not support Wyoming big sagebrush plant communities, and thus the portion of the watershed south of Hwy 20 will not be analyzed in the cumulative effects section. The effect of forested areas becoming overstocked and at high risk for catastrophic wildfire on human safety, private property, wildlife habitat, aquatic resources, cultural resources, livestock grazing, and SSS may be cumulative with the effects of overstocked forests with high risk of catastrophic wildfire on other landscapes within the watershed. In addition, the effect of the transition of mountain big sagebrush-bunchgrass communities and low/stiff sagebrush-bunchgrass communities to juniper woodlands on wildlife habitat, aquatic resources, cultural resources, livestock grazing, and SSS may be cumulative with the effects of juniper woodland development on other similar landscapes in the watershed. Accumulations of hazardous fuel in the project area, in combination with other hazardous fuels on adjacent BLM and Forest Service-administered and private lands within the watershed, would increasingly threaten resource values, private property values, and human safety over time in the Silver Watershed Basin.

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 direct and indirect 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." Our information on the current environmental condition is more comprehensive and more accurate for establishing a useful starting point for a cumulative effects analysis, than attempting to establish such a starting point by adding up the described effects of individual past actions to some environmental baseline condition in the past that, unlike current conditions, can no longer be verified by direct examination.

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: predicting the effects of the proposed action and its alternatives is based on published empirical research and the general accumulated experience of the resource professionals in the agency with similar actions.

D. Proposed Action: Critical Elements

1. Air Quality

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

The areas of greatest impact from prescribed fire would be those areas downwind and down drainage from the project area. A wind vector analysis and review of topographic features indicated these areas are typically northeast, east and southeast, respectively, of the project area. The amount of impact would be dependant on atmospheric conditions at the time of ignition. Prescribed fires are planned and implemented when atmospheric stability and wind conditions promote smoke dispersion into the atmosphere and/or transport out of the area. In addition they are planned when diurnal wind conditions limit the amount of smoke pooling in canyons and valleys. The areas of greatest impact from mechanical treatments would be within the immediate project area.

2. Water Quality

Reducing competition from juniper in the uplands and riparian zones should improve watershed stability and function by reducing bare soil and sediment inputs, increasing infiltration, and maintaining or restoring proper storage and release of groundwater important for late season flows and temperatures.

Watershed function and overall water quality would improve where erosion is minimized, sediment inputs are minimized, and infiltration rates increase.

3. Wetlands and Riparian Zones

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

Overall, reintroducing and mimicking natural processes that have been excluded from the riparian zones (i.e., prescribed burns) should result in a positive vegetation response. Reeves et al. (1995), stated fire can be important for maintaining complex and productive habitats. Riparian plant species possess adaptations to fluvial disturbances that facilitate survival and reestablishment following fires, thus contributing to rapid recovery of streamside habitats (Dwire and Kauffman 2003). Treatment of juniper in riparian areas would facilitate the recovery of a riparian hardwood community and restore the riparian zone to a more historic regime. With the reestablishment of this community, greater bank stability, sediment capture, stream shading, nutrient input, and water storage and release is expected.

4. Migratory Birds

The effects on migratory birds would depend on the type of treatment and plant community being treated. The overall net effect of the proposed action would likely be an increase in habitat diversity and an increase in avian species diversity. Impacts to migratory birds would be minimized by broadcast burning in the fall, and cutting and piling in the fall where determined necessary. This would help reduce the amount of disturbance to migratory birds during the breeding, nesting, and fledging seasons.

Where junipers have developed into woodlands on sagebrush-bunchgrass sites, migratory bird diversity and richness is relatively low. The use of prescribed fire and/or mechanical cutting in these areas would regenerate grasses and forbs. Shrubs including sagebrush and bitterbrush would also regenerate as a result of the proposed action. As these species regenerate bird diversity and richness is likely to increase. These actions would reduce habitat quality and quantity for species that prefer woodland habitat, such as the gray flycatcher, dusky flycatcher, and Oregon junco. Birds nesting in cavities in large western juniper would be minimally affected as these large juniper trees are generally fire resistant, and would not be targeted by mechanical treatments. There would also be areas that are left as no action areas that support these large old growth juniper trees. This would further ensure that cavity nesting habitat would remain after treatments.

In areas where juniper is in an intermediate stage of transition to woodlands, migratory bird diversity and richness is relatively high. The proposed action is to use prescribed broadcast fire to create a mosaic where 40 to 60 percent of the area is burned or use mechanical methods and prescribed jackpot burning to remove much of the juniper. Follow-up cutting to remove the juniper in areas that were unburned may take place, but not through the entire unit. A mosaic burn would provide a diversity of habitats, including early succession plant communities as well as retained areas of juniper in an intermediate stage of transition to woodlands. The diversity of habitats created by these mosaic burns would likely increase avian species diversity. Birds nesting in cavities in large western juniper would be minimally affected as these large juniper trees are generally fire resistant, and would not be targeted by mechanical treatments.

Migratory bird species, which utilize mountain mahogany and quaking aspen stands, would likely be favored as the proposed action would protect and enhance these vegetative communities. This would be beneficial because migratory bird diversity and richness is very high in aspen stands. The removal of juniper from these communities would increase the health and vigor of the stands, thus stimulating regeneration and recruitment of younger trees. The fencing of aspen stands would protect the younger trees from browsing animals. The protection and enhancement of these communities would ensure long-term availability of aspen and mountain mahogany habitats for migratory birds.

The proposed action would cause both immediate and long-term benefits for Brewer's sparrows, sage sparrows, and loggerhead shrikes. Treatments that involve felling of juniper or killing juniper via single-tree burning would immediately improve habitat quality for these species. The broadcast burn treatments may initially degrade the habitat for these species as both sagebrush and juniper would be consumed by the fire, but it should improve habitat quality for these species in the future when sagebrush reestablishes itself.

In the forested areas the proposed action would open up the stands allowing grasses, forbs, and shrubs to regenerate. The opening of the stands would also increase the health and vigor of retained trees, thus promoting the growth of larger trees. Snags and downed woody debris habitat is also likely to be maintained or increased as a result of the proposed action. All of the above would increase vegetative species and habitat diversity, which would likely increase avian diversity and richness. Cavity nesters and other birds that utilize snags and larger trees should have an increase in habitat quantity and quality as a result of the proposed action. Other avian species that favor open stands would also see an increase in habitat quality and quantity as well. There would be a reduction in habitat quality for the few birds that prefer dense conifer understories. However, areas of dense conifer understories would remain in the project area as not all forested sites would be treated. Overall, the net effect of the proposed action would likely promote an increase in avian species diversity in the future.

5. Special Status Species - Flora

Astragalus tegetarioides has evolved with fire and is known to be tolerant to disturbance regimes. Specific responses to proposed disturbances are not well known. *Astragalus tegetarioides* populations would be avoided during implementation as a large percentage of the known world population of this species occurs within the Dry Lake Allotment.

A botanist would work with the project lead to identify areas to be avoided. Small sections of selected populations would have test plots implemented within them to glean additional fire effects knowledge. This monitoring would be overseen by a botanist in cooperation with implementation crews.

In general, plants in fire-adapted ecosystems have some ability to respond to stimuli generated by fire events, both natural and prescribed. Plant species respond differently to stimuli of this type and not all response is positive for a given species or population.

Fire intensity and duration are important considerations with regard to plant response. Other considerations are specific to the type of growth habit, and this may be species specific or general for plants having similar characteristics.

One of the most important differences between the proposed action and the no action alternative is, with the latter, the potential for increased burn severity in the project area due to a lack of fuels reduction. Burn severity is a measure of the amount of fuel consumption and associated heating at and belowground surface. It is a function of duration of fire, and relates closely to the amount of surface fuel, litter and duff consumption, and their moisture content. Belowground effects would only become apparent in areas of high fuel accumulations.

A low severity fire would have little to no effect on most buried plant parts and often stimulates significant amounts of sprouting. A moderate severity fire may reduce sprouting from some buds. Sprouting can still occur because some buds in deeper duff or soil layers are still undamaged. A high severity fire can eliminate species and may lethally heat some plant parts in upper soil layers, particularly where concentrations of heavy fuels or thick duff layers are consumed. Any resprouting that does occur on heavily burned microsites can only occur from adjacent areas or from deeply buried plant parts. Abundant vegetative regeneration can still develop from species with deep roots such as aspen.

The reduced understory cover and thickness of organic layers following fire can increase light near the surface; this can increase post-fire plant response. Warmer soil temperatures following fires can enhance the amount of response as well.

Some of the biggest effects may come from changes in soil chemistry and soil organisms following burning. In addition many forb species have coevolved with and adapted to fire to release with intense heat. However, most of these responses are poorly understood for the Special Status plant species occurring on the project area.

Whether herbaceous plants recover after fire depends largely on whether they are exposed to lethal temperatures. Survival generally depends on depth below the surface, whether or not they are located in combustible material, fire intensity and duration, and the subsurface moisture of the site.

6. Special Status Species - Fauna and Fish

Special Status Fauna

The proposed action would have no known effects on bald eagles. The Silver Creek Winter Roost Site is not targeted for treatment. If any actions are taken within the Silver Creek Winter Roost Site or its buffer zone it would occur between May 1 and December 31. Management action during this time period would avoid direct contact with the eagles as they do not generally occur at the roost site during this time of year. Any actions taken would either have no effect or a proposed beneficial effect on all potential winter roost trees in the project area.

The proposed action would likely have some effects on Columbia spotted frogs and/or their habitat. In the short term there would be little to no effect on Columbia spotted frogs or their habitat as the riparian areas are not the priority for treatment. Any treatment that does occur in riparian areas would enhance riparian vegetation and overall spotted frog habitat. In the long term spotted frogs may likely benefit from increased water availability in the creeks, springs, and ponds as a result of improved upland conditions.

The proposed action would have effects on sage-grouse and their habitat. The proposed action is in compliance with the Greater Sage-Grouse Conservation Assessment and Strategy for Oregon: A Plan to Maintain and Enhance Populations and Habitat. In mountain big and low/stiff sagebrush communities that are in a mid to late transitional stage toward fully-developed juniper woodlands there would be long-term beneficial impacts toward sage-grouse and their habitat as a result of the proposed action. All habitat components for sage-grouse would be improved as a result of the mechanical treatments, especially nesting habitat in the big sagebrush communities and brood rearing in the low sagebrush communities. This treatment would remove perches used by predators, such as raptors and ravens, while maintaining and invigorating the herbaceous and shrub understory. A portion of the mountain big sagebrush sites may be broadcast burned. Areas that are broadcast burned would remove both the juniper and herbaceous understory. Nesting and wintering habitat for sage-grouse

would eventually come back in these areas as mountain big sagebrush reestablishes itself. These areas would likely offer quality brood-rearing habitat for sage-grouse in the short term as there is likely to be a flush of forbs after the broadcast burn treatments. Overall, the mountain big sagebrush and low/stiff sagebrush sites that are currently considered to be unsuitable for sage-grouse due to juniper encroachment would likely again become functional sage-grouse habitat as a result of the proposed action.

The areas that are classified as yearlong sage-grouse habitat, but are currently being encroached upon by juniper, are proposed to receive prescribed fire and/or mechanical treatments. Although these areas may be receiving some sage-grouse use now, as juniper encroachment continues sage-grouse use would decline and these areas would eventually cease to function as habitat. The broadcast burn treatments in these areas would likely displace sage-grouse in the short term, but in the long term would improve habitat as mountain big sagebrush-bunchgrass communities reestablish in the burn areas. Sage-grouse may benefit nutritionally in the short term by the flush of forbs expected to occur after burning. The mechanical and jackpot burning treatments in the mountain big sagebrush and low/stiff sagebrush sites would have immediate beneficial effects to sage-grouse.

Special Status Fish

At this time, fish bearing streams in the project area have little to no juniper or other conifer encroachment and would receive minimal treatment. However, encroaching juniper is present in the surrounding hillsides and would be targeted for treatment. This would reduce effects to fish habitat. Effects to Special Status fish species from this project are likely to be related to additional input of sediment to the stream following prescribed burns. Depending on several factors (i.e., timing of burn, storm events) the severity of erosional impacts would vary. Prescribed burns would be initiated when conditions are conducive to lower intensity burns. A low intensity burn would most likely result in a patchy burn pattern. This would minimize the chance of excessive sediment delivery to the streams because sediment trapping vegetation would still remain. In the event of a higher intensity burn, expected impacts would be short term. Many studies have reported an increase in erosion and runoff immediately following a fire (prescribed or wild) but these rates return to pre-fire levels within 5 years (Wright and Bailey 1982). Once herbaceous vegetation recovers and the surrounding areas revegetate, sediment would be trapped before entering the stream channel. Untreated vegetation in the riparian zone would also trap sediment before entering the stream channel.

Generally, fish species present in the planning area are not expected to be adversely affected by disturbances to habitat resulting from prescribed burning and mechanical treatments. Species such as redband trout appear to be well adapted to temporary disturbances such as those created by fire (Rieman and Clayton 1997). Reestablishing more natural patterns and processes in the uplands would likely lead to long-term riparian restoration and more productive aquatic habitats.

7. Noxious Weeds

Encroaching stands of juniper have the ability to outcompete other native vegetation creating new niches that can be occupied by noxious weeds. Removal of juniper from the proposed project area would counteract this effect. Initially, the use of prescribed fire could open up areas for weed colonization by creating disturbed habitat favoring noxious weed invasion, however, areas that are predicted to have a limited natural recovery would be seeded with a mixture of desirable species providing competition to noxious weed establishment. An aggressive survey and treatment protocol by the BLM would also address noxious weed establishement.

There would be minimal increases in the risk of introduction of new weed populations or the 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 at least 2 years post-treatment and any weeds attempting to establish would be treated using an integrated weed management approach, as outlined in the Districts Noxious Weed Management EA OR-020-98-05.

8. American Indian Traditional Practices

In the long term, implementation of the proposed action may increase the distribution and density of riparian vegetation stands that are important for the practice of Burns Paiute Tribal traditions. The proposed action would have no impacts on the culturally important root crops in the planning area since such habitats are typically characterized by sparse grass/low shrub fuel models.

9. Cultural Heritage

There would likely be no sustained effects to cultural resources as a result of implementing the proposed action. Project design elements are in place to protect identified archaeological resources from the effects of mechanical disturbance and fire-related damage. Effects of mechanical disturbance, such as erosion of site deposits, would likewise be avoided through the observation of project design elements. Implementation of prescribed burning treatments could pose some risk to built or other fire-sensitive cultural resources identified in the planning area.

Cultural resources in the planning area would benefit from landscape scale fuels reduction treatments as archaeological and built resources would become less likely to sustain damage from a severe wildfire event and fire suppression activities.

E. Proposed Action: Noncritical Elements

1. Soils

Post-treatment plant cover increases would help reduce the amount of bare ground and the size of bare ground patches. Shifting cover from large woody plants to smaller herbaceous and shrub species may not increase the actual cover, but would reduce the connectivity of the bare ground patches, therefore, reducing the distance water can travel across the soil surface without being slowed by vegetation and/or plant litter. Understory vegetation has been found to increase between 200 and 330 percent on Steens Mountain following partial cutting and burning of the plant community (Bates et al. 2006).

Burning of previously cut western juniper within the project area during the winter and spring would reduce the impacts of burning by reducing the amount of heat transferred to the soil surface. Bates and others found that perennial grass cover was significantly higher 4 years following spring burning than in the unburned control or fall burned areas. Perennial forb cover was also greater than the control or fall burned areas, but not statistically different. Fall burned areas had greater herbaceous plant cover than the unburned controls.

Soils within the project area have a texture class of clay-loam. Use of tracked or wheeled equipment may compact the clay-loam to some extent. However, project design elements restrict the use of heavy equipment to periods of time when soil are dry or frozen. This would keep compaction to a minimum.

2. Biological Soil Crusts

Prescribed burning in the forms of broadcast, jackpot or individual tree burning could have an effect on biological soil crusts. By removing biological soil crust cover through burning, some areas, especially areas with a major moss/shrub component, could experience prolonged biological soil crust recovery periods. Biological soil crusts in areas of naturally low fuels (low sagebrush sites) would have less likelihood of effects from fire. The intent of proposed prescribed fire is to create a vegetation mosaic of seral stages. As fire burns through an area some vegetation is left unaffected as are biological soil crusts. Mosaic patterns in vascular vegetation may be partially mirrored by biological soil crust communities. Biological soil crusts also occur in areas without vegetation, so the total remaining biological soil crust cover in a burned area should be the sum of cover in unburned vegetation and untreated interspaces or areas of naturally low fuels.

Post-fire reseeding or planting of native or desirable nonnative vegetation could benefit biological soil crusts by increasing perennial plants and providing micro-site moisture soil stability. This method, in concert with post-treatment rest from grazing, has recently been shown to benefit biological soil crust recovery in moss dominated biological soil crust communities (Hilty et al. 2004).

3. Vegetation

Low Sagebrush-bunchgrass

The majority of western juniper found on these sites established within the past 130 years. Removal of these younger trees would help to reestablish appropriate low sagebrush plant communities. Cutting western juniper would help to increase soil resources (water and nutrients) for residual grasses forbs and shrubs. Cutting would have the least impacts on the associated herbaceous and woody plants. The downed trees and slash would also moderate the environment for plants beneath the canopy of the downed trees. Moderation of the environment would help to reduce the effects of extremely cold or hot conditions on young establishing plants and protect those plants from grazing by domestic and wild ungulates.

Piling and/or burning in downed trees and slash would cover less than 25 percent of the total treated areas in low sagebrush plant communities. Burned areas would be dominated by herbaceous plants for at least 10 years following treatment. Reestablishment of low sagebrush would be slow due to low site productivity. However, the patchy nature of the burn (burned areas interspersed in a continuous sagebrush stands) would facilitate establishment of low sagebrush. Burning when soils are frozen or totally saturated would help to reduce individual plant death due to high temperatures caused by the accumulation of fuels. Burning when soils are dry and unfrozen would shift the plant composition of the burned spots to annual plants for an extended period of time.

Broadcast burning of low sagebrush may occur on small portions of low sagebrush plant communities located within larger tracts of big sagebrush. Burning would result in conversion of small areas to perennial bunchgrass/forb dominated plant communities. Miller and Rose (1998) estimated that establishment of low sagebrush following burning may take in excess of 50 years to occur on large burned areas. Establishment would occur quicker in areas where unburned patches of low sagebrush are left.

Mountain Big Sagebrush-bunchgrass

Western juniper has made significant increases in mountain big sagebrush plant communities. Prescribed fire and/or cutting have proven to be an effective method to reduce the influence of western juniper in this plant community.

Cutting followed by jackpot burning has proven to be an effective method to balance plant community restoration and fire management concerns on areas where western juniper has developed into closed woodland. Western juniper woodlands that have progressed to the point where understory shrubs have been reduced, or eliminated, would not carry fire into the canopy of the trees. In general, only very high intensity fires that occur under severe climatic conditions would move from tree to tree in western juniper woodlands. Temperature, relative humidity, and wind conditions required for this to occur only happen on less than 1 percent of the days during an average fire season. The conditions never occur during the late summer or fall when broadcast burning occurs. Cut western juniper trees would provide protection for establishing grasses and forbs. Bates and others (2001) found that sites on Steens Mountain, less than 100 miles south of the proposed project area, where understory vegetation cover was less than 5 percent, increased to greater than 30 percent, 5 years after cutting. Jackpot burning helps to reduce the threat of high intensity wildfire in cut western juniper woodlands. Jackpot burning would also impact herbaceous plants under the accumulation of fuels. Burning when soils are frozen or saturated would reduce the negative effects of jackpot burning. Burned patches would depend on pre-cutting density, cover, and average tree size. Areas effected by cutting and jackpot burning could be as little as 15 percent and as high as 60 percent. Winter burning of downed western juniper slash was found to reduce the negative impacts of jackpot burning by 30 percent (Bates et al. 2002). Native perennial grasses and forbs are capable of responding to removal of western juniper and subsequent jackpot burning, if done when soils are frozen or saturated. If jackpot burning occurs during times when soils are dry, seeding would be required to limit establishment of undesirable plants.

Broadcast burning is an effective treatment of western juniper in areas where shrubs are still present in the plant community. Burning would be done in a mosaic pattern with a goal of 40 to 60 percent of the area burned. This type of burning produces a greater amount of edge than does burning in regular shaped blocks. The burning also leaves a number of unburned islands within the burned area perimeter. Large amounts of edge and a number of interior sagebrush islands increases the overall landscape diversity and helps in reestablishment of a sagebrush dominated plant community. Miller and others (2000) state that one native grass plant per 10 square feet was sufficient for native vegetation to recover following burning and/or cutting. If the threshold of one native grass plant per 10 square feet is not reached, seeding would be required to maintain a native plant population.

Low Sagebrush/Stiff Sagebrush

Western juniper historically occupied some low sagebrush sites, but within the last 130 years the density and cover of western juniper has increased on these sites. Removal of trees less than 130 years would restore the historic structure of an open woodland. Old growth trees would be left onsite. These old to ancient trees are important for many neotropical migrant birds and small mammals. Leaving approximately 10 percent of the trees less than 130 years old would allow for replacement of older trees as they die. Response of understory vegetation to tree removal would be limited. Low sagebrush sites are inherently low in productivity and change occurs slowly. Burning would reduce the cover of low sagebrush and mat-forming shrubs. Return to pre-burn shrub cover could take more than 50 years. Burning would also reduce the cover of low-growing, mat-forming forbs. However, larger perennial bunchgrass and deeper rooted perennial forbs would fill in the cover left by the reduction of mat-forming plants. Impacts of burning occur on a small percentage of the area because of the open nature of the western juniper woodlands on low sagebrush sites.

4. Wildlife

Overall there is likely to be an increase in wildlife species diversity as a result of implementing the proposed action. The strategically placed juniper cuts, conifer thinning treatments, and prescribed burns within the project area would create a diversity of habitats. These actions would reduce juniper and pine encroachment, and cause an increase in grasses, forbs, and shrubby browse species. These treatments are likely to increase the health, vigor, and palatability of winter forage for both deer and elk. In areas such as juniper woodlands and dense pine stands, the quantity of winter forage browse species is expected to increase as well.

The protection and enhancement of mountain mahogany and aspen stands would also benefit deer and elk, as well as many other wildlife species. There would be a short-term loss of aspen habitats for big game species if aspen stands require a protective fence. Thermal and hiding cover would decrease as a result of the proposed action, but there would still be more than sufficient thermal and hiding cover in the project area. Species utilizing more open habitats, such as pronghorn, would be favored as a result of the proposed action. Species favoring juniper woodlands and dense conifer stands would be negatively impacted as their preferred habitat would be targeted for removal by the proposed action.

5. Fisheries

Impacts of the proposed action on fisheries would be the same as those impacts of the proposed action on Special Status fish species discussed above.

6. Grazing Management

All management actions that deal with removal of large woody species such as western juniper would release nutrients for the increased production of herbaceous species and increase available soil moisture. The increase in herbaceous species would improve livestock distribution thereby reducing concentrations of livestock on any given area, and may cause more uniform utilization patterns. Treatment of areas encroached by juniper would improve overall rangeland condition by bringing areas back to a more historical/potential community type. Any areas of BLM-managed land which receive a broadcast burning treatment would be rested for 1-year prior to prescribed fire and for at least two growing seasons after prescribed fire. Growing season rest may also be required following jackpot burning to provide for plant recovery.

The proposed action has potential to reduce forage competition between livestock and wildlife that tends to occur once juniper woodlands are established. Available forage would be increased with the improved rangeland condition. The current permittee is presently using approximately 50 percent of his active preference. After implementation of the proposed action; rangeland trend, utilization and use supervision studies would continue. If these studies indicate an increase in available forage adequate to support current active preference, 2,851 AUMs of active use would be licensed on Dry Lake Allotment #7009.

7. Recreation/Off-Highway Vehicles

Under the proposed action there may be brief impacts to recreational activities in the vicinity of the project area. Recreational activities within the project area will be affected by the implementation of the proposed action. There may be temporary closures of areas while prescribed burns are taking place. Temporary closures are likely to be less than a week in duration. Smoke and noise generated during project implementation could disrupt recreational activities in the spring or fall seasons. In the long term, recreational activities related to driving for pleasure, big game hunting, and wildlife viewing should be enhanced as habitat function and landscape diversity is expected to improve over time.

8. Economic and Social Values

There would be effects to the local economy under the proposed action. The proposed action would utilize stewardship or service contracts to reduce biomass in the project area. The purchase of supplies and equipment necessary for implementation of the proposed action from community merchants would constitute an additional economic effect.

Increased rangeland health would increase forage production for livestock and wildlife thereby increasing economic opportunities and fostering more desirable recreation opportunities.

Disruption to agribusiness during the prescribed burn and the required rest period would occur.

9. Visual Resources

The proposed action meets management direction outlined in the Three Rivers RMP for VRM Classes III and IV. Visual resources would be affected while treatments are taking place. Upon completion of the project visual resources and the aesthetic character of the project area should be enhanced as the regeneration of grasses, forbs, shrubs, and trees takes place and overall health and diversity of the project area improves.

10. Forestry/Woodlands

Within the ponderosa pine woodland areas:

Stocking levels of invading western juniper would decrease to be more in line with historical levels. Small and medium sized ponderosa pine stocking would be reduced substantially. Pines that remain would have increased vigor and be more able to withstand natural disturbance processes such as fire and insect attack. Bitterbrush, bunchgrass, and other upland vegetation would benefit from the decreased stocking of trees. Ponderosa pine would exist in a level more characteristic of historical pine woodlands, with scattered large diameter pines and other sizes dispersed through the sagebrush/bunchgrass community.

Within the ponderosa pine forest areas:

The proposed action activities would restore the character of the stands to near their historic condition. The overstory would continue to consist of large diameter ponderosa pines. The character of the understory would substantially change as the basal area would be greatly reduced. Overall stand character would be more open and park-like with clumps of big trees and scattered understory reproduction. Both the overstory and the trees that remain in the understory would grow faster and more vigorously and result in better overall stand health. All treated stands would be more resilient to natural disturbance processes such as fire, disease, and insect attack. Duff depths would be reduced and with more sunlight and moisture, the ground cover would respond with much greater cover of herbaceous and shrubby species.

Quaking Aspen

Western juniper encroachment into quaking aspen stands is exacerbating the general decline of quaking aspen and other riparian hardwoods documented across the western United States (Wall et al. 2000). Cutting western juniper and ponderosa pine would help increase the amount of soil moisture and nutrients available to residual quaking aspen and understory plants. Suckering would be encouraged by some physical damage caused by juniper and pine falling. Juniper and pine trees that are felled would knock over or severely damage some standing aspen. This damage would help to facilitate the suckering of quaking aspen. However, resources released by cutting western juniper would also be available for small western juniper that occur in the understory. Miller and Rose (1995) found that up to 1,400 western juniper seedlings were growing in the understory of quaking aspen stands on Steens Mountain. Follow-up broadcast burning treatments would reduce the number of western juniper seedlings released following cutting and increase the number of quaking aspen suckers. Fencing with woven wire following treatment would protect new quaking aspen suckers from browsing by large wild herbivores and domestic livestock. Jackpot burning following cutting would help to reduce western juniper seedlings. However, seedlings outside of the burned area would not be killed by the burning and would benefit from released resources.

11. Fire Management

Treatment of western juniper stands in big sagebrush, quaking aspen, and riparian areas would help to move the area toward Condition Class 1 (Appendix 2). The project area was classified as Condition Class 2 by the FRCC process. Areas of mountain big sagebrush, ponderosa pine, and mountain mahogany that have been encroached by western juniper were classified as Condition Class 3. Treatment would move those areas toward Condition Class 2 and ultimately Condition Class 1. Low sagebrush plant communities were classified as Condition Class 2. Western juniper cutting in the low sagebrush and prescribed burning in low would help to move these areas toward Condition Class 1.

Treatment would reduce the intensity and severity of wildfires and the risk to firefighters by altering the continuity of fuels. Suppression actions would be able to employ more direct attack strategies minimizing acres burned in wildfires. Firefighters may rely more on natural fuel breaks and changes in fuels. Less fireline may need to be constructed to suppress wildfires. Treatment of previously cut area would help to increase firefighter and public safety. Mop-up following wildfire would also be reduced by reduction of cut western juniper.

12. Transportation/Roads

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 offsite erosion and sedimentation. Without corrective maintenance, over time the roadbed washes out making it difficult to traverse rocks and boulders. Ultimately another route paralleling the original road may develop and the original road abandoned. This results in long term loss of vegetation, habitat, and land productivity and can result in safety and liability issues associated with public use of the road.

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

Other effects of project activities on transportation may include loss of public access from physical deterioration of roads to the point of being impassible. In addition, private landowners may restrict access because they fear their road maintenance investment would be lost or that they may be liable for accidents resulting from poor road conditions. However, in the past the fire and fuels branch as been quick to rehabilitate any damage to roads on both private and public lands that was related to implementation of the proposed action.

F. Proposed Action: Cumulative Effects

At a watershed scale, the effects of the proposed action could be considered cumulative with the effects of previous and reasonably foreseeable vegetation management projects in the watershed. The project area falls almost entirely within the Silver Watershed Basin. Other juniper control and forest health projects occurring on BLM-administered lands within the Silver Watershed Basin include the Three Rivers Juniper Management Project (EA OR-025-00-04), Dry Mountain Old Growth Project, and the SHED Forest Restoration Project (EA OR-025-04-038).

The Silver Watershed Basin encompasses 1,085,901 acres made up of various ownerships. The BLM administers 676,389 acres within the watershed. Most of the BLM-administered land within the watershed is located south of Hwy 20 in Wyoming big sagebrush plant communities. The project area does not support Wyoming big sagebrush plant communities, and thus will not be analyzed in the cumulative effects section. There are approximately 42,000 acres of BLM-administered land in the watershed that is dominated by mountain big sagebrush. The proposed action in concert with other juniper control efforts in the watershed will reduce the influence of western juniper on approximately 6,000 acres or roughly 14 percent of the mountain big sagebrush on BLM-administered lands within the watershed. There are approximately 177,000 acres of BLM-administered land in the watershed that is dominated by low or stiff sagebrush. The proposed action in concert with other juniper control efforts in the watershed will reduce the influence of western juniper on approximately 15,000 acres or roughly 8.5 percent of the low and stiff sagebrush on BLM-administered lands within the watershed. There are approximately 7,300 acres of BLM-administered land in the watershed that supports ponderosa pine. The proposed action in concert with other forest health projects in the watershed will improve forest health on up to an estimated 1,800 acres or roughly 25 percent of the BLM-administered land that supports ponderosa pine in the watershed.

The proposed action includes project design elements developed to avoid damage of fisheries, SSS habitat, cavity-nesting bird habitat, big game cover and forage values, cultural resources, and economic and social values. Project design elements would also limit the ability of noxious weed expansion or establishment. Project design elements would reduce effects related to loss of soil productivity and sedimentation of water sources to levels that are immeasurable at a watershed scale. Effects of smoke on air quality would be short lived.

As the 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." Our information on the current environmental condition is more comprehensive and more accurate for establishing a useful starting point for a cumulative effects analysis, than attempting to establish such a starting point by adding up the described effects of individual past actions to some environmental baseline condition in the past that, unlike current conditions, can no longer be verified by direct examination.

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: 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.

CHAPTER V. CONSULTATION AND COORDINATION

A. Agencies and Individuals Consulted

Burns Paiute Tribe
Harney County Court
Oregon Department of Fish and Wildlife
U.S. Forest Service: Malheur National Forest, Emigrant Creek Ranger District

B. Adjacent Private Landowners and Permittees Contacted

Mark and Susan Doverspike (Hotchkiss Co., Inc.)
Mathew Perlot (Silver Creek Cattle Ranches)

C. Participating Bureau of Land Management Employees

Jim Buchanan, Supervisory Natural Resource Specialist
Lindsay Davies, Fisheries Biologist/Aquatic Specialist
Stacy Fenton, Geographic Information System Specialist
Gary Foulkes, District Planning/Environmental Coordinator
Doug Linn, Fire Botanist
Fred McDonald, Supervisory Natural Resource Specialist-(Recreation)
Nick Miller, Wildlife Biologist, Interdisciplinary Team Leader, Lead Preparer
Lisa Norfolk, Rangeland Management Specialist
Skip Renchler, District Lands and Realty Specialist
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Appendix A

Activity Descriptions

Prescribed Burning

Prescribed burning would be used to varying degrees in all of the resource treatments. These treatments would include activities such as jackpot burning, broadcast burning, piling and burning, and/or single-tree burning.

Burning prescriptions[7] would vary depending on specific objectives and would allow adequate fire behavior to reduce the stocking of fully and partially developed juniper woodlands, and reduce size classes of dead and downed fuel within previously cut juniper control units and cut/piled units. Jackpot and broadcast burning would be the primary forms of treatments used in sagebrush-bunchgrass (mountain big sagebrush, low sagebrush, stiff sagebrush, mountain mahogany) dominated ecological sites. Piling and burning, and single-tree burning would occur in ponderosa pine-bunchgrass communities, aspen stands, and in areas where jackpot burning and broadcast burning are determined to be ineffective. This might include areas where fire-sensitive assets such as range improvements or cultural resources occur. This treatment may also be used to improve the effectiveness of holding actions[8] near a unit or property boundary.

Tools such as drip torches, fusees, All-Terrain Vehicle (ATV) ignition, aerial ignition, and other firing devices are typically used to ignite prescribed burns. Broadcast burns are generally implemented in the fall (September, October) to moderate undesirable fire behavior. Roads, natural barriers, and small amounts of mechanically constructed fireline may be utilized as fire breaks at the boundaries of burning units. Two-track four-wheel drive roads positioned along burn unit boundaries may be bladed to improve their ability to function as a control line. Broadcast burning operations would be monitored to ensure project design elements are properly observed and objectives are achieved. Once treatment objectives are attained within targeted vegetation communities, no remaining acres within that community type would be treated within the burn units. All burn plans would include an escaped fire suppression plan and a smoke management plan.

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[7] ***Prescription:*** A plan specifying management objectives to be obtained, and air temperature, humidity, season, wind direction and speed, fuel, and soil moisture conditions under which a fire would be started or allowed to burn.

[8] ***Holding Action:*** Any action taken to stop the spread of fire.

Although the target areas primarily consist of Bureau of Land Management (BLM) administered land within the Dry Lake Allotment Ecological Restoration Project Area (Maps 2 and 3), there are areas adjacent to project area boundaries where burning is allowable without it being declared a wildfire (Contingency Areas). In the event that fire spreads beyond a targeted area, the burn boss and resource advisors onsite would determine if suppression actions are warranted.

Jackpot Burning

Jackpot burning is the application of prescribed fire to concentrations of fuels, and is typically applied during the time of year when the probability of fire spread is very low (usually in the late fall through early spring when soil moistures are high or the ground is frozen). Jackpot burning is the method used in units where fuel loads are discontinuous or the ability of fire to spread is low. Jackpot burning may also be applied in areas where natural fuel concentrations exist in isolated areas. This method would burn the fine fuels, limit the ability of the fire to spread and prevent soil sterilization from excessive heat. It is conducive to maintaining the shrub component on the site and the herbaceous plant species growing under the downed junipers.

Jackpot burning would be a principal activity throughout sagebrush-bunchgrass dominated plant communities where prescribed broadcast burning is not applicable. It may also be utilized within the units of previously cut juniper that exist throughout the project area or as preparation for holding a broadcast burn. Jackpot burning may require up to 2 years of growing season rest after implementation. The duration of the rest period would be determined by the Field Manager based on rangeland monitoring, by a BLM Interdisciplinary Team, of plant community response.

Broadcast Burning

Broadcast burning is the controlled application of fire to wildland fuels within a predetermined area during specific environmental conditions in order to attain resource management or fuels reduction objectives. It is generally applied to fuel beds that are more continuous, and at a time of year when professional firefighters can get the fire to spread in order to meet resource objectives (usually September to October). Broadcast burning would be another primary form of prescribed fire applied under the proposed action.

Portions of shrubland communities that are in middle to late transitional stages toward closed juniper woodland would require mechanical pretreatment to create ladder fuels that allow fire to spread. Individual trees would be periodically felled against standing trees and allowed to cure, creating a ladder allowing ground fire to move into canopies of standing uncut trees.

Sites not supporting large trees typical of communities in latter stages of juniper woodland development would not require a mechanical felling treatment prior to application of prescribed fire. Other pre-treatment activities that may occur within or near broadcast burn units include wetlining,[9] blacklining,[10] and handline construction around interior leave islands and fire-sensitive assets such as range improvements or cultural resources. Holding operations near property boundaries may be accomplished with pre-treatment using small amounts of jackpot burning, juniper cutting, and/or piling and burning.

Scheduling of burning during the 5 to 10-year implementation period is dependent upon resource objectives, weather, fuel conditions, project funding, and arrangements with grazing permittees. These factors, especially weather, make it difficult to accurately project the number of acres burned in a given year. Broadcast burning operations require one growing season of grazing rest prior to treatment and two growing seasons of rest following treatment.

Pile Burning

Mechanical piling and/or hand piling would be used to reduce fuel loading and continuity primarily in forested areas, but may occur in other plant communities as well. Machine piles are usually 12 feet tall by 16 to 22 feet wide and are constructed by grapple equipped excavators or dozers. Piles would be burned within 2 years of construction during late fall, winter, or spring, preferably when the ground is frozen or wet. Where pile burning occurs, a mixture of native and nonnative grass, forb, and shrub species would be seeded. Pile burning would be an activity that occurs on less than 1,500 acres under the proposed action.

Single-tree Burning

Single-tree burning involves the ignition of individual trees with terra torches, torches mounted to vehicles or ATVs, flare launchers, or other firing devices. In this treatment, juniper trees less than 8 feet tall and/or basally sprouting multi-stemmed trees would be burned individually to prevent recovery from manual or mechanical cutting. Only torching of individual trees would occur under this treatment and fire would not move from crown to crown. Single-tree burning would be employed primarily in the low/stiff sagebrush-bunchgrass communities, but would have limited application under the proposed action and would be implemented on a relatively infrequent basis. Single-tree burning is typically performed in late fall, winter or spring, preferably when the ground is frozen or wet.

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[9] **Wetline:** A line of water, or water and chemical retardant, sprayed along the ground, which serves as a temporary control line from which to ignite or stop a low-intensity fire.

[10] **Blackline:** Preburning of fuels adjacent to a control line before igniting a prescribed burn. Blacklining is usually done in heavy fuels adjacent to a control line during periods of low fire danger to reduce heat on holding crews and lessen chances for spotting across control line. In fire suppression, a blackline denotes a condition where there is no unburned material between the fireline and the fire edge.

Mechanical Treatments

Juniper Cutting – Fall and Leave (No burning)

In some situations, juniper would be felled and left onsite under the proposed action. There would be no follow-up burning when this treatment is applied. A juniper cutting only treatment may be applied in mountain big sagebrush and low/stiff sagebrush communities in early stages of transition toward juniper woodlands or as a strategy to reduce juniper encroachment within stands of mountain mahogany or bitterbrush. This treatment would only be applied where risks associated with hazardous fuels are low.

Appendix B

The Five Fire Regimes

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

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

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

IV) 35-100+ 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.

Fire Regime Condition Classes (from Hann and Bunnell 2001).

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