ENVIRONMENTAL ASSESSMENT

DOI-BLM-NV-WO10-2011-0005-EA

Montana Mountains Cooperative Fuels Treatment Project

July 2012

Prepared by:

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Cooperating Agency

BLM

Winnemucca District

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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Montana Mountains Cooperative Fuels Management
and Habitat Restoration Plan and Environmental Assessment
DOI-BLM-NV-WO10-2011-0005-EA
Winnemucca District Office

1.0 INTRODUCTION

The Montana Mountains contains some of the most important Threatened and Endangered and sensitive species habitat within the state of Nevada. Threatened species present include Lahontan cutthroat trout. Candidate species present include the greater sage-grouse and sensitive species present include pygmy rabbits, burrowing owls and others. Vegetation and habitat within the range are at substantial risk of wildfire due to previous drought years which have led to die-off of mature foliage. The past two years which have been wetter than average have led to an excess of fine fuel build up, leading to an abundance of fuels within the area.

The Montana Mountains are located within the Lone Willow Population Management Unit (PMU) and within the Healthy Lands Initiative (HLI) Boundary. A population management unit defines distribution of sage-grouse within certain geographical areas and defines conservation goals to protect sage-grouse. Conservation goals within the PMU recognize the need for a proactive fuels and habitat management within this PMU to protect sage-grouse habitat. One of the goals of this PMU is to; "Actively protect the remaining unburned portions of the nesting and summer use areas within the PMU from wildfire. PMU Objective 1, further states; "Decrease the potential for large catastrophic fires through manipulations of fuel loads and connectivity."

The HLI is a Bureau of Land Management (BLM) cooperative conservation effort to restore important wildlife habitat on a landscape scale. HLI has six project areas throughout the west. The Montana Mountains are located within the HLI Oregon-Idaho-Nevada Shrub Steppe Landscape project area. The emphasis of the Montana Mountains Cooperative Fuels and Habitat Restoration Plan (PLAN) is protecting, maintaining and restoring sagebrush steppe sage-grouse habitat subject to the following goals and objectives.

The BLM coordinated with multiple interested agencies and governments early in the planning process and completed public scoping of the PLAN. Four meetings and two field trips were held to receive important input which contributed towards development of the PLAN. Involvement included; the Nevada Department of Wildlife (Cooperating Agency), Nevada Division of Forestry, U.S. Fish and Wildlife Service, N-2 Grazing Board, University of Nevada Cooperative Extension, Natural Resources Conservation Service, affected permittees and other interested publics.

1.1 Plan Goal and Objectives

BLM developed goals and objectives base on interdisciplinary team input and public input received from meetings and field trips.

Goal: The goal of the PLAN is to reduce the risk of unwanted destruction of habitat from wildland fire and to protect and maintain healthy, resilient, and ecologically diverse habitats and rangeland within the Montana Mountains (See Map 1: Project Location Map).

PLAN Objectives Identify The Following Specific Desired Outcomes:

- Improve or restore vegetation communities, habitats, and rangeland.
- Match fuel treatments with ecological conditions of the treatment areas and that are compatible with sagebrush obligate species.
- Design treatments that are compatible with livestock grazing.
- Ensure fuel treatments are compatible with existing plans.
- Where possible, utilize existing fuelbreaks, barriers, roads and fence lines to create or support fuelbreaks.
- Strategically place fuelbreaks to ensure effectiveness and to support fire suppression operations.
- Where practicable, design treatments to blend with the natural topography and create a natural mosaic within sagebrush communities allowing for regeneration of sage and an increase in forbs and grasses within the treatment area.
- Consider cumulative effects to vegetation and habitats when developing fuel treatments.
- Protect Threatened and Endangered, candidate and sensitive species habitat.
- Provide long term maintenance and effectives of treatments for long term viability of the project.
- Implement monitoring to ensure fuelbreak effectiveness, maintenance of ecosystem health in addition to achieving PLAN goals and objectives.

1.2 Purpose and Need

The purpose of the PLAN is to:

- Limit the potential spread of wildfire by removing hazardous fuels through mechanical, chemical, prescribed fire, and seeding treatments.
- Protect, improve, or rehabilitate vegetation and wildlife habitat.
- Provide for public safety, protection of property and infrastructure.
- Provides requisite off-site sage-grouse and pygmy rabbit habitat mitigation for the Ruby Pipeline project.

According to the Healthy Forest Restoration Act of 2003 the BLM has a responsibility to conduct hazardous fuels reduction projects to protect watersheds and address threats to rangeland health across the landscape. The need for this PLAN is to protect critical sagebrush obligate species habitat including Sage-grouse and Pygmy rabbit habitat and protect threatened species habitat for Lahontan cutthroat trout that are at substantial risk from wildfire due to drought conditions and from hazardous fuels at a landscape level. There is also a need to maintain and improve vegetation communities, improve Fire Regime Condition Classes (FRCC), and maintain or improve wildlife habitat and rangeland especially in areas that have become decadent, have been altered by establishment of invasive annual species, or have been affected by fire, drought, or disease.

1.3 Decisions to Be Made

The authorized officer will decide whether or not to implement the PLAN and which alternative or portions of alternatives will be selected. Any decisions would be issued under this PLAN utilizing applicable authorities and regulations under Federal Land Management and Policy Act (FLPMA), Forest Management authorities per regulations 43 CFR 5000 and Rangeland Management under 43 CFR 4100 regulations and "full force and effect" regulations applicable to the Healthy Forests Initiative and Healthy Forest Restoration Act.

1.4 Land Use Plan Conformance

The proposed action and alternatives described are in conformance with the Paradise-Denio Management Framework Plan III (MFP) July 1982. Although not specifically addressed, the proposed treatments conform to wildlife objectives, fire and management decisions, or standard operating procedures.

> **Fire F-1 Objective:**
> "To minimize the wildfire damage to life, property, and resources."
>
> **Wildlife MFPIII Decisions WL-1.21 P.D.-WL 1.27 SG:** Maintain and improve habitat for sensitive, protected, threatened and endangered species listed on the U.S. Fish and Wildlife Service Endangered and Threatened List, BLM-Nevada Department of Wildlife Sensitive Species List and those existing Federal and state laws and regulations.

1.5 Relationship to Laws, Regulations, and other Plans

This Environmental Assessment follows the guidance provided in the Healthy Forest Restoration Act under Section 102(a) (5) and has been incorporated by reference:

> "Enhance protection from catastrophic wildland fire for threatened and endangered species or their habitats and that maintain and restore such habitats".

The proposed actions and alternatives described are consistent with state and local laws, regulations and plans to the maximum extent allowable under federal law.

The proposed action and alternatives correspond to the actions recommended in the Nevada and Eastern California Sage-grouse Conservation Plan, 2004 developed by the (Nevada) Governor's Sage-grouse Conservation Team.

Any and all treatments that alter sagebrush habitat would conform to Management Guidelines for Sage-Grouse and Sagebrush Ecosystems in Nevada (developed by Nevada BLM, October 2000) which includes a newer draft version of the Western States Sage-

Grouse Guidelines as amended and developed by the Western Association of Fish and Wildlife Agencies (WAFWA), (Appendix IV).

The following documents provide support for the proposed actions within this EA:

- WFO Environmental Assessment Herbicide Application for Control of Noxious Weeds NV-020-99-10 (January 19, 1999).
- Programmatic Environmental Assessment of Integrated Weed Management on Bureau of Land Management Lands NV-020-08-11.
- Vegetation Treatment Using Herbicide on Bureau of Land Management Lands in Seventeen Western States Programmatic EIS, Record of Decision September 29, 2007.
- Winnemucca Field Office Green Stripping Environmental Assessment No. 020-02-24, Winnemucca Nevada, May, 2002.

These documents are available for review at the BLM, Winnemucca District.

1.6 Tiering and Incorporating by Reference

The Council of Environmental Quality regulations at 40 CFR 1508.28, provides for tiering this EA to a broader Environmental Impact Statement (EIS). This EA tiers to the "Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States, Final Programmatic Environmental Impact Statement and Record of Decision (September 2007)." This EA also incorporates by reference, the environmental analysis with respect to herbicides as presented in Chapter 4, pages 4-1 to 4-253.

1.7 Potential Issues

An interested party letter was sent out on August 24, 2010 informing known interested parties that the Bureau of Land Management (BLM) is proposing to implement a variety of restoration and fuelbreak treatments in the Montana Mountains. The BLM has also held multiple Inter Disciplinary Team (ID Team) meetings. Issues identified from public scoping and ID Team meetings are;

- What can be done to maintain, protect and improve sage-grouse, sensitive species, candidate species and Threatened and Endangered species habitat?
- Is it possible to restore cheatgrass "die off" areas?
- What are the potential public safety and health concerns from use of herbicides?
- What are possible detrimental effects to sage-grouse habitat by constructing fuelbreaks?
- Can the potential for wildfire to spread from the valley floors, up drainages into upper elevations containing important sage-grouse habitat be mitigated?
- What are erosion and sediment impacts to important resources from roads?
- Need for restoration of stringer meadows.
- Need for important habitat enhancement and rehabilitation.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Location of Proposed Action

The Montana Mountains are situated between Quinn River Valley and Kings River Valley, in northern Humboldt County. The project area boundary covers a large expanse of land, approximately 346,000 acres, between Townships 44-48 North, and Ranges 33-38 East (See Map 1: Project Area).

2.2 Proposed Action-Vegetation Management and Habitat Rehabilitation

The BLM WDO in conjunction with Nevada Department of Wildlife (NDOW) is proposing a number of treatments that would create fuelbreaks and improve or rehabilitate habitat within the Montana Mountains Project Area (see Map 1). Treatments would occur within defined treatment zones. Actual treatments within these zones would vary in widths based on fuel types and topography. Establishment of fuelbreaks would limit the spread and intensity of wildfire. Habitat improvement and rehabilitation actions would enhance and rehabilitate rangeland and wildlife habitat. These management actions would be phased in over time depending on available funding. Treatment techniques (see list below) would be used individually or collectively to achieve desired status for sagebrush habitat.

Mechanical Treatment
A Dixie harrow, rotary mower, or other implements would be used to remove vegetation from the proposed fuelbreak locations. Use of a Dixie Harrow in conjunction with mowing would occur in areas where there is existing native vegetation that has not been altered or burned. Mastication equipment would be pulled by rubber tired/tracked farm type tractors or a dozer.

Herbicide Treatment
The herbicides Imazapic, Glyphosate, and Tebuthiuron, would be used to remove undesirable vegetation and hazardous fuels and control the growth of annual species such as cheatgrass, tumble mustard, and Russian thistle.

Herbicides would be applied in the spring or fall by aircraft, truck, or ATV; herbicide may also be applied with crews utilizing backpack pumps to spray noxious weeds or annual invasive species.

Seeding Treatment
Portions of treated areas would be seeded or planted in the fall after any applicable mechanical treatments and/or herbicide treatments are completed, depending on degree of surface disturbance and type of understory vegetation. Where possible, seeding would occur in areas where there is no spring grazing, where rest rotation grazing occurs to allow for seeds to establish (see Appendix III for seed mixes).

Seed would be planted using a rangeland drill seeder or broadcasted utilizing an ATV, a tractor or by aircraft. Hand planting of shrub seedlings would also occur where applicable.

Prescribed Fire
Use of prescribed fire is proposed to pre-treat the cheatgrass die off areas if cheatgrass biomass is great enough to inhibit seeding treatments. Prescribed fire treatments would adhere to BLM policy and guidance. Prior to implementing burning, a prescribed fire burn plan would be prepared, which addresses burn complexity, appropriate personnel and suppression equipment, fire weather, permits and contingency planning.

Hand Thinning
Hand thinning would involve crews removing vegetation utilizing saws or other hand tools.

Approximate acreage to be impacted by proposed actions would be about 14,313 acres of which about 3,802 acres would be located within existing disturbed areas (roads, previously burned, previously seeded). About 10,511 acres would be new disturbance.

2.2.1 Fuelbreaks and Greenstrips

Proposed fuelbreaks would be constructed and maintained using a combination of treatments including; mechanical, herbicides, prescribed fire, hand thinning, and seeding. Fuelbreaks would range from 200-800 feet wide, depending on fuel types and location. Where possible fuelbreaks would be constructed in a mosaic pattern or strips to blend with existing vegetation and topography and would be constructed adjacent to existing roads or in areas previously disturbed. In addition, the existing Thacker Pass fuelbreak would be maintained.

Greenstrips are a type of fuelbreak that is seeded with fire resistive vegetation (such as kochia, Crested wheatgrass, Sandberg's Bluegrass) to slow or prevent the spread of wildfire. Proposed greenstrips would be established in previously burned areas on the west side or Kings River side of the project area. Greenstrips would be constructed by seeding along existing roads with fire resistive vegetation (See Appendix III for appropriate native and non-native seed mixes). Mechanical treatments may be needed to remove existing vegetation biomass. Herbicide treatments would be used to control invasive annual species, when deemed necessary through monitoring, for maintenance of greenstrips following seeding activities.

Table 1 - Proposed Fuelbreaks and Greenstrips

Name	Acres	Width	Action
Kings River Fuelbreak	344	400	Mechanical/Seeding/Herbicide
Ikes Canyon Fuelbreak	33	300	Mechanical/Seeding/Herbicide
Gold Hill Fuelbreak	47	300	Mechanical/Seeding/Herbicide
South Fork Fuelbreak	104	300	Mechanical/Seeding/Herbicide

Name	Acres	Width	Action
South End Fuelbreak	359	400-800	Mechanical/Seeding/Herbicide
Thacker Pass Fuelbreak	195	300	Mechanical/Seeding/Herbicide
TOTALS	**1,082 Acres**		
Kings River Rd Greenstrip	258	200	Herbicide/Seeding
Lateral #1 Greenstrip	5	200	Herbicide/Seeding
Lateral #2 Greenstrip	6	200	Herbicide/Seeding
Lateral #3 Greenstrip	6	200	Herbicide/Seeding
Lateral #4 Greenstrip	16	200	Herbicide/Seeding
Lateral #5 Greenstrip	14	200	Herbicide/Seeding
Lateral #6 Greenstrip	15	200	Herbicide/Seeding
Lateral #7 Greenstrip	35	200	Herbicide/Seeding
Lateral #8 Greenstrip	29	200	Herbicide/Seeding
TOTALS	**384 Acres**		

2.2.2 Road Maintenance and Improvement

Proposed road maintenance and improvement actions would include using heavy equipment to blade or grade existing roadways to remove vegetation and improve access. Grading of road surfaces would allow for maintenance, improvement and creation of ditches and shoulders (maximum width for any type of improvements would be 22 feet wide). Maintenance of roads would also include installation of culverts, construction of rolling dip gravel stream crossings, excavating the road base and replacing with gravel and boulder fill (in meadow areas), installing cattleguards, sediment barriers and surfacing areas with gravel. Application of pre-emergent herbicides, prior to grading is also proposed to reduce the spread and establishment of noxious weeds. Road shoulders may be seeded with species listed in Appendix III where seeding is deemed appropriate and additional shoulder and bar ditch maintenance is complete. Once maintained, roads would serve as fuelbreaks and allow for better access for fire suppression equipment. All existing and proposed road improvements would be subject to periodic maintenance.

Table 2- Proposed Road Improvement/Maintenance

Road	Length	Acres	Action
Crowley-Jordan	22 miles	59	Maintenance
Pole Creek Road	34 miles	91	Maintain and Improve
Long Canyon	18 miles	48	Improve
Jordan Meadow Mtn.	7 miles	19	Improve
TOTALS	**81 Miles**	**217 Acres**	

2.2.3 Rangeland and Habitat Improvement and Restoration

Habitat restoration projects would include manipulation of large stands of late seral stage sagebrush with poor age class distribution to create a multiple age class stand which would increase the health and vigor of the stand. Mechanical treatments would be applied in a mosaic pattern or strips to change the age class and stand structure. For the first year of treatment no more than 1/6 of one sage block would be treated; prior to treatment the block would be monitored to determine what plant species are present in the area, and their average density and cover across the sage block. After treatment the block would be monitored (in treated areas) to determine changes in plant species density and cover. Additional treatments would not occur on this block or any additional blocks until monitoring results on the first treated area shows a stable or decreasing trend in cheatgrass density and cover. After monitoring results are achieved on the treated block additional treatments may occur on the three remaining blocks. No more than 1/3 of one block would be treated during a one year period and no more than ½ of any block would be treated within a ten year period. Treated areas would be seeded during mechanical treatments with a mixture of native grasses and forbs (see Appendix III-Seeding Species and Rates). Treated areas may be sprayed with herbicide to ensure cheatgrass does not out-compete native species where necessary. These treated areas would also serve as fuelbreaks.

If monitoring determines that sagebrush restoration blocks are ineffective, or in place of those projects, habitat protection projects would be implemented. Habitat protection projects would include seeding fire resistant vegetation and some native species (see Appendix III) in strips along sagebrush/cheatgrass interface areas on the margin of the habitat restoration blocks initially. Strips would be at least 100 to no more than 300 feet wide. Pre-treatment may be necessary to ensure seed success; pre-treatments would include herbicide, mechanical, and prescribed burning, singly or in conjunction depending on the site and existing vegetation. Treatments would be similar to treatments for cheatgrass displacement areas. Once the initial strip is established additional strips would be established extending outward into the cheatgrass areas. No more than 500 acres of habitat protection strips would be implemented per year with a maximum of 5000 acres over the life of the PLAN.

Habitat restoration would also address Cheatgrass Displacement or “die-off” areas on the East side of the Project Area. The cheatgrass in these areas has died off and presents an opportunity to re-establish native and/or introduced vegetation with little to no pre-treatment (to remove cheatgrass biomass). Potential pre-treatments include site preparation (mechanical or prescribed fire) and chemical treatments. Following pre-treating, re-seeding to establish native shrubs and native and/or introduced grasses are proposed depending on site potential (see Appendix III-Native Seeding Species and Introduced Seeding Species Tables). Blocks may be temporarily fenced depending on the grazing system to allow for establishment of seeded species. Test plots may be installed prior to seeding to

determine if the "die-off" areas are the result of a pathogen spillover where transmissions of pathogens in the seed bank attack other seeds.

Habitat improvement projects include installing, modifying, and/or maintaining riparian exclosure fencing at several springs and meadow habitats (see table below) identified in the Lone Willow Population Management Unit (PMU) sage grouse conservation plan. Fencing would either be constructed of pipe rail or T-post and barbed wire using appropriate wildlife design specification including flagging for sage grouse. Installing permanent fencing around portions of the meadows and springs would allow natural processes to restore soil, hydrologic, and vegetative functionality by improving water retention, reducing excess erosion/deposition, and decreasing impacts to vegetation from cattle. Properly functioning meadows would serve as more effective fuelbreaks.

Once enclosed riparian areas and meadows have reached Proper Functioning Condition (PFC) and have expanded to their potential extent, at the BLM's discretion these areas would be considered for prescriptive grazing if determined necessary to meet resource objectives.

Wet meadow restoration and or stabilization would occur in the 4th of July and Bull Spring Meadows. In both locations channel stabilization and rehabilitation would be of primary concern. The BLM would also commit to preserving currently existing vehicular access while negating or minimizing the impacts that current roads cause.

Bull Spring Meadow Restoration Plan:
In the Bull Spring meadow, severe headcuts would need to be stabilized using hardened, flow dissipating structures. Moderate headcuts may be stabilized by slope adjustment and replanting of appropriate soil stabilizing vegetation (juncus, carix, salix, etc). Minor headcuts would be allowed to heal naturally with regular (~once per year for a minimum of five years) monitoring to ensure that minor headcuts are not becoming more exaggerated.

The road through Bull Springs meadow would be divided uphill (to the south) of the spring source. Maximum road widths would be no more than 22 feet wide. The east arm of the road would closely follow a route of equal elevation to a nearby clay mine, approximately 0.6 miles long. The west arm of the road would remain outside of the Bull Spring exclosure and rejoin the existing road slightly to the north of the proposed Bull Spring exclosure, approximately 0.8 miles long. An existing trough, in the meadow would be moved out of the meadow and placed outside of the proposed exclosure.

4th of July Meadows Restoration Plan:
Prior to restoration of the currently degraded 4th of July meadow, extensive rehabilitation and modifications to Pole Creek Road would be required.

Where distinct stream channels would not likely have occurred prior to the installation of modern culverts, culverts would be removed and the road base excavated and replaced with boulder fill (to just below the historic meadow surface elevations), creating a permeable rock dam. Gravel fill would be added (bringing the road surface up to historic meadow surface elevations) to provide a more appropriate driving surface. Boulder and gravel fills would be keyed into the adjacent uplands to ensure that high flows would not be able to erode around the ends of the structure. Where distinct stream channels would have likely existed prior to installation of modern culverts, the culverts would be removed and a structure would be installed which would allow for passage of higher flows and lateral migration of the stream channel. Maximum road widths would be no more than 22 feet wide, approximate length of road modification would be 0.3 miles or less.

Restoration in the 4th of July meadow would be divided into two main areas, the areas to the west (upstream side) and to the east (downstream side) of Pole Creek Road. West 4th of July meadow would mainly rely on natural processes to restore channel morphologies, vegetative communities, and water retention and conveyance with regular (~once per year for a minimum of five years) monitoring to ensure that minor headcuts are not becoming more exaggerated. Moderate headcuts may be targeted for re-contouring and re-vegetation. East 4th of July meadows would require substantial modification requiring the use of heavy machinery. Vertical stream banks would be terraced to create floodplains which can be accessed by surface water during high flow events. These terraces would also be designed to ensure access of wetland vegetation to groundwater. Once terraced, replanting of appropriate soil stabilizing wetland vegetation (juncus, carix, salix, etc) would occur.

In addition the eastern edge of the existing 4th of July Exclosure fence would be extended to tie into the rocky ridges approximately 600 feet to the east. Additional fencing would occur along each side of the existing road prohibiting vehicular access to the meadow area. Any fence installed would match current BLM approved steel fence designs and specifications. Total meadow restoration described in this EA would impact an area on the order of 18 acres or riparian habitat.

Old Man Spring and Spring North of Old Man Spring

Portions of the existing fence around Old Man Spring would be maintained or replaced with appropriate fence materials which may include metal brace posts, new wire, or snow clips to accommodate the winter snow loads in the area.

The un-named spring directly north of Old Man Spring would be fenced to create an exclosure. A final fence design would be developed after authorization to accommodate site specific construction limitations (i.e. bed

rock outcrops or culturally sensitive sites). Installation of up to three cattle guards may be required at this site. If conditions permit, water from the spring area would be piped to a trough outside of the exclosure and away from the riparian area.

Upper Lone Willow Trough and Lone Willow Spring
A trough located in the upper reaches of the Lone Willow meadow complex would be moved downhill approximately 300 feet away from the riparian area and re-installed. In addition, the existing barbed wire and wood fence around Lone Willow Spring would be removed. A new fence would be installed which would exclude cattle grazing from a larger area (approximately 29 total acres, 13 acres of riparian habitat).

Riser Creek Fence
A section of fence, approximately 1/2 mile in length would be installed between the existing allotment boundary fence and the rimrocks of Riser Creek. This fence would prohibit cattle movement into upland areas until grazing is scheduled to occur (as defined in Jordan Meadows Grazing Permit).

Jordan Meadow Spring
Two sections of fence would be installed above Jordan Meadow Spring prohibiting the movement of cattle through the riparian area except during designated cattle movement times. The proposed fence sections would be approximately 1.5 miles long.

Brush Removal
Heavy brush along narrow canyon bottoms adjacent to roads would be hand thinned to reduce hazardous fuel loads. No more than five acres per project would be thinned and not more than 15 acres or thinning would occur per year.

Table 3. Proposed Habitat Restoration

Name	Acres	Actions
Sage Block 1	1,785	Dixie Harrow and Seed (Herbicide if necessary)
Sage Block 2	3,113	Dixie Harrow and Seed (Herbicide if necessary)
Sage Block 3	1,629	Dixie Harrow and Seed (Herbicide if necessary)
Sage Block 4	1,738	Dixie Harrow and Seed (Herbicide if necessary)
TOTALS	**8,265 Acres**	
Displacement Block 1	559	Burn/Mow, Herbicide and Seed
Displacement Block 2	767	Burn/Mow, Herbicide and Seed
Displacement Block 3	1,011	Burn/Mow, Herbicide and Seed
Displacement Block 4	1,681	Burn/Mow, Herbicide and Seed
TOTALS	**4,018 Acres**	
Wet Meadow Restoration	18	10 acres of riparian habitat within the 4th of July exclosure and 8 acres at Bull Spring.
Meadow and	150	150 acres over the life of the project. 5 acres per

Name	Acres	Actions
Drainage Brush Removal		project area, no more than 15 acres per year. Includes hand thinning and use of a small mower.
TOTALS	**168Acres**	
4th of July Meadow	2	Addition of "wing" fences and road fences to existing 171 acre exclosure with 27 acres of riparian habitat. 0.9 miles of fencing with an approximate disturbance width of 20 feet for installation.
Old Man Spring Exclosure	442	Maintenance of 3.3 miles of existing fence exclosing 442 acres of land from cattle grazing which includes 54 acres of riparian habitat.
North of Old Man Spring Exclosure	34	Installation of 0.9 miles of fence which would exclude cattle grazing from approximately 33 acres of land including 9 acres of riparian habitat. Installation of a trough outside the exclosure if needed.
Bull Spring Exclosure	61	Installation of 1.7 miles of fence which would exclose cattle from approximately 57 acres of land including 8 acres of riparian habitat. Creation of 1.4 miles of new road around the exclosure. Installation trough outside the exclosure
Lone Willow Spring Meadow and Upper Lone Willow	30	Installation of 1 mile of fence which would enclose 29 acres of land including 13 acres of riparian habitat. Installation of a trough outside the exclosure if needed.
TOTALS	**569 Acres**	

2.2.4 Acquisition of Easement

BLM proposes to pursue acquisition of an easement from the private property owner along a portion of the Crowley-Jordan road. Potential easements would be acquired along the roadway within two private parcels of land. One parcel is located at; T46N., R36E., Section 29 the other parcel is located at T45N., R36E., Sections 20 & 29. Acquiring easements would allow BLM to maintain and improve the existing road through these areas ensuring the road is an effective fuelbreak and to allow for continued public access to BLM managed lands within the Montana Mountains.

2.2.5 Maintenance and Monitoring

All proposed actions and existing fuelbreaks would be maintained to ensure effectiveness. Maintenance would include a combination of treatments where and when necessary based on monitoring, professional judgment, and funding availability. Herbicide would be applied in areas where invasive annual species have established or where fuels have built up affecting fuelbreak effectiveness. Habitat rehabilitation or restoration projects would also be maintained to ensure and promote project success.

Monitoring would be implemented to ensure PLAN goals and objectives are achieved. In addition, monitoring would establish baseline data, gauge the effectiveness of treatments and mitigation measures, and would be used to determine the need for treatment maintenance. The methods used to monitor

vegetation treatments may include a combination of photo point, paced and permanent density, line-point intercept, gap intercept, belt transects, production plots, and Rangeland Health Assessments. Monitoring for riparian restoration will follow the Multiple Indicator Monitoring (MIM) of Stream Channels and Streamside Vegetation protocol (Burton, Smith, and Cowley, 2011). Monitoring for invasive species would also include infestation size, density and damage potential. Monitoring would also include fire regime condition class evaluation and cheat grass displacement or "die off" monitoring.

2.3 Proposed Environmental Protection Measures

In addition, the following environmental measures are components of the proposed action and would be implemented:

1. Herbicide application rates (range of rates) and application would be subject to label restrictions and standard operating procedures (SOPs) (See Appendix I).

2. All treatments identified would be in accordance with the Instruction Memorandums WO-IM-2012-043 Greater Sage-Grouse Interim Management Policies and Procedures and WO-IM-2010-149 Sage-grouse Conservation Related to Wildland Fire and Fuels Management. Fuels Management Best Management Practices (BMPs) for Sage-Grouse Conservation as described in (Appendix IV).

3. For any proposed actions that are not performed outside of the migratory bird breeding season (March 1 – August 31), a migratory bird nesting survey would be conducted in potential habitat areas no more than 10 days and no less than 3 days prior to initiation of disturbance. If active nests are located, a minimum 260 ft. protective buffer would be established or activities delayed until the birds have completed nesting and brood-rearing activities.

4. All NRHP eligible or unevaluated sites would be avoided during the course of this project. An archaeologist would be involved as detailed plans are developed for each phase of the implementation to ensure avoidance is factored into the detailed project designs. An archaeologist would review plans for each phase of the project's implementation to ensure avoidance of NRHP eligible or unevaluated sites.

5. Any unanticipated archeological discovery on BLM lands will be reported to a BLM archeologist and work in the immediate vicinity will stop until SHPO is consulted.

6. Prior to implementation of treatments, pygmy rabbit surveys would be conducted in areas of suitable habitat. A 400 ft. avoidance buffer would be established around any active pygmy rabbit burrows and burrow complexes found. No

removal or manipulation of sagebrush would occur within any 400ft. avoidance buffers established.

7. For any proposed actions that are not performed outside of the burrowing owl breeding season (March 1 – August 31), a burrowing owl survey would be conducted in potential habitat areas no more than 10 days and no less than 3 days prior to initiation of disturbance. If active burrows are located, a minimum 260 ft. protective buffer would be established or activities delayed until the birds have completed nesting and brood-rearing activities.

8. Existing documented populations of lonesome milkvetch that occur near proposed treatment areas would be flagged and avoided.

9. No disturbance activities would be conducted during the sage-grouse lekking and nesting seasons from March 1st through June 30th.

10. Shrubs and native vegetation would not be treated within ten feet of perennial drainages with mechanical treatments.

11. Protective fences would be constructed to BLM wildlife friendly specifications. Fences requiring four wires would be built with a smooth bottom wire to allow for antelope movement. Wooden posts would not be used in fence construction and t-posts would have perch deterrents installed on top to discourage raptor perching. Wire fencing would be installed to include reflectors in order to deter collisions with sage grouse. Steel pipe-rail fence may also be constructed, which is highly visible and eliminates the possibility of sage-grouse entanglement.

12. All terrestrial equipment (e.g. vehicles, hand tools, tractors, etc.) to be used in treatments would be washed offsite prior to being brought to the project site, to avoid spreading noxious weed seeds.

13. All historic properties (i.e. archaeological sites listed unevaluated or eligible for inclusion on the National Register of Historic Places) would be avoided during project implementation. Avoidance buffers of at least 30 meters from National Register sites would be observed during project implementation.

14. If any significant paleontological resources are found during operations, impacts would be mitigated through avoidance and/or data recovery. Any unanticipated vertebrate fossil discovery on BLM lands will be reported immediately to the Project Archaeologist**.**

15. Drill seeding operations would be completed following the contour of the land as much as possible to reduce potential water erosion and impacts to visual resources.

16. Two weeks before herbicides are applied, the tribal council of the Fort McDermitt Paiute and Shoshone Reservation would be notified of when, where and how herbicides would be applied.

2.4 Alternatives

The following alternatives were developed based on discussion with ID Team Members, Montana Mountains CORE Team members, public comments, and several field trips with interested parties.

2.4.1 Alternative B - Road Maintenance, Construction, and Riparian Habitat Improvement and Spring Restoration

Alternative B is identical to the proposed road maintenance riparian/meadow habitat improvement projects, spring/meadow restoration actions identified under the Proposed Action.

No construction of linear fuelbreaks, other greenstrips, or habitat restoration blocks described in 2.2.3 would occur. Approximately 81 miles of roads would be maintained and/or improved.

2.4.2 Alternative C – Enhanced Vegetation Management Including Site Specific Prescribed Grazing

Alternative C is identical to the proposed action with the exception that the Kings River fuelbreak would be modified. This alternative would include expansion of the fuelbreak to approximately 0.5 miles wide which would increase the acreage of that fuelbreak to 2,281 acres. The area would be mechanically treated, fenced and seeded with a mixture of native and introduced grasses. After seeding, the area would be closed to grazing for a minimum of two growing seasons. In addition to serving as a fuelbreak, this area would provide forage for wildlife and livestock. Once vegetation objectives are met, these fuelbreaks would be maintained using a combination of mechanical, herbicide, and prescribed grazing actions.

Under this alternative prescribed grazing would be implemented as needed to meet resource objectives on the proposed Kings River fuelbreak expansion area. Approximately 16,249 acres would be impacted by this alternative.

2.5 No Action Alternative

Under the no action alternative, the management plan would not be implemented. All existing fuelbreaks would be maintained and periodic road maintenance would occur.

3.0 AFFECTED ENVIRONMENT

The proposed project plan is located within the Montana Mountains Planning area which totals 345,735 acres (see Map 5: Planning Area Boundary and Cumulative Impact Area). Of which approximately 26,876 acres are private, and approximately 318,859 are public. The Planning area's northern border extends slightly past the Oregon state line, and its southern border is the Thacker Pass Road. The eastern edge of the planning area follows the Quinn River, in the Quinn River Valley, and the western edge follows the Kings River, in the Kings River Valley.

There are multiple creeks that flow through the Planning area. Several of the creeks are occupied by Lahontan Cutthroat Trout (LCT) or are defined as LCT Recovery Streams. A variety of wildlife such as mule deer, bighorn sheep, antelope, pygmy rabbits, sage-grouse and others thrive within the area. The majority of the planning area overlaps nearly 250,000 acres of the northeastern portion of the Lone Willow Sage-grouse Population Management Unit (PMU) which is regarded as one of the most important and intact PMU's in Nevada.

The terrain within the Planning area is varied and diverse. The planning area encompasses an entire mountain range from adjacent valley bottoms to the mountain top. The vegetation within the planning area includes large, intact, contiguous, stands of Wyoming Big Sagebrush, Low Sagebrush, along with large extents of Salt Desert Shrub and Greasewood vegetation communities. These areas have withstood persistent disturbance from fire, grazing pressures and road construction, though large areas of cheatgrass have moved into, and in some areas replaced native vegetation communities, primarily on lower fan piedmonts and valley interfaces at lower elevations.

The planning area is a very popular recreation and hunting area for local residents. There are several Lithium and Uranium exploration sites scattered along the southwestern edge of the planning area. There is also a clay prospect located near the Pole Creek road in Bull Basin in the middle, western portion of the planning area.

One Wilderness Study Area (WSA) exists within the project area: Disaster Peak WSA (NV-020-859). All proposed treatment actions fall outside this WSA boundary within the Planning Area.

There are no known vertebrate paleontological resources within the Montana Range. The project area has been modeled as Potential Fossil Yield Categories (PFYC) 1 and 2, which are low potential or PFYC 3, moderate potential. Plant fossils, specifically petrified wood, are known to occur in the Planning Area.

The Planning area is bordered on both the eastern and western edges by agricultural lands and rural ranches. Producers in this area grow a wide variety of crops such as alfalfa hay and seed, potatoes, onions, barley, native meadow hay, mint, and Kentucky Bluegrass seed. Many of the ranches located on the edges of the Planning area hold livestock grazing permits within the Planning area.

3.1 Supplemental Authorities (Formerly referred to as Critical Elements)

The following critical elements or supplemental authorities are present and could be affected by the proposed action and alternative:

Table 4. Supplemental Authorities

Critical Element	*Present*		*Affected*		*Rationale*
	Yes	No	Yes	No	
Air Quality	Present		Affected		See Section 4.1.1
ACEC's		Not Present		Not Affected	
Cultural Resources	Present			Not Affected	See Section 4.1.2
Environmental Justice		Not Present		Not Affected	
Floodplains		Not Present		Not Affected	No FEMA mapped floodplains are present within the planning area.
Invasive, Non-native Species	Present		Affected		See Section 4.1.3
Migratory Birds	Present		Affected		See Section 4.1.4
Native American Religious Concerns	Present		Affected		See Section 4.1.5
Prime or Unique Farmlands		Not Present		Not Affected	
Threatened and Endangered Species	Present		Affected		Lahontan Cutthroat Trout (see section 4.1.6)
Wastes, Hazardous or Solid		Not Present		Not Affected	
Water Quality (Surface and Ground)	Present		Affected		Effects to surface water quality and quantity are expected to occur from restoration of and exclusion of cattle grazing from meadow/ spring habitats. (See section 4.1.7)
Wetlands and Riparian Zones	Present		Affected		Effects are expected to occur from restoration of and exclusion of cattle grazing from meadow/ spring habitats. (see section 4.1.8
Wild and Scenic Rivers		Not Present		Not Affected	Crowley Creek and Washburn Creek were evaluated in the Winnemucca District Draft RMP-EIS.
Wilderness		Not Present		Not Affected	

3.1.1 Air Quality

The project area is located within an unclassified air basin. Air quality within the general area of the proposed action is considered good. In most undeveloped regions in Nevada the ambient pollutant levels are below measurable limits. In the past ten years Nevada has been through several severe/extreme drought periods. Based on data from the U.S. Drought Monitor 2002-2004 and 2007-2008 were periods of severe/extreme drought over the majority of the state which contributed to dust storms and increased wildfire danger.

Dust storms, wildfire, and commercial burning occur within the Quinn River and Kings River Valleys and impact air quality on a seasonal basis.

3.1.2 Cultural Resources

An inventory of archeological sites within the Montana Mountains Planning area has been completed for all proposed treatments except the southernmost rangeland restoration block adjacent to Crowley Creek and northernmost cheat grass displacement or "die-off" block (see map 1). A final report from Logan Simpson Design that records a number of sites is still in progress. It would be necessary to conduct cultural inventory for Section 106 compliance and associated NEPA evaluation prior to implementation of any treatment in the aforementioned unrecorded areas. Inventory completed specifically for this project (Cardno-Entrix 2011, Logan Simpson Design nd. in progress), plus past cultural inventories show a wide range of prehistoric site types spanning the entire archaic period through Euroamerican contact in the nineteenth century. Previous inventories have identified rock shelters, temporary/seasonal open-air camps, lithic scatters, isolated projectile points, etc.). The highest concentration of prehistoric sites is in association with permanent and intermittent water sources. Over-all site density is high, in part due to the presence of an abundance of lithic resources, including obsidian from the ***Double H source***. In addition, the Montana Range is rich in an abundance of wildlife and botanical resources. Springs and seasonal creeks, which may have flown year-round during periods in the past when snowfall was heavier, are also abundant in the range.

Point types found within the Montana Mountains Planning area reflect a wide variety of types that are time sensitive (temporally diagnostic). These include: Northern Side Notch (Early Archaic), Elko Series (Middle Archaic), Great Basin Stemmed (PaleoInidan) and Rosegate and Desert Side-Notched (Late Archaic to EuroAmerican Contact). Based on these temporally diagnostic projectile points, the Montanas were occupied during a prehistoric time range from the Paleo-Indian period (11,000 BP) to the Early Historic (mid-nineteenth century) (Justice 2002).

At contact the Atsaküdökwa tuviwarai (Red Butte Dwellers) were the Northern Paiute band most closely affiliated with the Montanas Range. Summit Lake was the closest major body of water, although several creeks run through the mountains and the Quinn and King's rivers skirt the boundaries of the range.

The prehistoric archaeology, as to settlement pattern and site type distribution, is heavily influenced by the presence of the Double H/Whitehorse National Register Eligible Lithic Procurement District. This district overlaps the project area and, as a key obsidian toolstone location probably attracted more human use of the Montanas Range than would otherwise be expected.

Historic*:*
It is uncertain where the Montana Range got its name from. Montana is the anglicized form of montaña which means mountain in Spanish.

Historic sites in the project area are generally associated with ranching, and, to a much smaller extent, mining operations from the mid-19th century on.

Disaster Peak is the most prominent geographic land mark within the Montana Range. Local lore as to the origin of the name "Disaster Peak" varies. One story reports that Disaster Peak gets its name from an event in 1864. As the story goes, in that year, a party of seven miners made camp near the as yet to be named peak. They were ambushed by a party of Bannock Indians and four of the prospectors were killed. After this event the location became forever-known as Disaster Peak. A somewhat different version claims that miners returning to the East from California were ambushed by Indians and had to bury their gold on the peak. To this day the treasure has not been found. Losing such a fortune would have been a disaster in deed. One wonders why the miners would have been transporting their gold back East instead of cashing in at an assayer's office in California. Another story isn't nearly as entertaining as the previous two; talk has it that the peak got its name from the first person who climbed it. He broke his leg and considered that a real "disaster."

The first mining claims filed in the Montana's were during the 1890s (Leszcykowski 1986). Large scale mining has never been a major economic concern within the Montanas Range. For the most part mining in the range has been characterized by small family subsistence operations (Berg 2008). The Disaster Peak Mining District was established in 1914 (Carlson 1974 pg. 98). American Collide currently operates the Disaster Peak Mine. This mine yields a clay consisting largely of the mineral hectorite. Hectorite is mostly used in cosmetics but is also a mineral source for refined lithium.

In the early 1950s the Moonlight mine (site CrNV-2-8587) began operation. On-again off-again small scale exploration, largely for uranium, has been occurring since then to the present.

3.1.3 Invasive Non-native Species

An "invasive species" is defined as a species that is nonnative to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health (Executive Order 13112). Invasive, nonnative species are species that are highly competitive, highly aggressive, and spread easily. They include plants designated as "noxious" and animals designated as "pests" by federal or state law.

The Nevada Department of Agriculture maintains a Nevada Noxious Weed List. The noxious weed species that have been identified in the Project Area are Scotch thistle (*Onopordum acanthium),* a Category B weed and hoary cress (*Cardaria draba*), a Category C weed. Category B weeds are "established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur". Category C noxious weeds are defined

by NAC 555.010 as "weeds that are generally established and generally widespread in many counties of the State."

Nevada Revised Statutes, Chapter 555.05 defines “noxious weeds” and mandates land owners and land management agencies to include control of noxious weeds on lands under their jurisdiction.

Nevada has listed 47 non-native invasive plant species that require control. Of these 47 species, 14 species have been identified in the Winnemucca District (for a complete list of weed species, see Appendix II).

Noxious weeds,native and non-native invasive species generally occupy areas of disturbance, such as along commonly used travel routes . Native and non-native invasive species known in the planning area include clasping pepperweed (*Lepidium perfoliatum*), tumble mustard (*Sisymbrium altissimum* L.) and cheatgrass (*Bromus tectorum*). Known noxious weeds in the planning area include Scotch thistle (*Onopordum acanthium* L.), hoary cress (*Cardaria draba* (L.) Desv.) and saltcedar (*Tamarix* L.). Nevada Revised Statutes, Chapter 555.05 defines “noxious weeds” and mandates land owners and land management agencies to include control of noxious weeds on lands under their jurisdiction.

3.1.4 Migratory Birds

Neo-tropical migrant bird species are those species that breed in the temperate portions of North America and winter in the tropics in either North or South America. Migratory birds are protected and managed under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 *et. seq.*) and Executive Order 13186. The MBTA, prohibits take of migratory birds and nests (nests with eggs or young). Executive Order 13186 directs federal agencies to promote the conservation of migratory bird populations and emphasizes maintaining and improving migratory bird habitat.

Treatment areas are dominated by sagebrush/grass vegetative communities. Wyoming Big Sagebrush is the most common habitat type with smaller pockets of Low sagebrush. Small areas of Salt Desert Shrub, Greasewood, and cheatgrass are also present. Migratory birds commonly associated with these vegetative communities include: black-throated sparrow (*Amphispiza bilineata*), Brewer’s blackbird (*Euphagus cyanocephalus*), Brewer’s sparrow (*Spizella breweri*), burrowing owl (*Athene cunicularia*), canyon wren (*Catherpes mexicanus*), gray flycatcher (*Empidonax wrightii*), green-tailed towhee (*Pipilo chlorurus*), loggerhead shrike (*Lanius ludovicianus*), rock wren (*Salpinctes obsoletus*), sage sparrow (*Amphispiza belli*), sage thrasher (*Oreoscoptes montanus*), western meadowlark (*Sturnella neglecta*), and vesper sparrow (*Pooecetes gramineus*) (Great Basin Bird Observatory, 2003). The burrowing owl, loggerhead shrike, sage thrasher, and Brewer’s sparrow are BLM designated sensitive species and are discussed in section 3.1.20.

3.1.5 Native American Religious Concerns

Numerous laws and regulations require consideration of Native American concerns. These include the National Historic Preservation Act of 1966 as Amended (NHPA), the American Indian Religious Freedom Act of 1978 (AIRFA) as amended, Executive Order 13007 (Indian Sacred Sites), Executive Order 13175 (Consultation and Coordination with Tribal Governments), the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), the Archaeological Resources Protection Act of 1979 (ARPA) as well as NEPA and FLPMA.

The proposed action occurs in the traditional territories of the the *Aga' ipañinadökadö* ("fish lake eaters") and *Atsakudöka tuviwarai* ("red butte dwellers") (Stewart 1939, 1941). These two bands are identified with the Summit Lake Paiute Tribe and Fort McDermitt Paiute and Shoshone Tribe. The Shoshone and Paiute Tribes of Duck Valley also claim this area. Consultation letters were sent out to the following tribes on March 2nd, 2011: Fort McDermitt Paiute and Shoshone Tribe, Shoshone and Paiute Tribes of Duck Valley, Winnemucca Indian Colony and Summit Lake Paiutes. A consultation meeting with Fort McDermitt occurred on June 21st, 2011 and this project was discussed. This project was discussed with the Summit Lake Paiute Tribe on April 21 and May 19, 2012. Copies of the preliminary EA were sent out on April 25, 2012 to the following tribes: Fort McDermitt Paiute and Shoshone Tribe, Shoshone and Paiute Tribes of Duck Valley, Winnemucca Indian Colony and Summit Lake Paiutes.

Disaster Peak is a place of cultural and spiritual importance to the Fort McDermitt Paiute and Shoshone (Bengston 2006). It also serves a boundary marker for the *Aga' ipañinadökadö* ("fish lake eaters") and *Atsakudöka tuviwarai* ("red butte dwellers") (Stewart 1939, 1941).

The sage-grouse has a significant role in Northern Paiute oral traditions. Fowler (2002:243-244) and Kelly (1938) collect several variants explaining how the sage-grouse saved fire during the world flood. The sage-grouse, the only bird (or animal in other variants) to survive the flood, protected a fire on a mountain top, so that the succeeding animals and humans could have it when the flood waters receded. In the Owens Valley Paiute story of how pine nuts came to the world, the sage-grouse is a minor character which helps with the theft of the pine nuts (Steward 1936:431).

Leks are considered as important cultural sites by the Northern Paiutes since the strutting is the basis of the Round Dance (also called Circle Dance) (Bengston 2006). Round Dance locations may or may not be near leks. The timing and meaning of the Round Dance varies across the Great Basin, but the dance is tied to marking seasonal subsistence activities and is imbued with cosmological ideas related to renewal of the world and human's relationships to the Creator/God (Hultkrantz 1986).

Sage-grouse are also a traditional food source of the Northern Paiutes (Fowler 1986; Gilmore 1953; Steward 1941; Stewart 1941). There are cursory ethnographic reports on sage-grouse hunting for the following Paiute bands: *Agai-Panina*, *Atsa'kudökwa-*

tuviwarai, and *Tagö-töka* (Duck Valley Paiutes) (Bengston 2010; Fowler 2002; Stewart 1941). The bird was hunted in the spring, the meat was dried and could be eaten as long as supplies lasted. Deadfalls, hunting blinds, nets, nooses, and snares were all commonly used.

Hunting for the Northern Paiute, whether for sage-grouse or other animals, serves more than a means of providing food. As noted by Deur (2010), Hanes (1982), and Walker (2010), hunting is a way in which the Northern Paiutes and Western Shoshoni preserve part of their cultural traditions. Hunting in traditional areas is an active way of maintaining a tie to their past and a means of preserving cultural traditions. During the hunt, children are taught traditional knowledge and practices by their parents and elders. Hunting is also a means of cementing social relationships: after a successful hunt, the game is shared between the young hunters, their parents and their extended family.

Native Americans utilize a variety of wild plants. Seeds from a variety of grasses, roots like camus and others, can be used as foods, while others like Ephedra and Artemesia can be used for medicines (Stewart 1941).

They also consider all water to be sacred. Not only is it considered as being important for survival, warm and hot springs are often believed to have medicinal properties. Springs are also believed to be the home of water babies. These are supernatural creatures which are reported to carry off children and sometimes people (Hultkrantz 1986).

3.1.6 Threatened and Endangered Species

A species list was requested from the United States Fish and Wildlife Service (USFWS) for the proposed treatment areas (6-23-10). The Oregon USFWS responded and referred to their on-line process for agencies to obtain a species list by county. On July 14, 2010, an on-line species list was obtained for Harney and Malheur counties in Oregon. The species list showed the following listed, proposed and candidate species which may occur in those two Oregon counties:

- Borax Lake chub (*Gila boraxobius*) an endangered species,
- Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*) a threatened species,
- Bull trout (*Salvelinus confluentus*) a threatened species,
- Malheur wire-lettuce (*Stepanomeria malheurensis*) an endangered species,
- Howell's spectacular thelypody (*Thelypodium howellii ssp. spectabilis*) a threatened species,
- Greater sage-grouse (*Centrocercus urophasianus*) a candidate species,
- Yellow-billed cuckoo (*Coccyzus americanus*) a candidate species, and
- Columbia spotted frog (*Rana luteivertris*) a candidate species.

Although these species may occur within the Harney and Malheur counties in Oregon these species have not been documented within the Planning Area, which contains only a small southern portion of both counties. Using information provided on the USFWS website, only three of the eight listed, proposed and candidate species occur or are likely

to occur within the Planning Area. The three species that will be discussed are Lahontan cutthroat trout, Greater sage-grouse, and Yellow-billed cuckoo. The other five species (Borax Lake Chub, Bull Trout, Malheur wire-lettuce, Howell's spectacular thelypody, and Columbia spotted frog) have been dismissed from further analysis as they do not occur within the Planning Area.

The Nevada USFWS responded on August 6, 2010 that the Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi)* a threatened species, and the Greater sage-grouse (*Centrocercus urophasianus*) a candidate species, may occur in the Planning Area within Nevada. Lahontan cutthroat trout will be discussed under the Fisheries Sections. Greater sage-grouse and Yellow-billed cuckoo will be discussed under the Special Status Species Sections.

3.1.7 Water Quality

According to the Winnemucca District's spring inventory geodatabase, 471 spring sources occur in the Planning Area. The National Hydrography Dataset indicates that the planning area contains approximately 1,700 miles of perennial, intermittent, and ephemeral streams. Of these streams, 630 miles of stream are within ¼ mile (and downstream of segments within ¼ mile) downstream of proposed projects of all types. Surface water quality data collected in the planning area between the 2000 and 2004 indicates that surface waters are generally of good quality. The data show cool waters (generally less than 20º C) with low dissolved solids (generally less than 200 mg/L). E. coli bacteria numbers range from undetectable to almost 2,000 mpn/100mL (most probable number of E. coli bacteria per 100 mL). The highest values occur when discharges are lowest and temperatures are highest. The data do not provide insight as to the source of the bacteria. E. coli bacteria occur without disturbance or use, but cattle use can increase the amount of this bacteria. The data do not represent all streams within the planning area. However, with no major variation in land use, geology, or climate across the planning area; it would be expected that all surface water sources would display similar trends.

The Nevada Division of Environmental Protection has not listed any of the water bodies within the Planning Area on the State of Nevada List of Impaired Water Bodies (Section 303(d) of the Clean Water Act).

3.1.8 Wetland and Riparian Zones

Wetland and riparian zones were delineated within the Horse Creek and Jordan Meadows allotments using 2010 NAIP color infrared aerial imagery. These boundaries were chosen because wetland restoration and wetland/ riparian exclosures maintenance or construction will only occur in these two allotments. Riparian areas outside of these allotments are not expected to be measurably impacted by the proposed actions or alternatives.

The Horse Creek and Jordan Meadows allotments contain approximately 516 and 675 acres of riparian and wetland vegetation, respectively. Riparian and wetland habitats on privately owned land make up a small percentage of these values and have been included in the total. Proper functioning condition assessments of lotic riparian habitat have been conducted on approximately 10 miles of stream in the Horse Creek allotment and 12 miles of stream in the Jordan Meadows allotment. The results of these assessments are shown below.

Table 5. Proper Functioning Condition (PFC) Rating

	PFC Rating				
Allotment	**PFC**	**FAR+**	**FAR=**	**FAR-**	**NON**
Horse Creek	0%	0%	35%	29%	36%
Jordan Meadows	45%	12%	43%	0%	0%

FAR+ Functioning at Risk Upward Trend
FAR= Functioning at Risk Static Trend
FAR- Functioning at Risk Downward Trend
NON Non-Functioning

Only one area of lentic habitat within these two allotments has been assessed for functionality. The southern portion of the Old Man Springs area, approximately 22 acres, was assessed in 2011 and determined to be in functional at risk with an upward trend.

Within these two allotments, three riparian areas have had exclosure fences constructed to limit or eliminate use by cattle. Within the Horse Creek allotment, a 442 acre exclosure is intended to limit cattle use on 54 acres or riparian habitat in the Old Man Springs area and a 170 acre exclosure is intended to limit cattle use on 27 acres of riparian habitat in the 4th of July meadow area. In the Jordan Meadow allotment, an existing 157 acre exclosure is intended to limit cattle use on 13 acres of riparian habitat in the headwaters of Riser Creek and an existing 8 acre exclosure is intended to limit use on 4 acres of riparian habitat at Lone Willow Spring.

Bull Spring Meadow Restoration Area:

This restoration area represents 0.7 miles of the lotic riparian area in the Horse Creek allotment with a functional at risk rating with a downward trend. Currently an occasionally maintained north-south two track, Pole Creek Road, is located adjacent to or in the riparian area. This road splits near the north end of the riparian area with one branch continuing across the creek to the northwest and another branch turning up hill to the east which provides access to a nearby clay mine. The clay mine access road appears to have promoted concentration of surface flows and the formation of head cutting at the downhill end of this branch of road. The Bull Spring riparian area also contains a spring box and trough which is utilized by cattle. Within the stream channel itself, many head cuts ranging in height from several inches to several feet occur with small, flat meadow areas in between. No coarse rock material occurs in the channel to provide armoring against continued erosion. The stream channel is, however, underlain by lenses of erosion resistant clay which appear to be slowly eroding.

4th of July Meadow Restoration Area:
This restoration area represents 2.2 miles of the lotic riparian area in the Horse Creek allotment with a nonfunctional rating. Currently the area is bisected by an occasionally maintained two track, Pole Creek Road. Culverts have been installed where the road crosses the three main drainage channels of the meadow. Visual assessments have led specialists to believe that these culverts have been cause of erosion upstream of the road (due to an artificial lowering of local base levels) and downstream of the road (due to artificially concentrated surface flows). Head cuts upstream of the road are generally only a few inches in height, but occur sporadically up that majority of the drainage. Downstream of the road, stream channels have eroded down through three to four feet of fine, wetland sediments. This has led to more rapid discharge of groundwater from the adjacent meadow. This has led to encroachment of upland plants into the meadow area. Additionally, cattle use is concentrated in this area during the warmest parts of the year. Qualitative assessments indicate that the riparian vegetation in this area receives a high degree of utilization. Coarse rock does not occur in the stream channels until further downstream where the channel has cut down through "rim rock". Additionally, the 4th of July Meadow area serves as a popular camping area for OHV operators and hunters. Camping activities have led to the creation of persistent impacts to riparian vegetation from fire rings, soil compaction, and soil rutting.

Old man Spring Exclosure:
This area was exclosed from cattle use during the 1970s. fence portions are comprised of "let down fence" which requires that the fence be let down each winter and re-raised each spring to prevent breakage of barbed wire and bending of T-posts. The remainder of the fence is T-post and barbed wire with three cattle guards where two tracks enter the exclosure. Snow loading has led to malfunction of portions of the fence and maintenance of the "let down fence" has not been adequately applied every season. Because of this, cattle use has continued to occur within the exclosure. In addition to the fencing, check dams were installed in previously incised channels in the southern portion of the exclosure. These check dams appear to be causing re-sedimentation of the incised channels as well as an increase in retention of soil moisture and the recruitment of riparian vegetation.

Spring North of Old Man Spring Exclosure:
The main drainage in this area has been incised and qualitative assessments indicate that there is a high degree of cattle use on the riparian vegetation. Currently a road crosses the downstream (eastern edge) end of the meadow and runs adjacent to, but uphill from the meadow on its northern edge.

Lone Willow Spring Exclosure:
This riparian area is a unique perched meadow with groundwater which drains to the north and south around a hill to the west. The meadow is up to 0.1 miles wide and roughly 0.5 miles long. Erosional features are not evident in this riparian area.

A four wheel drive trail leads up to the spring sources and traverses the meadow for approximate 200 feet. An immobile, weathered bus is located near the spring source. It doesn't appear that this vehicle is currently used as a camp shelter or for any other purpose. Cattle use occurs on the meadow and has likely led to hummocking evident in the wettest areas of the meadow. Remnants of an historic 8 acre exclosure fence can be found near the Lone Willow Spring source, but the fence has not likely been functional for many years.

Additional Affected Resources

In addition to the supplemental authorities, the following important resources are also present and affected by the proposed action and alternatives.

3.1.9 Fisheries

The Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*, LCT) is a threatened species under the Endangered Species Act of 1973, as amended, and is the only listed fishery species known to occur within the Montana Mountains project area. Within the Planning Area, LCT occur within Corral Canyon, Crowley, Line Canyon, McDermitt, Pole, Riser, Sage, and Washburn creeks. Recovery habitat that is currently unoccupied for LCT exists within Rock Creek, Cold Springs Creek, Cottonwood Creek, and Kings River. The LCT occupied creeks and unoccupied recovery creeks are annually monitored, and the monitoring reports are available from the Winnemucca BLM office upon request.

Corral Canyon Creek (LCT occupied)
Corral Canyon Creek is a small tributary stream to Sage Creek, which arises from the east slope of the Trout Creek Mountains at an elevation of 7,760 feet. The creek is a second order stream that is approximately 5.3 miles in length, and intersects with Sage Creek at an elevation near 5,270 feet. The stream flows through approximately 3.9 miles of BLM land, and 1.4 miles of land belonging to the private sector. Stream survey data collected by NDOW indicate conditions for salmonids based on the General Aquatic Wildlife Survey indices, are shown below.

Table 6. NDOW Stream Survey results on Corral Canyon Creek.

Parameter	July 1989	July 1999	July 2004	June 2011
Pool Measure	80.6	68.3	63.8	42.6
Pool Structure	43.9	40.0	22.7	54.2
Stream Bottom	81.4	66.3	73.3	60.8
Bank Cover	59.2	66.9	83.8	72.8
Bank Soil Stability	64.2	62.9	85.0	78.1
Bank Vegetation Stability	78.3	73.9	84.7	78.4
Habitat Condition Index (HCI)	67.9	63.2	68.9	64.5
Discharge	0.59 cfs	0.98 cfs	1.1 cfs	17.6 cfs
Embeddedness	33.0	39.4	20.0	45.0
Ungulate Damage	21.6	8.8	24.4	3.1
Spawning Gravel	66.0	41.6	46.1	31.9

The recent 2011 stream survey of Corral Canyon Creek shows that the parameter which may be limiting the stream appears to be pool measure (pool/riffle ratios). Pool measure was noted with below desirable levels at 5 of the 9 sample stations. The streamflow was extremely high during the 2011 stream survey, which could be attributed for the lower pool measure rating. Overall, habitat conditions have declined slightly since the 2004 survey.

Crowley Creek (LCT occupied)

Crowley Creek begins from the east slope of the Montana Mountains, near an elevation of 6,400 feet, in Humboldt County, Nevada. Pole Creek and Rock Creek are intermittent flowing streams that have their confluence with Crowley Creek at elevations of 4,425 feet and 4,580 feet respectively. The stream is approximately 18.5 miles in length and terminates in the Quinn River Valley, near an elevation of 4,200 feet. Crowley Creek flows through approximately 13.4 miles of BLM land and 5.1 miles of private land. Stream survey data collected by NDOW indicate conditions for salmonids based on the General Aquatic Wildlife Survey indices, are shown below.

Table 7. NDOW Stream Survey results on Crowley Creek.

Parameter	September 1987	June 1991	June 1995	June 2000	June 2003	June 2009
Pool Measure	27.1	40.1	77.5	65.3	62.4	48.5
Pool Structure	46.8	47.2	30.0	52.0	26.6	20.3
Stream Bottom	62.1	60.3	54.9	59.4	43.9	66.8
Bank Cover	58.8	57.7	66.0	73.8	76.0	83.6
Bank Soil Stability	62.5	59.3	77.9	66.0	78.7	70.0
Bank Vegetation Stability	64.5	68.6	77.3	66.1	76.4	73.0
Habitat Condition Index (HCI)	53.6	53.5	63.8	63.1	60.7	60.4
Discharge	0.23 cfs	0.75 cfs	7.34 cfs	5.0 cfs	1.44 cfs	2.41 cfs
Embeddedness	47.9	52.5	19.6	40.2	45.7	56.0
Ungulate Damage	28.0	1.0	1.2	22.5	7.5	20.5
Spawning Gravel	39.3	35.0	31.8	33.2	16.3	17.6

The recent 2009 stream survey of Crowley Creek shows that the parameters which may be limiting the stream appears to be pool measure (pool/riffle ratios) and pool structure (quality pools). NDOW finds that streams or stream reaches with HCI ratings of greater than 50.0 percent are considered good habitats for trout. Overall, Crowley Creek has remained stable since the 2003 survey.

Line Canyon Creek (LCT occupied)

Line Canyon Creek originates from the east slope of the Trout Creek Mountains, at an elevation near 7,960 feet, in Humboldt County, Nevada. The stream is approximately 4.4 miles in length and terminates into Sage Creek, near an elevation of 5,410 feet in Malheur County, Oregon. There is one major tributary that flows into Line Canyon Creek at an elevation of 6,920 feet. The main stem of Line Canyon Creek flows through approximately 3.8 miles of BLM land and some 0.6 miles of private land. Stream survey

data collected by NDOW indicate conditions for salmonids based on the General Aquatic Wildlife Survey indices, are shown below.

Table 8. NDOW Stream Survey results on Line Canyon Creek.

Parameter	July 1989	August 1999	July 2004	June 2011
Pool Measure	79.4	62.3	73.0	58.2
Pool Structure	17.1	61.3	36.5	51.3
Stream Bottom	75.5	71.0	76.4	59.1
Bank Cover	51.5	78.3	75.9	73.9
Bank Soil Stability	56.5	67.5	80.9	85.3
Bank Vegetation Stability	63.5	73.7	80.0	78.3
Habitat Condition Index (HCI)	59.1	69.0	70.5	67.7
Discharge	0.59 cfs	3.3 cfs	1.0 cfs	10.4 cfs
Embeddedness	40.8	23.4	13.5	41.3
Ungulate Damage	16.5	6.9	5.0	0.8
Spawning Gravel	59.8	42.0	53.4	27.4

The recent 2011 stream survey of Line Canyon Creek shows that the parameters which may be limiting the stream appears to be pool measure (pool/riffle ratios) and pool structure (quality pools). Pool measure was noted with below desirable levels at 5 of the 9 sample stations. The streamflow was extremely high during the 2011 stream survey, which could be attributed for the lower pool measure rating. Overall, habitat conditions have remained stable since the 2004 survey.

McDermitt Creek (LCT occupied)

McDermitt Creek is one of the largest streams that flow into the Quinn River system. It arises from the east slope of the Trout Creek Range in Harney County, Oregon, at an elevation of 7,940 feet. There are several smaller tributaries to the McDermitt Creek watershed with Riser Creek, Sage Creek, and the North Fork Tributary being the largest. The main stem of McDermitt Creek is approximately 33.0 miles in length and terminates into the Quinn River at an elevation of 4,400 feet in Humboldt County, Nevada. Stream survey data collected by NDOW indicate conditions for salmonids based on the General Aquatic Wildlife Survey indices, are shown below.

Table 9. NDOW Stream Survey Data for McDermitt Creek

Parameter	October/June 1988/89	September 1998	August 2003	June 2009
Pool Measure	42.8	46.8	32.0	37.0
Pool Structure	89.7	96.7	64.9	38.7
Stream Bottom	68.5	69.2	49.8	63.6
Bank Cover	54.3	59.3	84.3	95.3
Bank Soil Stability	72.4	79.5	79.0	68.0
Bank Vegetation Stability	68.3	77.5	78.0	73.3
Habitat Condition Index (HCI)	67.0	72.5	64.7	62.7
Discharge	5.85 cfs	19.4 cfs	7.0 cfs	38.5 cfs
Embeddedness	38.0	53.3	40.0	42.9
Ungulate Damage	35.0	15.0	13.0	41.8
Spawning Gravel	51.3	25.0	14.2	22.0

The recent 2009 stream survey of McDermitt Creek shows that the parameters which may be limiting the stream appears to be pool measure (pool/riffle ratios) and pool structure (quality pools). NDOW finds that streams or stream reaches with HCI ratings of greater than 50.0 percent are considered good habitats for trout. Overall, habitat conditions for McDermitt Creek have declined slightly over the conditions measured during the previous surveys.

Pole Creek (LCT occupied)

Pole Creek originates from the east slope of the Montana Mountains, at an elevation of approximately 6,700 feet, in Humboldt County, Nevada. The stream is approximately 10.5 miles in length, and flows into Crowley Creek at an elevation near 4,420 feet. The stream flows through approximately 9.3 miles of BLM land, and 1.2 miles of private land. Stream survey data collected by NDOW indicate conditions for salmonids based on the General Aquatic Wildlife Survey indices, are shown below.

Table 10. NDOW Stream Survey results on Pole Creek.

Parameter	September 1987	June 1994	June 1998	June 2003	June 2009
Pool Measure	68.7	15.6	45.6	36.5	31.2
Pool Structure	35.8	11.7	63.1	2.7	10.6
Stream Bottom	94.0	92.6	92.9	70.1	91.8
Bank Cover	40.3	56.5	66.5	70.2	89.3
Bank Soil Stability	42.2	50.6	62.5	66.7	69.1
Bank Vegetation Stability	45.0	52.1	68.8	63.8	68.8
Habitat Condition Index (HCI)	34.4	37.1	66.5	51.7	54.3
Discharge	0.49 cfs	0.23 cfs	9.1 cfs	1.7 cfs	2.0 cfs
Embeddedness	12.5	51.2	33.7	12.7	54.9
Ungulate Damage	38.1	6.5	0.0	10.8	17.7
Spawning Gravel	53.1	51.8	44.0	19.1	32.7

The recent 2009 stream survey of Pole Creek shows that the parameters which may be limiting the stream appears to be pool measure (pool/riffle ratios) and pool structure (quality pools). NDOW finds that streams or stream reaches with HCI ratings of greater than 50.0 percent are considered good habitats for trout. Overall, habitat conditions for Pole Creek have improved substantially over those conditions depicted during the 1987 and 1994 surveys.

Riser Creek (LCT occupied)

Riser Creek originates from the east slope of the Montana Mountains, at an elevation of 6,800 feet, in the Humboldt County, Nevada. The stream is approximately 17.5 miles in length, which flows through 14.4 miles of BLM land and 2.5 miles of land under private ownership. Little Riser Creek and Frances Creek are intermittent flowing streams that have their confluence with the mainstem of Riser Creek at elevations of 5,430 feet and 5,300 feet respectively. Riser Creek runs in a northeasterly direction and terminates into McDermitt Creek in Malhuer County, Oregon.

Riser Creek was completely fenced, with water gaps, in 1992 to protect LCT and their habitat. Streambank cover has improved with increased willows and improved pool structure. Stream survey data collected by NDOW indicate conditions for salmonids based on the General Aquatic Wildlife Survey indices, are shown below.

Table 11. NDOW Stream Survey Data for Riser Creek

Parameter	October 1987	July 1991	July 1995	June 2000	July 2011
Pool Measure	53.4	46.1	48.9	39.6	35.7
Pool Structure	35.2	0.0	10.9	43.8	49.9
Stream Bottom	92.0	82.1	74.5	82.3	69.8
Bank Cover	53.8	46.3	86.6	73.6	84.4
Bank Soil Stability	56.3	50.0	78.6	68.3	92.9
Bank Vegetation Stability	57.8	52.5	74.7	66.1	84.0
Habitat Condition Index (HCI)	58.1	46.2	62.3	62.3	69.5
Discharge	0.70 cfs	0.32 cfs	4.25 cfs	2.20 cfs	2.8 cfs
Embeddedness	25.0	18.7	15.6	37.4	46.2
Ungulate Damage	34.5	33.6	6.7	27.5	0.0
Spawning Gravel	44.0	31.0	28.7	37.0	15.8

The recent 2011 stream survey of Riser Creek shows that the parameter which may be limiting the stream appears to be pool measure (pool/riffle ratios). Pool measure was noted with below desirable levels at 9 of the 13 sample stations. Overall, habitat conditions have improved since the 2000 survey, and this may be a function of the installed livestock exclosures.

Sage Creek (LCT occupied)

Sage Creek originates from the east slope of the Trout Creek Mountains, at an approximate elevation of 7,800 feet, in Humboldt County, Nevada. The stream is approximately 10.5 miles in length, and terminates into McDermitt Creek near an elevation of 5,015 feet, in Malheur County, Oregon. Corral Canyon Creek, Line Canyon Creek, and North Fork Sage Creek are all major tributaries to the main stem of Sage Creek, and have their confluences at elevations near 5,270 feet, 5,410 feet, and 6,030 feet respectively. Sage Creek flows through approximately 8.6 miles of BLM land (Vale and Winnemucca Districts) and some 1.9 miles of private land. Stream survey data collected by NDOW indicate conditions for salmonids based on the General Aquatic Wildlife Survey indices, are shown below.

Table 12. NDOW Stream Survey results on Sage Creek.

Parameter	July 1989	August 1999	July 2004	June 2011
Pool Measure	69.8	50.9	64.8	26.3
Pool Structure	41.3	59.2	45.4	43.8
Stream Bottom	73.9	80.5	73.0	70.7
Bank Cover	56.4	74.0	83.8	73.0
Bank Soil Stability	58.7	58.7	80.9	87.2
Bank Vegetation Stability	69.8	60.4	84.3	79.9
Habitat Condition Index (HCI)	58.3	63.9	72.0	63.5
Discharge	1.96 cfs	1.9 cfs	1.9 cfs	15.6 cfs

Parameter	July 1989	August 1999	July 2004	June 2011
Embeddedness	35.7	37.4	18.8	43.5
Ungulate Damage	14.0	24.0	3.4	2.4
Spawning Gravel	52.5	46.2	61.4	41.8

The recent 2011 stream survey of Sage Creek shows that the parameters which may be limiting the stream appears to be pool measure (pool/riffle ratios) and pool structure (quality pools). Pool measure was noted with below desirable levels at 16 of the 19 sample stations. The streamflow was extremely high during the 2011 stream survey, which could be attributed for the lower pool measure rating. Overall, habitat conditions have declined slightly since the 2004 survey.

Washburn Creek (LCT occupied)

Washburn Creek begins in the Seven Springs Basin, on the east side slope of the Montana Mountains, near an elevation of 6,880 feet. Wildcat Creek, Jordan Meadow Creek, and Little Washburn Creek are intermittent flowing streams that have their confluence with Washburn Creek at elevations of 4,910 feet, 4,870 feet, and 4,865 feet respectively. Washburn Creek is approximately 23 miles in length and terminates into the Quinn River near an elevation of 4,400 feet. Washburn Creek flows through approximately 16.0 miles of BLM land and 6.9 miles of private land. Stream survey data collected by NDOW indicate conditions for salmonids based on the General Aquatic Wildlife Survey indices, are shown below.

Table 13. NDOW Stream Survey results on Washburn Creek.

Parameter	October 1987	June 1991	June 1995	May 2000	June 2005	July 2011
Pool Measure	45.4	47.1	61.8	64.0	58.9	51.8
Pool Structure	16.7	48.2	41.0	68.2	39.4	31.4
Stream Bottom	54.8	65.9	58.8	61.2	67.3	57.1
Bank Cover	58.1	60.0	64.3	68.1	73.0	63.9
Bank Soil Stability	50.6	62.3	61.7	67.7	68.7	73.7
Bank Vegetation Stability	58.6	66.7	67.6	67.3	66.4	68.3
Habitat Condition Index (HCI)	50.1	59.6	59.2	65.6	62.3	57.7
Discharge	0.74 cfs	0.84 cfs	7.29 cfs	3.4 cfs	2.94 cfs	2.7 cfs
Embeddedness	44.0	45.2	22.5	44.0	37.7	49.3
Ungulate Damage	35.0	4.1	0.0	19.4	0.2	2.6
Spawning Gravel	41.0	39.8	27.8	37.8	19.9	22.9

The recent 2011 stream survey of Washburn Creek shows that the parameters which may be limiting the stream appears to be pool measure (pool/riffle ratios) and pool structure (quality pools). The lack of pools and quality pools may not be representative of the entire system, as numerous quality pools were observed by NDOW outside of surveyed transects. Overall, habitat conditions have declined slightly since the 2005 survey. The later season of surveying may have affected the overall HCI for this stream.

Cold Springs Creek (LCT unoccupied)

Cold Springs Creek originates from the west slope of the Trout Creek Mountains, at an elevation of approximately 7,960 feet, in Humboldt County, Nevada. The stream is approximately 3.1 miles in length, and flows into the Kings River near an elevation of 5,430 feet. There are two major tributaries to Cold Springs Creek (Tributary 368 and Tributary 516), that have their confluences with Cold Springs Creek near elevations of 5,980 feet and 6,170 feet respectively. The Cold Springs Creek flows entirely on BLM lands. Stream survey data collected by NDOW indicate conditions for salmonids based on the General Aquatic Wildlife Survey indices, are shown below.

Table 14. NDOW Stream Survey results on Cold Springs Creek.

Parameter	August 1989	June 1994	June 1998	June 2003	July 2008
Pool Measure	67.3	55.1	62.4	70.3	59.5
Pool Structure	28.4	25.5	67.1	10.7	17.1
Stream Bottom	72.1	68.3	74.4	69.9	92.4
Bank Cover	57.0	64.3	66.5	74.1	95.0
Bank Soil Stability	68.5	69.6	72.3	79.1	75.0
Bank Vegetation Stability	69.0	70.6	88.2	83.4	78.1
Habitat Condition Index (HCI)	62.8	60.8	71.8	71.8	69.5
Discharge	0.62 cfs	0.95 cfs	4.8 cfs	1.59 cfs	2.4 cfs
Embeddedness	42.4	34.0	44.0	19.0	42.5
Ungulate Damage	40.5	0.0	0.0	5.6	23.8
Spawning Gravel	60.6	51.0	53.0	51.6	60.3

The recent 2008 stream survey of Cold Springs Creek shows that the parameter which may be limiting the stream appears to be pool structure (quality pools). NDOW finds that streams or stream reaches with HCI ratings of greater than 50.0 percent are considered good habitats for trout. Overall, Cold Springs Creek has remained stable since the 2003 survey.

Kings River (LCT unoccupied)

Kings River originates from the west slope of the Trout Creek Mountains, near an elevation of approximately 8,340 feet, in Humboldt County, Nevada. From the headwaters, the river flows in a northwest direction and crosses into Harney County, Oregon. The river then makes a loop to the southwest and crosses back into Nevada. From that point, the river travels in a southerly direction and terminates into the Quinn River Lakes and then to the Quinn River. Once the river leaves the canyon mouth and enters the Kings River Valley, all or most of the surface flow is used for irrigation purposes. The Kings River is the largest drainage system in the Trout Creek Mountains and is approximately 41 miles in length. The main stem flows through approximately 24 miles of BLM land, and approximately 16 miles of private land. Tributaries to Kings River include: House Creek, Rodeo Creek, Log Cabin Creek, Tributary 788, Tributary 819, Little Creek, Tributary 847, Cold Springs Creek, and Coffee Creek. Stream survey data collected by NDOW indicate conditions for salmonids based on the General Aquatic Wildlife Survey indices, are shown below.

Table 15. NDOW Stream Survey results on Kings River.

Parameter	August 1989	June 1994	June 1998	June 2003	July 2008
Pool Measure	65.4	57.2	56.5	54.9	65.8
Pool Structure	44.2	55.3	61.6	31.5	45.7
Stream Bottom	66.5	64.2	74.4	69.6	81.4
Bank Cover	61.4	52.5	58.5	65.8	81.6
Bank Soil Stability	57.2	62.6	69.7	68.9	64.9
Bank Vegetation Stability	56.6	62.0	74.5	63.3	67.1
Habitat Condition Index (HCI)	60.4	55.6	65.9	59.0	67.7
Discharge	0.82 cfs	3.48 cfs	17.8 cfs	14.6 cfs	5.9 cfs
Embeddedness	35.4	33.3	38.5	24.2	42.8
Ungulate Damage	37.0	9.8	0.0	8.8	33.8
Spawning Gravel	39.6	39.7	40.0	35.9	23.9

The recent 2008 stream survey of Kings River shows that the parameter which may be limiting the stream appears to be pool structure (quality pools). NDOW finds that streams or stream reaches with HCI ratings of greater than 50.0 percent are considered good habitats for trout. Overall, habitat conditions for Kings River have improved since the 2003 survey.

Rock Creek (LCT unoccupied)

Rock Creek originates from a large plateau located in the Montana Mountains at an elevation near 6,640 feet, in Humboldt County, Nevada. The stream travels southwesterly and terminates into Crowley Creek at an elevation near 4,510 feet. Rock Creek is considered a third order stream that is approximately 11.5 miles in length. Rock Creek flows exclusively on BLM land. Stream survey data collected by NDOW indicate conditions for salmonids based on the General Aquatic Wildlife Survey indices, are shown below.

Table 16. NDOW Stream Survey results on Rock Creek.

Parameter	July 1995	June 2000
Pool Measure	19.1	5.8
Pool Structure	10.5	4.0
Stream Bottom	68.4	65.0
Bank Cover	46.4	72.8
Bank Soil Stability	54.7	70.2
Bank Vegetation Stability	57.5	72.8
Habitat Condition Index (HCI)	42.8	40.8
Discharge	0.74 cfs	1.29 cfs
Embeddedness	n/a	30.1
Ungulate Damage	0.0	30.7
Spawning Gravel	n/a	25.5

The recent 2000 stream survey of Rock Creek shows that the parameters which may be limiting the stream appears to be pool measure (pool/riffle ratios) and pool structure

(quality pools). NDOW finds that streams or stream reaches with HCI ratings of 50.0 percent or less are considered poor habitats for trout. Overall, Rock Creek has remained stable since the 1995 survey.

3.1.10 Fire and Fuels Management

The majority of the Planning Area and all proposed actions of this project are located within the Montana Mountains Fire Management Unit (FMU), (NV-020-16). Wildfire Management priorities for this FMU are:

- Protect adjacent functioning ecosystems (sagebrush habitat), designated critical habitat, habitats for federally listed, BLM sensitive, state listed, and/or federal candidate species.
- Limit cheatgrass expansion.
- Restore degraded ecosystems.
- Desired Future Condition communities will exhibit or be progressing toward a diverse, productive, and healthy population of native or desirable plant species and functioning disturbance processes appropriate for site characteristics.

Montana Mountains Fire Regime Condition Class (FRCC)

A natural fire regime is a general classification of the role fire would play across a landscape in absence of modern human mechanical intervention. Fire regimes are classified based on the average number of years between fires (fire frequency) combined with severity (amount of replacement) of the fire on dominant vegetation.

Table 17. FRCC Description

Fire Regime Number	Frequency (years)	Severity
I	0-35	Low & Mixed
II	0-35	Replacement
III	35-100	Mixed
IV	35-100	Replacement
V	200+	Replacement

A fire regime conditions class (FRCC) is a classification of the amount of departure from the natural regime (Hann and Bunnell 2001). This classification is based on a relative measure describing the degree of departure for the natural (historical) fire regimes. FRCC condition class 3 is a high departure from the central tendency of the natural regime, primarily due to the effects from wildfire, whereas a condition class 1 is a low degree of departure from the natural regime.

Data extracted from the LANDFIRE website shows the following FRCC types and acreages for the planning area:

Table 18. Planning Area FRCC

Fire Regime	Acres	Percent of Planning Area
I	1,056	0.3%
II	68,513	19.8%
III	122,995	35.6%

Fire Regime	Acres	Percent of Planning Area
IV	114,837	33.2%
V	38,484	11.1%
Condition Class		
1	142	0.0%
2	264,504	76.5%
3	7,474	2.2%
Other*	73,828	21.4%

*Other includes Non-Classified lands, Agriculture lands, and Barren or Developed lands.

The majority of the planning area is within Fire Regime III and IV, and Condition Class 2. This data shows that the majority of the area is somewhat departed from the natural regime, but not to the extent of being a Condition Class 3. The Fire Regimes associated with the area (FR III, and FR IV) show that there is a moderate to high probability in the event of a wildfire; it would be a stand replacement fire. Frequency intervals and severity should increase overtime and would be influence by areas dominated by cheatgrass. Cheatgrass invasion alters fire frequency from historic regime intervals to shorter cycles of 5 years or less. Historic fires have converted areas within the FMUs to cheatgrass dominated sites.

BLM data shows that approximately 25 fires have occurred within the Planning Area within the last 25 years (see Map 4: Fire History) Approximately 91,935 acres have burned (roughly 26% of the total planning area acreage) with an average fire size of 3,677 acres per fire within the assessment area boundary. The largest fire was 58,263 acres, on the eastern edge of the Montana's and it occurred in 1985. The majority of large fires within this area have occurred on the southeastern and eastern edges of the Planning area between 1984 and 1997. Very few of these fires were rehabilitated during this time.

In the past 10 years a number of wildfires have occurred in lower elevation areas within the Quinn River and Kings River Valleys adjacent to and in the Montana Mountains (See fire history map). Based on climate changes, fuels buildup and drought conditions the risk for a large catastrophic fire occurring within the range is high. Few fires have occurred in the upper elevations and the potential of fire "wicking" up drainages from the lower to upper elevations has increased. The Montana Mountains are located in a relatively remote area of the state. In the event of a wildfire, response time by suppression resources is increased allowing fire to spread.

A number of past fires have been subjected to a variety of stabilization and rehabilitation treatments with mixed results (see Table 2. Emergency Stabilization and Rehabilitation Fires). These ES&R efforts have re-vegetated and stabilized burned areas. The majority of burned areas within the planning area are in a Fire Regime I, Condition Class 3.

Table 19. Ten Year - Emergency Stabilization and Rehabilitation Fire Acres

Year	Fire Name	Fire Acreage in Planning Area	Acres Rehabilitated
2010	Horse Creek	270	210*
2006	Moonlight	765	761*
2006	Covert	2,146	1,738
2006	Horse Creek**	1,523	1,540
2004	China Creek	95	N/A
2004	Sentinel Point	80	80
2001	Line Canyon	21	N/A
2001	Lucky Strike	38	N/A
2001	Jordan Meadows	347	N/A
2001	Horse Canyon	24	N/A
2001	Sentinel Peak	20	N/A

*Sagebrush Planted in Seed Mix

The BLM has implemented a number of fuelbreaks within the Montana Mountains utilizing the herbicide Tebuthiuron. Tebuthiuron targets brush species with minimal effects to understory grasses and forbs. Strategic placement of Tebuthiuron adjacent to roads and corridors has killed sagebrush in areas thereby creating fuelbreaks. Approximately 771 acres have been treated to date within the Planning Area.

3.1.11 Geology and Minerals

The description of the geology of the project area is based primarily on Willden (1964), Stewart and Carlson (1978), and Stewart (1980). The oldest exposed bedrock in the range is granodiorite and related intrusive rocks, which occur in the northwestern part of the range. Their composition varies considerably, mostly in the amount of included dark minerals. It is uncertain whether this variation exists within a single intrusive body or whether several bodies of different composition are present. The rest of the range is primarily composed of a varying suite of volcanic rocks. Immediately overlying the plutonic rocks is a dacite welded tuff, followed by mixed extrusive units. Near the top of this sequence, the andesite of Orevada View has been dated at approximately 23 Million Years Before Present (mybp) (Greene, 1976). Based on lithology it is thought to be related to the Steens volcanic series. The eruption of the McDermitt caldera complex followed at around 16 mybp and added more rhyolitic to dacitic flows and welded tuffs to the range. At least one caldera in the complex, the Long Ridge Caldera, developed a fresh-water moat, as evidenced by local water-lain sedimentary units high in the geologic sequence. Structures related to the caldera development, re-activated by basin-and-range tectonics, greatly influenced the development of the present topography.

Most mineral resources in the Montana Mountains appear to be associated with the McDermitt Caldera complex and related structures. The caldera rocks are generally anomalously high in several elements, most notably uranium, mercury, antimony, and lithium.

In the northwestern Montana Mountains there are some gold-bearing vein systems, none of which has proven economic to this point. Associated placer deposits have been worked from the late-1800's to mid-1900's, apparently with limited success. The vein deposits appear to be related to the intrusive rocks, but it's not clear what, if any, part that subsequent volcanic episodes had in the development of the gold mineralization.

The historic Cordero mine and recent McDermitt Mine, located adjacent to each other in the northeastern portion of the range, were important mercury mines. Production of mercury is recorded as beginning in 1935 and continued sporadically until the 1990s, when the McDermitt Mine was closed and reclaimed.

Low-grade uranium showings along the west front of the range south of Horse Creek also exist. At the Moonlight Mine uranium occurs in vein structures, at presently sub-economic amounts and grades. Exploration is ongoing along the west flank of the range to determine if mining of uranium may be feasible.

Across much of the project area lithium mineralization consisting of layered beds of lithium-bearing, clay-rich volcaniclastic sedimentary rocks is present. One location in the north-central project area has been developed for use in the clay form, as a special-use clay. There is a project, presently focused at the south end of the project area, where the operator hopes to develop these clays as a source of lithium carbonate, which is the marketing product for most applications of lithium metal. The Kings Valley Lithium Exploration Project is located on the north side of Thacker Pass. At the present time, five areas of significant lithium mineralization have been identified: the North Lens, North Central Lens, South Lens, South Central Lens, and PCD Lens. In each of these areas, hectorite (the primary lithium bearing clay mineral), occurs in thick, apparently continuous accumulations in the sedimentary rocks. The thickness of mineralization varies from less than three feet to more than 295 feet. Previous exploration suggests that the deposit averages 2,300 parts per million (ppm) lithium (Eggleston 2008). The operator on this project is presently engaged in mineral exploration.

3.1.12 Lands and Realty

There are approximately forty five rights-of-ways situated within the planning area. Of these, six are located near or could be affected by the proposed plan and alternatives (see Table 3). These six rights-of-ways include transmission lines, telephone lines and roads. In addition, acquisition of two 60 foot wide easements are proposed through private land along the existing Jordan Crowley Road. The first easement is located at: T. 46N., R.36E., section 30. This easement would be approximately 1,250 feet in length. The second easement would be located at; T. 45 N., R.36 E., sections 20 and 29. This easement would be approximately 6,980 feet in length.

Table 20. ROW-In Proximity to Proposed Treatments

ROW Name	Legal Description	ROW Number	ROW Type
Oregon-Idaho Utilities Inc. Harney Electric Coop.	T.44N., R.34E., secs. 3, 9-10, 12-13, 15,18 T.44N., R.35E., secs. 7-8, 13-18 T.44N., R.36E., secs. 14-20, 29, 32 T.44N., R.37E., secs. 1-2, 4-7, 9-11, 14-18, 20-21, 23, 25-28 T.45N., R.37E., secs. 2, 10-12, 14-16, 21-29, 31-32, 35-36 T.46N., R.34E secs. 31-32	N-60463 Nev-058382	FiberOptic (underground) Telephone & Telegraph Transmission Line
Harney Electric Coop.	T.45N., R.34E., secs. 5-6, 8, 20-21, 28-29, 34 T.45N., R.36E., secs. 36	Nev-05382	Transmission Line
Harney Electric Coop. Oregon-Idaho Utilities Inc. Humboldt County	T.46N., R.33E., secs. 23-24, 28, 33, 36	Nev-058382 N-60463 N-55323	Transmission line FiberOptic (underground) Telephone & Telegraph Road
Cordero Mining Company Harney Electric Coop.	T.46N., R.37E., secs. 11-12, 14, 22-23, 27-28, 33-34	Nev-050645 Nev-058382	Telephone Transmission Line
Harney Electric Coop.	T.47N., R.37E., secs. 11, 13-16, 23, 25-27, 36	Nev-058382 N-10522 N-003740	Transmission Line Transmission Line Transmission Line

3.1.13 Lands with Wilderness Characteristics

Wilderness Characteristics Inventories for the proposed treatment areas were reviewed. Historical inventories had determined that the areas did not possess wilderness characteristics. Current reviews concurred that the areas do not meet the criteria for Lands With Wilderness Characteristics due to wide-spread surface disturbance from a variety of human activities including roads, a dense network of two-tracks, extensive OHV use, rockhounding, and mineral exploration activities. The determination was made utilizing satellite imagery, GIS data, and field verification.

3.1.14 Public Health and Safety

BLM approved herbicides were evaluated in the 2007 Final Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States, EIS. The evaluation included effects to human health and safety. Two herbicides analyzed and proposed for use in the Plan are Imazapic and Tebuthiuron.

Imazapic (Plateau or Panoramic) is a U.S. Environmental Protection Agency approved herbicide and is approved by BLM for use on public lands. The Vegetation Treatments EIS identified two possible receptors to exposure to herbicides; occupational and public receptors. Occupational receptors include workers who mix, load, and apply herbicides. Public receptors would include the public likely to come into contact with herbicides such as ranchers, hunters, and other public land users. According to the Material Safety and Data Sheets, Plateau does not cause cancer, is unlikely to cause birth defects, and did not interfere with reproduction based on laboratory animal studies.

Tebuthiuron or commonly known as "Spike" is a U.S. Environmental Protection Agency approved herbicide and is approved by BLM for use on public lands. According to the Material Safety and Data Sheet (MSDS – Product Code 34442), Tebuthiuron does not cause cancer, is unlikely to cause birth defects, and did not interfere with reproduction based on laboratory animal studies.

3.1.15 Rangeland Management

There are portions of nine livestock grazing allotments within the Humboldt River Field Office where vegetation treatment projects are proposed. These allotments are; Cordero, Crowley Creek, Flat Creek, Horse Creek, Jordan Meadows, Kings River, Little Horse Creek, Pole Creek and Washburn. Projects are also proposed in the Zimmerman allotment which is administered by the Vale Oregon District. The proposed treatments would results in approximately 10,511 acres of new disturbance in these allotments. The following table lists the public and private acres within the project area by allotment.

Table 21. Allotment Acres

ALLOTMENT	PUBLIC AC.	PRIVATE AC.	TOTAL AC
Cordero	5,374	998	6,372
Crowley Creek	49,983	479	50,462
Flat Creek	24,378	7,369	31,747
Horse Creek	39,165	701	39,866
Jordan Meadows	106,494	2,792	109,286
Kings River	144,211	6,965	151,176
Little Horse Creek	3,843	0	3,843
Pole Creek	34,348	154	34,502
Washburn	31,458	1,778	33,236
Zimmerman	30,977	1,018	31,995
Totals	470,231	22,254	492,485

Grazing management is authorized on these allotments consistent with the terms and conditions of the respective allotment specific grazing permits. Livestock grazing is authorized within the allotments as follows:

Table 22. Allotment Seasons of Use, Class of Livestock, and AUMs

ALLOTMENT	LIVESTOCK KIND	SEASON OF USE	AUM'S
Cordero	Horses	04/01-10/31	190
Crowley Creek	Cattle	04/01-12/16	3,300
Flat Creek	Cattle	04/01-01/31	3,170
Horse Creek	Cattle Horses	04/15-09/30 04/15-09/14	4,346 101
Jordan Meadows	Cattle	11/01-09/30	16,868
Kings River	Cattle	03/15-11/30	12,192
Little Horse Creek	Cattle Horses	04/01-09/30 04/01-09/30	404 120
Pole Creek	Cattle	04/01-10/31	2,987
Washburn	Cattle Horses	01/01/-08/31 03/20-08/31	1,431 33

ALLOTMENT	LIVESTOCK KIND	SEASON OF USE	AUM'S
Zimmerman	Cattle Horses	04/15-09/30,11/01-11/30 04/01-10/31	7300 42

*An Animal Unit Month (AUM) is the amount of forage needed to sustain one cow, five sheep, or one horse for a month (BLM WFO 2002).

Livestock grazing operations in the project area have been impacted by wildfires and the subsequent recovery and rehabilitation efforts. In most cases wildfires have required temporarily closing the burned portions of the allotments to livestock grazing. Wildfires have also resulted in the loss of native perennial forage, followed by an increase of cheatgrass and other non-native annual species.

3.1.16 Recreation

While no concrete data exist on recreational visits to the project area, evidence of seasonal visitation supports the notion that the project area is among the most popular areas for dispersed recreation within the District. Primary recreational activities that occur in the proposed project area are sightseeing, bird and wildlife viewing, hunting, off-road vehicle use, and hiking/walking. Vehicle use includes back country touring and exploration on the numerous primitive roads/trails found in the area. Hunting seasons in the area run from early August (antelope season) thru the end of the year. Rifle deer season, chukar, and sage-grouse seasons all usually begin in early October. Consequently, heaviest hunting usage occurs from early October until snowfall.

3.1.17 Soils

Soils information is extracted from the Soil Survey of Humboldt County Nevada, East Part, 2002, refer to maps: soil, water and wind erosion hazard potential, and percent of slope.

The cheatgrass displacement areas identified for treatment in the planning area are primarily in Loamy or Sandy 8- 10 precipitation zone (PZ) Ecological Sites. These areas have shown substantial soil loss from wind erosion following these cheatgrass displacement events. Wind drifted soil has accumulated along fence lines or other raised surface features. The substantial amount of topsoil in these areas appears to have moved off-site. These current conditions restrict native vegetation seed from germinating and successfully establishing in these areas due to the excessive surface soil movement and subsequent soil loss.

Some existing roadbeds and drainage structures within the planning area have contributed to soil loss. Some wet meadow and spring apron areas have been negatively impacted due to improperly placed and/or under-sized culverts.

3.1.18 Special Status Species

Both Threatened and Endangered Species (addressed in 3.2.4) and BLM designated Sensitive Species (addressed below) are considered Special Status Species. BLM policy

is to provide these species with the same level of protection as provided for candidate species in BLM Manual 6840.06C, that is to "ensure that actions authorized, funded, or carried out do not contribute to the need for the species to become listed".

The following BLM Nevada designated sensitive species are discussed, because they have been observed in the proposed project area or habitat characteristics indicate they may be present on the project area.

Several databases were consulted for the presence of endangered, threatened, candidate, and BLM designated sensitive species including: the Nevada Natural Heritage Program (NNHP) database (2011), the Nevada Department of Wildlife (NDOW) Diversity database (2011), NDOW Bighorn Habitat GIS layer (2011), NDOW Raptor Nest Sites GIS layer (2011), NDOW Sage Grouse Habitat and Sage Grouse Leks GIS layers (2011), and the Great Basin Bird Observatory (GBBO) Final Atlas Data Distribution database (2011).

The following Special Status species had one or more documented occurrences in the project planning area: big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*), long-legged myotis (*Myotis volans*), burrowing owl (*Athene cunicularia hypugaea*), bighorn sheep (*Ovis canadensis*), lonesome milkvetch (*Astragalus solitarius*), pygmy rabbit (*Brachylagus idahoensis*), golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), northern goshawk (*Accipiter gentilis*), Swainson's hawk (*Buteo swainsoni*), Brewer's sparrow *(Spizella breweri*), Lewis's woodpecker (*Melanerpes lewis*), loggerhead shrike (*Lanius ludovicianus*), sage thrasher (*Oreoscoptes montanus*), and greater sage-grouse (*Centrocercus urophasianus*).

Bats

Several species of bats may occur in the planning area. Most bats in Nevada are year-round residents. In general terms, bats eat insects and arthropods during the warmer seasons and hibernate in underground structures during the cooler seasons. Bats commonly roost in caves, mines, outcrops, buildings, trees, and under bridges. Bats thrive where plant communities are healthy enough to support a large population of prey (Bradley et al. 2006). Healthy riparian communities with high water tables and tall vegetation support large flying insect populations, which provide favorable foraging habitat for bats.

Big brown bat, hoary bat, and long-legged myotis occurrences were documented in the northern part of the planning area on the Nevada side (NDOW Diversity database 2011). Big brown bats inhabit various wooded and semi-open habitats and use caves, mines, and buildings for hibernation. Hoary bats prefer woodlands and both roost and hibernate in trees and occasionally rock crevices. The long-legged myotis can be found in montane forest, riparian, and desert habitats, and typically hibernates in mines and caves.

Bighorn sheep

Approximately 70,000 acres of occupied year-round bighorn sheep habitat is present in the planning area (NDOW Bighorn Habitat GIS layer 2011). An additional 11,000 acres

is categorized as potential bighorn habitat. Bighorn sheep typically reside in mountainous habitat areas. Topography is the primary source of cover for bighorns, and steep broken escarpments (60% plus slope) or rock outcrops at least five acres in size with accessible terraces is optimum. Grasses have high importance in bighorn sheep diets, but forbs and shrubs are also important. Desirable bighorn habitat consists of sagebrush/bunchgrass communities, wet meadows, and riparian areas adjacent to rock outcrops and rimrock.

Burrowing Owl

Burrowing owls were documented in the planning area, with several occurrences near the proposed fuelbreak on the west side of the planning area (NDOW Diversity database 2011, and GBBO Final Atlas Data Distribution database 2011). Burrowing owls prefer open, arid, treeless landscapes with low vegetation. Burrowing mammal populations provide nesting habitat and owls choose nesting areas based on burrow availability (Floyd et al. 2007). Burrowing owls are highly adaptable and readily nest in open disturbed areas such as golf-courses, runways, and industrial areas that border suitable habitat (Neel, 1999). Dense stands of grasses and forbs within owl home ranges support populations of rodent and insect prey

Lonesome Milkvetch

Lonesome milkvetch is a perennial herb that occurs in washes and banks of shallow soils on volcanic flat-rock with *Artemisia arbuscula, Atremisia tridentata, Tetradymia glabrata, Poa sandbergii, Atriplex confertifolia, and Chrysothamnus nauseosus.* Growth occurs from a buried root crown and flowering typically occurs in late-spring. The population trend of this species is currently unknown. Surveys for this plant have not been conducted since 1983, but the plant is presumed extant (Morefield 2001). Only three occurrences of this species have been mapped by NNHP (NNHP database 2011) and all occur within the planning area.

Migratory Birds

Lewis's woodpecker inhabits open woodlands in Northern Nevada, and is most often found in riparian woodlands. Habitat requirements include abundant flying insects, open space for foraging, and dead tree cavities for nesting (Floyd et al. 2007). Two sightings of Lewis's woodpecker are documented for the planning area, however, no treatments are planned in woodland areas (NDOW Diversity database 2011).

Loggerhead shrikes tend to favor arid open country with just a few perches or lookouts. Nesting occurs in isolated trees and large shrubs. Loggerhead shrikes forage mainly on small vertebrates and insects, and benefit from habitat with a diverse structure and species composition. Healthy sagebrush communities provide ideal habitat for these birds. Several observations of this bird are documented in the planning area (NDOW Diversity database 2011, and GBBO Final Atlas Data Distribution database 2011).

The sage thrasher is considered a sagebrush obligate. Habitat requirements include large expanses of tall, dense, intact sagebrush. Typically associated with big sagebrush, but may sometimes occur in shrublands dominated by greasewood or bitterbrush (Floyd et al.

2007). The planning area has multiple documented occurrences of this bird (NDOW Diversity database 2011, and GBBO Final Atlas Data Distribution database 2011).

Brewer's sparrow is also considered a sagebrush obligate, but may use other shrubland habitat types such as salt desert scrub. Brewer's sparrow is described by Floyd et al. (2007) as one of the most common birds found in northern Nevada shrublands, however, populations may be declining due to loss and degradation of sagebrush habitat. The NDOW Diversity database (2011) and the GBBO Final Atlas Data Distribution database (2011) show a combined nineteen documented occurrences for this bird in the planning area.

Pygmy Rabbit

In the Great Basin, the pygmy rabbit is typically restricted to sagebrush-grass communities located on deep loamy soils, however, they may also occur in areas of large dense rabbitbrush and greasewood. Preferred locations for burrows include broad valley floors, drainage bottoms, alluvial fans, and other areas with friable soils. A dietary study of pygmy rabbits showed dependence on sagebrush year round. Sagebrush made up about 51% of the diet in summer and 99% in the winter. Grasses and forbs were also consumed in the summer (Green and Flinders, 1980).

The NNHP database (2011) shows 4 known populations of pygmy rabbits in the planning area and the NDOW Diversity database (2011) lists an additional 2 populations. Complete surveys of the planning area have not been conducted, so additional populations of pygmy rabbit are likely present. The large expanses of preferred pygmy rabbit habitat (dense, intact stands of sagebrush on friable soils) and the presence of multiple populations within the planning area make this a priority area for protection of existing sagebrush habitat to benefit pygmy rabbits.

Raptors (Golden eagle, Ferruginous hawk, Northern goshawk, Swainsons hawk)

Golden eagles are primarily cliff nesters and would utilize the treatment area to forage for prey species such as jackrabbits and other small mammals. Golden eagles are protected under the Bald and Golden Eagle Protection Act. Nevada's golden eagle population is thought to be stable to increasing. They are widespread and frequently encountered (Floyd et al. 2007). One nest is documented in the planning area (NDOW Raptor Nest Sites GIS layer 2011) and 16 sightings are documented throughout the planning area (NDOW Diversity database 2011, and GBBO Final Atlas Data Distribution database 2011).

Swainson's hawks typically nest in large deciduous trees adjacent to open country, especially farmland. Agricultural and sagebrush habitats are used for foraging on a wide variety of insects, small mammals, birds and reptiles. Swainson's hawk populations have been declining in the west since the early part of the century. Much of this decline is attributed to pesticide induced winter mortality in South America (Paige and Ritter 1999, Floyd et al. 2007). Two observations of Swainson's hawk in the planning area have been reported (NDOW Diversity database 2011).

The northern goshawk is a forest hawk inhabiting coniferous and aspen forests, with a preference for taller, mature stands with significant canopy closure. One sighting has been reported in the planning area at the northernmost boundary on the Oregon side (NDOW Diversity database 2011).

Ferruginous hawks are typically found in areas of sagebrush with scattered trees present in the landscape. This bird requires open country for foraging and will inhabit grasslands and shrublands while avoiding forests and steep terrain. Most likely to occur in sagebrush shrublands, but may also be found in salt desert scrub and sagebrush steppe (Floyd et al. 2007). One nest is documented as occurring in the planning area (NDOW Raptor Nest Sites GIS layer 2011).

Greater sage-grouse

The sage-grouse is a sagebrush obligate species and requires sagebrush with significant bunchgrass and forb components for survival. Sage-grouse may eat a variety of grasses, forbs and insects during the breeding season. However, they feed almost entirely on sagebrush during the winter months, selecting sagebrush with high protein levels (Paige and Ritter, 1999). Sage-grouse breed on lek sites and generally utilize the same leks in subsequent years. Leks are located in open areas (0.2 to 12 acres in size) surrounded by big sagebrush. A taller shrub component is important to provide escape cover and protection from predators. Leks are the center of year-round activity for resident sage-grouse populations and a majority of nests will be found in sagebrush habitat within 4 miles of a lek. Late brood rearing occurs in the summer and requires a sagebrush/perennial grass habitat intermingled with areas of wet meadow, riparian, or irrigated agricultural fields. Sage-grouse broods increasingly use mesic wet meadows where forbs, grasses, and insects are still available as sagebrush/perennial grass uplands mature and dry. Wet meadows and riparian areas become increasingly important during dry years and extended drought periods, and sage-grouse will move into these areas in early summer during dry conditions. Wet areas in Nevada are more critical for sage-grouse survival than in other states because Nevada uplands typically receive less annual precipitation. (NDOW 2010)

The planning area is part of the Lone Willow sage-grouse population management unit (PMU) and includes 237,000 acres of sage-grouse winter habitat, 215,000 acres of nesting habitat, and 128,000 acres of summer habitat (NDOW Sage Grouse Habitat GIS layer 2011). Sixty-four leks are documented as occurring within the planning area, with 32 of these currently classified as “active” (NDOW Sage Grouse Leks GIS layer 2011). For the last year surveyed on these 32 active leks (between 2008-2010) approximately 213 birds were observed. The planning area currently is made up of the following ranked habitat types (See Map 3: R-Value):

Table 23. R-Value Descriptions

R-Value	Description	Acres in the Planning Area
R-0	Key habitat, sagebrush communities with good canopy and cover and desired understory of grasses and forbs	96,818

R-Value	Description	Acres in the Planning Area
R-1	Areas with potential to produce sagebrush plant communities with desired understory of grasses and forbs, but lack sufficient sagebrush canopy	11,424
R-2	Areas of existing sagebrush plant communities with insufficient desired understory grasses and forbs	102,289
R-3	Areas with potential to produce sagebrush plant communities, but which are in various stages of Pinion/Juniper encroachment	13,412
R-4	Areas with potential to produce sagebrush plant communities, but have been converted to annual grasslands, annual forbs, or barren ground	11,820
X-3	Areas that are historic wooded areas that do not require conversion to sagebrush habitat types	0

The R-0 habitat is the highest quality habitat for sage-grouse and makes up close to a third of the planning area. R-1 and R-2 habitat also has good potential to become high quality sage-grouse habitat and makes up almost another third of the planning area. The number of active leks, the existing sage-grouse population, and the presence of large expanses of intact, dense big sagebrush and riparian areas make the planning area a high-priority for protection of existing sagebrush habitat and restoration of both upland and riparian areas.

Yellow-billed Cuckoo

Yellow-billed cuckoos are typically found in high-quality riparian habitats including mature willow, mesquite, tamarisk, hackberry, and other woody vegetation. Breeding territories are chosen based on habitat patch size, plant species composition, vegetation density, canopy cover, and distance to water (Floyd et al. 2007). This bird is considered uncommon in Nevada, and no occurrences have been documented in the planning area on the Nevada or Oregon side.

3.1.19 Vegetation

Vegetation compositions within the upper elevations of the planning area are primarily of a Wyoming big sagebrush and low sagebrush-bunchgrass mixture. The dominant ecological sites include the Claypan 14-16” (Idaho fescue, bluebunch wheatgrass, and low sagebrush), Clay Slope 8-12” (Bluebunch wheatgrass, Thurber’s needlegrass and Lahontan sagebrush), Loamy Slope 10-14” (Bluebunch wheatgrass and Wyoming big sagebrush), and Granitic South Slope 12-14” (Bluebunch wheatgrass, Thurber’s needlegrass, mountain big sagebrush, and bitterbrush). The majority of these sites are dominated by native bunchgrasses with a moderate percentage of shrubs and a small percentage of forbs. The majority of the upper areas have very little cheatgrass encroachment, existing mainly along travel corridors and within lower elevation locations impacted by wildfire activity

Vegetation compositions within the middle elevations of the planning area generally consist of a Wyoming big sagebrush and bunchgrass mixture. The dominant ecological sites include the Loamy 10-12" (big sagebrush, bluebunch wheatgrass, and Thurber's needlegrass), Loamy 8-10" (Thurber's needlegrass, Wyoming big sagebrush), and the Droughty Loam 8-10" (Thurber's needlegrass and Wyoming big sagebrush). The majority of these sites should be a dynamic balance of native perennial bunchgrasses and Wyoming big sagebrush dominance by percent cover. However, this natural stand dynamic has been altered in favor of shrubs due to the lack of natural disturbance and past grazing pressures. There are several crested wheatgrass seedings within the middle elevation areas. Big sagebrush and native forbs have moved back into these areas slowly over time. The native perennial bunchgrass component has been replaced by crested wheatgrass seedings in some of these areas. There tends to be greater cheatgrass displacement of native perennial understory of some of these areas as they are more accessible to both human and animal disturbance than upper elevations areas. Also many of these vegetation communities interface with lower elevation areas that have been negatively impacted by past wildfire activity.

The lower elevation vegetation types within the planning area generally are described as black greasewood, Wyoming big sagebrush, shadscale, and bunchgrass communities. Ecological sites include Saline Bottom (basin wildrye, greasewood), Sandy 8-10" (big sagebrush, Indian ricegrass, and needle and thread), Sodic Terrace 8-10" (greasewood, big sagebrush, basin wildrye), Saline Floodplain (silver buffaloberry, basin big sagebrush, and basin wildrye), and the Sodic Bottom (silver buffaloberry, greasewood, and basin wildrye). The majority of these sites are typically dominated by shrub species with a sub-dominant native perennial bunchgrass understory. The current state of vegetation communities, at lower elevations within the planning area, has been greatly altered due to impacts from wildfires, subsequent drought cycles and grazing pressures. Cheatgrass, tumble mustard, and Russian thistle have moved into and in many cases dominated much of these lower elevation sites.

3.1.20 Visual Resource Management

Visual resource management (VRM) is a process to manage the quality of the landscape and minimize potential impacts to the visual setting resulting from development activities. The BLM has defined management classes to identify permissible levels of landscape alteration while protecting the overall visual quality of an area. VRM classes are assigned to public land units through the use of visual resource inventory during the BLM's land use process. A visual resource inventory was conducted for the Winnemucca District in the summer of 2009. The Montana Mountains Planning Area consists of two VRM management classes. The Disaster Peak Wilderness Study Area is located within the Plan boundary and has a Class I designation. The objective for class I is to preserve the existing character of the landscape. The level of change should be characteristic to the landscape and must not attract attention. There are no proposed actions within this area.

The balance of the project area is located within visual resource management class IV. The objective of a Class IV designation is to provide for management activities that require major modifications of the existing character of the landscape. Management activities may dominate the view or be the major focus of the viewers' attention. The level of change to characteristic landscape could be high; however every attempt should be made to minimize the impact of these activities. Overall the existing landscape within the Montana Mountains has been altered due to wildfires, installation of range improvements (fences and seedings), and construction of fuelbreaks, roads, and mineral exploration. However, areas within the upper elevations of the range retain many characteristics of the natural landscape. The 'wide open' vistas in the project area contrasts sharply with the typical Nevada view shed of mountains and valleys.

3.1.21 Wilderness Study Areas

One Wilderness Study Area (WSA) exists within the project area: Disaster Peak WSA (NV-020-859). Section 603 (c) of Federal Land Policy and Management Act (FLPMA) directs how the BLM is to manage "lands under wilderness review," which includes WSAs. These lands are to be managed in a manner so as not to impair the suitability of such areas for preservation as wilderness, subject to the Wilderness Interim Management Plan. Consequently, actions proposed within WSAs are to be evaluated on the basis of their possible direct and indirect impacts on wilderness values of naturalness, solitude and primitive or unconfined recreation, and special features. All proposed actions fall outside these WSA boundaries.

3.1.22 Wildlife

A wide variety of wildlife species common to the Great Basin ecosystem/Big sagebrush community type can be found adjacent to or within the treatment areas. Approximately 100 bird species and 70 mammal species can be found in habitats similar to the project area and within adjacent sagebrush sites. Common large mammal species would include mule deer (*Odocoileus hemionus*) and pronghorn antelope (*Antilocapra emericana*). Other common wildlife species include black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), and badger (*Taxidea taxus*). Various small mammals, amphibians, and reptiles are also associated with the project area.

Mule Deer

Mule deer are classified as browsers, with shrubs and forbs making up the bulk of their annual diet. Approximately 246,000 acres of the planning area are classified as year-round mule deer habitat, 42,000 acres are classified as summer range habitat, and 21,000 acres are classified as crucial winter habitat (NDOW Mule Deer Habitat GIS layer 2011).

Pronghorn Antelope

Pronghorn antelope use open country with few trees and short shrubs. Wet meadows associated with springs provide succulent green forage during hot dry summer months. Antelope diets consist of forbs and grasses during the spring and early summer and shrub

browse the remainder of the year. Approximately 98,000 acres are classified as year-round pronghorn habitat, 161,000 acres are classified as summer range, and 47,000 acres are classified as winter range (NDOW Pronghorn Habitat GIS layer 201).

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Proposed Actions and Alternatives

4.1.1 Air Quality

Proposed Action

The Proposed Action would be expected to affect air quality for the short term. The use of mastication equipment during implementation operations and reduction of invasive, non-native annual vegetation cover from chemical applications would generate minor amounts of exhaust, emissions, and dust. Maintenance and improvement of existing roads would generate fugitive dust in the short term. These emissions would be localized and would not exceed Nevada and National Ambient Air Quality Standards. Short term minor impacts to air quality would occur following treatment as blowing dust would continue until soil stabilizes. Prescribed burning of the cheatgrass displacement areas would also not exceed Nevada and National Ambient Air Quality Standards. The principal fuel type within areas to be burned would consist of a grasses and forbs. The anticipated emissions from this fuel type would be; volatile hydrocarbons, carbon monoxide (CO) and carbon dioxide (CO2) (Boubel et al., 1969). Modeling for particulate matter, estimates annual PM10 emissions from prescribed fire would be approximately 7 tons per year. This number is based on the following assumptions: one 2,000 acre prescribed fire burn per year, fuel type = grass/forb and fuel loading = 1,000 pounds per acre. Emissions from prescribed fire events would comply with Nevada Division of Environmental Protection (NDEP), Smoke Management Program.

Construction of proposed fuelbreaks would reduce potential environmental impacts to air quality from wildfires as these fuelbreaks would limit the size and spread of wildfire.

Alternative B

Maintenance and improvement of existing roads would generate dust in the short term. These emissions would be localized and would not exceed Nevada and National Ambient Air Quality Standards. Short term minimal impacts to air quality would occur during and after treatment as blowing dust would continue until soil stabilizes. There would be minimal impacts from construction of habitat restoration projects. The acres of disturbance under this alternative would be much less as the treatment area is limited to selected roads within the planning area.

Alternative C

Impacts would be somewhat greater compared to those described in the Proposed Action Section. The proposed Kings River Fuelbreak under this alternative would leave a larger footprint of disturbance and would create more dust, vehicle emissions, etc., during

construction. These impacts would be expected to remain localized to the area and be short term.

No Action Alternative
No direct impacts to air quality would occur from construction of the proposed fuelbreaks as they would not be implemented. Impacts would still occur to air quality from periodic road maintenance and existing fuelbreak maintenance. The no action would cause indirect impacts as potential increases in wildfire size could occur resulting in increased smoke and dust. These impacts would be dependent on wildfire size and intensity.

4.1.2 Cultural Resources

Proposed Action
Because many of the cultural resource sites in the Montana Range are situated on or just below the ground surface, they are susceptible to disturbance or destruction by erosion and weathering processes. While these processes occur naturally, erosion can be exacerbated by human caused activities. No project activities under the proposed action are anticipated to increase erosion within unevaluated or eligible cultural site boundaries.

Areas in the vicinity of permanent and intermittent water sources have the highest potential for cultural resource sites. Cultural sites most likely to be impacted under the Proposed Action would be in the vicinity of permanent or reliable seasonal water sources. The proposed action is designed to not only prevent such erosion but to make erosion less likely by stabilizing soils through the reintroduction of native plant species less prone to contributing to the rapid spread of possible future wildfire.

Planned road maintenance under the proposed action would include using heavy equipment to blade or grade existing roadways to remove vegetation and improve access. Grading of most road surfaces would be limited to existing road width footprints and would allow for maintenance of ditches and shoulders. The Long Canyon road, The Fourth of July Meadow road and the Jordan Meadow Mountain road would be improved which includes: grading and expanding the road surface widths in areas, creation of bar ditches and shoulders, hauling road materials and gravel to surface the road. Maintenance and improvement actions that involve a road that passes through an eligible site and which occurs outside the existing road footprint would not proceed without implementation of a State Historic Preservation Office approved mitigation plan; likely to involve data recovery and/or monitoring. Data recovery or monitoring, if needed, would be conducted by a qualified permitted cultural resources contractor or BLM archaeologist.

Under the proposed action a mixture of re-seeding and other re-vegetation projects would be implemented. A variety of methods would be used, including a rubber tired tractor and drill seeder. Additionally, a Dixie harrow or rotary mower or other mastication equipment would be used to remove native vegetation and other vegetation from the proposed fuel break locations. Seeding may also be done using a rangeland drill seeder or broadcasted utilizing (ATV or tractor) or by aircraft. Re-vegetation actions that involve impacts to any

eligible site would not proceed. Planting within eligible or unevaluated sites would involve hand planting seedlings or broadcast seeding in order to avoid cultural site impacts.

A number of range improvement projects, in the form of pipelines and troughs, may be necessary with the proposed action. These projects, if found to be outside the current APE, would be completed in accordance with the environmental protection measures.

No impacts to eligible or unevaluated cultural sites would be permitted during the implementation of any proposed treatments or projects.

Alternative B

Planned road maintenance under Alternative B would include using heavy equipment to blade or grade existing roadways to remove vegetation and improve access. Grading of most road surfaces would be limited to existing road width footprints and would allow for maintenance of ditches and shoulders. The Long Canyon road, The Fourth of July Meadow road and the Jordan Meadow Mountain road would be improved which includes: grading and expanding the road surface widths in areas, creation of bar ditches and shoulders, hauling road materials and gravel to surface the road. Maintenance and improvement actions that involve a road that passes through an eligible site and which occurs outside the existing road footprint will not proceed without implementation of a State Historic Preservation Office approved mitigation plan; likely to involve data recovery and/or monitoring. Data recovery or monitoring, if needed, would be conducted by a qualified permitted cultural resources contractor or BLM archaeologist.

A number of range improvement projects, in the form of pipelines and troughs, may be necessary with the proposed action. These projects, if found to be outside the current APE, will be analyzed at a later date. However, no impacts to eligible or unevaluated cultural site would be permitted during the installation of said improvement projects.

Alternative C

Impacts would be similar to those described under the Proposed Action section.

No Action Alternative

The effects from livestock grazing under the No Action Alternative on cultural resources would continue at the present level; soil conditions would not improve and erosion would continue to impact cultural sites. Under the No Action Alternatives current fuels conditions are expected to be maintained and possibly worsen over time. Based on these conclusions, the No Action Alternative is not expected to result in adverse effects on cultural resources over levels that currently occur today or were experienced historically in the proposed treatment area.

4.1.3 Invasive Non-Native Species and Noxious Weeds

Proposed Action

There is a potential for noxious weeds and invasive, non-native species to invade project

areas following treatment. The native understory grasses and forbs would for the most part remain intact and would serve to compete with the invasive annual species. Follow up application of herbicides and seeding would also control the spread of noxious weeds and invasive, non-native species. Maintenance and improvement of roads could promote the establishment and spread of noxious weeds and invasive, non-native species. These impacts would be mitigated through follow-up application of herbicides and pre-treating areas with a pre-emergent.

Indirect impacts from the proposed treatments would be the possible reduction in fire spread, which in turn would reduce the spread of noxious weeds and invasive non-native species following wildfire. Seeding greenstrip and displacement areas should stabilize sites and reduce the spread of noxious weeds and invasive, non-native species.

Alternative B

Maintenance and improvement of roads could promote the establishment and spread of noxious weeds and invasive, non-native species. These impacts would be mitigated through maintenance measures that would control noxious weeds and invasive, non-native species along roadways. Noxious weeds and invasive, non-native species would continue to establish and spread in displacement areas under this alternative. The potential for large wildfires persist. Noxious weeds and invasive, non-native species would continue to establish and spread in burned areas.

Alternative C

Impacts would be similar to those described in the Proposed Action Section. The Kings River fuelbreak expansion could promote establishment and spread of noxious weeds and invasive, non-native species. These impacts would be mitigated through maintenance measures that would control noxious weeds and invasive, non-native species within the fuelbreak.

No Action Alternative

Under the no action impacts from noxious weeds and invasive, non-native species would continue to persist and expand along existing roads and fuelbreaks. Maintenance of existing roads and fuelbreaks would reduce the potential for noxious weed and invasive non-native species establishment and spread from these areas. Large scale wildfire has the potential to create conditions conducive for post-fire colonization of noxious weeds and invasive, non-native species. Noxious weeds and invasive, non-native species would continue to expand based on the number and size of wildfires.

4.1.4 Migratory Birds

Proposed Action

The proposed action would disturb approximately 4% (14,313 acres) of the total project area (345,735 acres), with 3% (10,511 acres) of the total disturbance occurring in previously undisturbed habitat and 1% (3,802 acres) of the total disturbance occurring in previously disturbed areas. Impacts to migratory birds may include temporary

displacement of short duration from foraging habitats during construction of fuelbreaks and greenstrips, road maintenance, and restoration activities (including upland and riparian restoration, construction of exclosure fencing, and potential relocation or addition of troughs). No displacement from active nests would be expected, since a nesting survey would be conducted for any disturbance activities conducted during the breeding season (March 1st – August 31st) and protective buffers around active nests established. Migratory bird species that nest or forage in dense sagebrush habitats may lose a small percentage of suitable habitat to fuelbreaks and greenstrips; however, fuelbreaks and greenstrips would mostly occur in previously disturbed areas. Migratory bird species that prefer lower shrub densities and more open areas for foraging and nesting may gain a small percentage of suitable habitat from fuelbreaks and greenstrips. Restoration of sagebrush stands to promote multiple age class stands would likely improve habitat quality for sagebrush obligate species. Restoration of cheatgrass displacement areas would also likely improve habitat quality for many migratory bird species. Riparian restoration activities would likely increase the amount and quality of suitable meadow habitats available to many migratory bird species by increasing plant diversity, increasing plant cover, and increasing available insect prey in the selected areas over time.

Fuelbreaks and greenstrips would reduce sagebrush canopy cover and density in strategic areas, which would help to slow the spread of wildfire, reducing the risk of damage to or loss of sagebrush habitats for migratory birds. Fuelbreaks and greenstrips would protect existing sagebrush habitats, which often convert to less desirable habitats composed of invasive plant species after wildfire. Where possible, fuelbreaks and greenstrips would be established in areas of previous disturbance, thereby reducing the amount of existing sagebrush habitat impacted.

Alternative B

Impacts to migratory birds would be identical to those described in the Proposed Action Section above with the exceptions that disturbance would be limited to road maintenance and riparian restoration activities and protection of existing migratory bird habitat from wildfire would be reduced.

Alternative C

Impacts to migratory birds would be identical to those described in the Proposed Action Section above. Total estimated habitat disturbance would increase by 1936 acres and protection of existing migratory bird habitats would be increased.

No Action Alternative

Without protection provided by fuelbreaks and greenstrips, large areas of migratory bird habitat would continue to be threatened by wildfire. Existing sagebrush habitats would likely convert to less desirable habitats after wildfire, making them less suitable for many species of migratory birds. Not implementing habitat restoration activities would allow continuing degradation of sagebrush and riparian areas in the planning area, making them less suitable habitat for migratory birds.

4.1.5 Native American Religious Concerns

Consultation with the Fort McDermitt Paiute and Shoshone tribe on this and other vegetation management projects has brought forth the following concerns:

1) The tribe is concerned with the aerial spraying of herbicides. They worry that the herbicides will contaminate springs and other water sources.
2) The tribe is concerned that tribal members could collect plants in areas that have been sprayed with herbicides. The council has asked that the tribe be notified two weeks before any spraying.
3) The tribe is opposed to any fire breaks being bladed through archaeological sites.

Consultation with the Summit Lake Paiute Tribe brought up the following concerns:

1) Some council members felt the project should not go forward, and the BLM should let nature take its course.
2) The council expressed concern that the crested wheat and forage kochia would spread from the greenstrips (and other areas planted with it) into other areas and reduce the number of native plant species.
3) The council felt the road maintenance and improvement could open the area up to more people.

Neither tribe had specific religious concerns on the Proposed Action or Alternatives.

Proposed Action

To date, no TCPs or Executive Order 13007 sites have been identified within the Project area that might be impacted by the Proposed Action. Consultation is on-going. Fort McDermitt's concerns on herbicide applications are addressed in Section 2.3. Summit Lake's concerns are addressed as follow:

1. Due to sage grouse concerns and past fire history, and the resulting conversion of native perennial vegetation communities to invasive annual grasslands, inaction would likely lead to further loss of native plant and animal habitat.
2. Seed mixes containing nonnative species would only be used areas of proposed greenstrips and fuels breaks which currently have a large component of invasive annual species present that native species are far less competitive with. The nonnative species would not be planted in high elevation areas where the potential for them to expand is increased. Most area where the nonnative species would be used are former seeding areas that already contain the species included in the seed mixes.
3. The roads that are planned to be improved or maintained currently exist. The roads would not be brought up to a higher level of maintenance, the intent is to analyze impacts of maintenance or improvement to authorize those activities.

The proposed action would help foster the growth of native plants, which are used by the Native Americans. Habitat for sage grouse would be improved. In the long-term, the quality of riparian environments and water sources would be improved.

Alternative B
Under Alternative B there would be no adverse effects to Native American Religious Concerns.

Alternative C
Impacts would be similar to those discussed in the proposed action.

No Action Alternative
Under the no action alternative there would be no adverse effects to Native American Religious Concerns.

4.1.6 Threatened and Endangered Species

Refer to Section 4.1.9 (Fisheries), and Section 4.1.18 (Special Status Species).

4.1.7 Water Quality

Proposed Action
Under the proposed action, expected impacts to water quality would occur over both the short and long term. Short term impacts may include increased sediment loading during restoration activities at 4th of July Meadow and Bull Spring. Road maintenance, overall, may lead to increased sediment loading in adjacent streams during or immediately after improvement work, however proper maintenance of roads will decrease sediment loading that can occur when unpaved roads fall into states of disrepair (i.e. excessive rutting or creation of additional roads to avoid ruts). The amount of sediment introduced to surface waters during construction activities would depend on the time of year and climate variations. Restoration work at 4th of July Meadow and Bull Spring has been designed to occur during the late summer and early fall when surface flows are the lowest. This would limit the amount of sediment which can be carried downstream, out of the restoration areas. These impacts would occur during the time when construction is actively occurring (on the order of two or three months) and persist until riparian vegetation has recolonized the manipulated areas (likely at least one growing season with climatological factors determining the regrowth of these plants).

Over the long term, however, these improvements and natural processes would help improve the riparian habitat condition which would aid in decreasing seasonal erosion during high flows. While large temperature swings of surface water have not been observed in the planning area, areas with increased riparian habitat functionality may also demonstrate an increase in ability to buffer increased water temperatures during the summer. There are approximately 53 miles of stream in the project area which would be impacted by these changes in water quality.

Addition of water troughs outside, but adjacent to, the riparian areas of Bull Spring, Lone Willow Spring, and North of Old Man Spring would present three additional water sources which would present water quality concern potential. Installation activities could lead to short term increases to sediment loading of surface water. Proper maintenance of

these developments would limit any water quality issues related to the water residing in the troughs.

Alternative B
Impacts under this alternative would be expected to be identical to those described in the Proposed Action Section.
Alternative C
Impacts under this alternative would be expected to be identical to those described in the Proposed Action Section.

No Action Alternative
If neither the Proposed Action nor one of the action alternatives is implemented, no additional impacts to water quality would occur. The effects of currently existing impacts described in the Affected Environment would continue to be managed in a similar way as they are currently. This would likely result in no net impact to water quality.

4.1.8 Wetlands and Riparian Zones

Proposed Action
Under the proposed action, expected impacts to wetlands and riparian zones would occur over both the short and long term. In the short term, riparian vegetation and soils would be disturbed/ removed during the rehabilitation and stabilization activities that would occur at 4th of July Meadow and Bull Spring. After stabilization and re-contouring of riparian and wetland soils, vegetation would be reintroduced through planting and/ or seedings. At all sites where cattle grazing exclosure fencing is to be installed or maintained, wetland and riparian zone condition would improve over the long term as natural processes lead to increases in riparian vegetation density and distribution, increases in sediment retention, and increases in retention of precipitation as groundwater. The improvement of road crossings through 4th of July Meadow and the re-routing of the road through Bull Spring will eliminate the historically persistent problems caused by the use of these roads during wet conditions. This includes decreasing the loss of wetland soils that have been disturbed by rutting. The restricted access to the 4th of July Meadow by highway vehicles, RVs, and OHVs will allow riparian vegetation to recover in the areas normally impacted by these activities. Piping water out of, but adjacent to, wetlands will eliminate the concentrated cattle impacts to wetland and riparian soils and vegetation at surface water sources and troughs. In total, 25 acres of wetland and riparian zones will be newly exclosed and improvement of exclosure fencing will occur around 58 acres of previously exclosed wetland and riparian zones. Approximately 18 acres (10 at 4th of July and 8 at Bull Spring) of wetland will be artificially stabilized and/ or restored through recontouring and revegetation.

Installation of water troughs outside, but adjacent to, the riparian areas of Bull Spring, Lone Willow Spring, and North of Old Man Spring would provide water sources that would promote distribution of cattle use. It is believed that this would reduce or prevent increased use of the remaining riparian areas by cattle. Installation activities would lead to short term disruption of wetland and/or riparian soils and vegetation. Natural processes

would be expected to rehabilitate these impacts rapidly (on the order of one growing season).

Alternative B
Impacts under this alternative would be expected to be identical to those described in the Proposed Action Section.

Alternative C
Impacts under this alternative would be expected to be identical to those described in the Proposed Action Section.

No Action Alternative
If neither the Proposed Action nor one of the action alternatives is implemented, no additional impacts to wetland and riparian zones would occur. The effects of currently existing impacts described in the Affected Environment would continue to be managed in a similar way as they are currently. This would likely result in no net impact to wetland and riparian quality.

4.1.9 Fisheries

Proposed Action
The proposed action would include impacts to LCT and other fish populations that could occur within the short and long term. The short term impacts would include increasing amount of sediment entering the streams during the maintenance of roads, installation of culverts, and construction of rolling dip gravel stream crossings. The long term impacts of the road improvements would have impacts to fisheries over the long term. Improved road crossings, including installation of larger culverts, and stream crossings would reduce headcutting around existing culverts and reduce siltation into streams over the long term creating better habitat for LCT and other fish within the streams.

Another project that could impact LCT and other fish populations is the application of herbicide near populated streams. The impacts could include: the slight possibility of an accidental application of herbicide into an occupied stream, the slight potential of washing herbicide into an occupied stream from a heavy rainstorm, and the slight possibility of drift into an occupied stream. However, measures have been set in place to reduce the chances of the previous impacts. The measures are: (a) no aerial application would occur within 300 feet of LCT streams, (b) no application by truck, backpack, or ATV would occur within 50 feet of LCT streams, (c) aerial application would stop 150 feet away from any existing open water sources (creeks, cattle troughs, springs, wet meadows, lakes, and ponds), (d) application by truck, backpack, or ATV would stop 50 feet away from any existing open water sources (creeks, cattle troughs, springs, wet meadows, lakes, and ponds) and (e) a BLM approved Project Inspector would be on site within the project area at all times while the herbicide is being applied and would be responsible for ensuring that the treatment is applied as directed.

Alternative B
Impacts under this alternative would be similar to those described in the Proposed Action Section.

Alternative C
Impacts under this alternative would be similar to those described in the Proposed Action Section.

No Action Alternative
With the no action alternative, impacts to salmonid species could occur if their habitat is lost in a large wildfire event. Streamside vegetation could be more vulnerable to burning which could increase water temperature and cause siltation issues within the stream. The increased water temperature can lead to oxygen depletion in the fish and a decreased ability to spawn. Siltation can make the water uninhabitable to the fish.

4.1.10 Fire and Fuels Management

Proposed Action
The proposed action would help to prevent the spread, size, and intensity of future wildfires from burning the remaining sensitive species habitat and vegetation within the Montana Mountains. Fire size and intensity would be reduced by providing effective barriers to slow or stop large wildfires and provide anchor points and safety zones for suppression resources. The area in general would become more accessible due to the proposed road improvements, allowing suppression resources to have a quicker response time. Maintenance of the existing fuelbreaks (numerous Spike treatments) would ensure their continued effectiveness of fuelbreaks to stop or slow the spread of future fire events. Changes in fire regimes and condition classes should stabilize as remaining native vegetation would be protected over time. Areas where restoration efforts take place would help to restore the natural Fire Regime and Condition Class to the mountain range.

Alternative B
This alternative would help to prevent future wildfires from burning on such a large scale. Suppression resources would have more access which would quicken response times to fire events. Under this alternative there would be a potential for increased size of wildfires would occur as fewer areas would be treated overall.

Alternative C
This alternative would have the same impacts as those described under the Proposed Action Section. The larger Kings River fuelbreak would provide a more effective barrier and would limit the potential spread of fire wicking in and up drainages such as China Creek.

No Action Alternative
If the no action alternative is selected, the potential for a large wildfire to burn into the Montana Mountains is highly likely. Fire history demonstrates there have been multiple wildfires that have threatened the range from the valley floors or the foothills. Sensitive

resource values would remain at high risk for large wildfire. The potential of fire to wick up drainages to important habitat areas in the higher elevations would persist. Large areas of important wildlife habitat would remain vulnerable to loss from wildfire.

4.1.11 Geology and Minerals

Proposed Action
If on the ground activities are appropriately planned and coordinated with operators of mineral activities there would be no negative effects on mineral resources from the proposed action. Also, improving roads would likely increase local demand for mineral materials suitable for road base. Improvements to access would benefit those operators engaged in exploration or development for mineral resources in the project area. Those operators would be expected to maintain the roads they use to the standard set in their plan of operations. It is anticipated that reclamation standards for future mineral operations would be amended appropriately to support the goals of the proposed action.

The proposed action would result in an improved fuels environment which would have the effect of reducing the exposure of existing and future mineral operations to catastrophic wildfire.

Alternative B
The effects of Alternative B would be essentially identical to those of the proposed action.

Alternative C
The effects of Alternative C would be identical to those of the proposed action.

No Action Alternative
Under this alternative there would be no impacts to existing or future availability of geology and mineral resources.

4.1.12 Lands and Realty

Proposed Action
Some of the fuelbreaks would be constructed near or adjacent to existing ROWs or in areas previously disturbed. No impacts to the ROW authorizations are anticipated as a consequence of the Proposed Action. The proposed action would ensure continued public access across private lands. Fuelbreaks would help protect ROWs from potential wildfire.

Alternative B
Proposed road maintenance, construction, and maintenance would have no impacts to the ROW authorizations under this alternative, although they may be more disposed to wildfire due to the lack of fuelbreaks.

Alternative C
The impacts to the ROW authorizations are the same as those described in the Proposed Action Section.

No Action Alternative
Under the no action alternative no new fuelbreaks would make ROW authorizations more prone to wildfire.

4.1.13 Lands with Wilderness Characteristics

Not present within treatment areas and therefore will not be analyzed further.

4.1.14 Public Health and Safety

Proposed Action
Analysis for public health and safety analysis references and tiers to the "Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States, Programmatic Environmental Impact Statement" as provided for under the Council of Environmental Quality regulations at 40 CFR 1508.28, Impacts from use of herbicides are presented in Chapter 4, pages 4-1 to 4-253.

Potential health effects from application of herbicide would be minimal due to the low rates of application, the size of the areas being treated, implementation of standard operating procedures and following label restrictions. Fuelbreaks would serve to promote public safety by protecting residents and infrastructure in the area.

Road improvement and maintenance would provide the public with safer transportation routes while in the Planning Area.

Alternative B
Impacts under this alternative would be minimal. Road improvement and maintenance would provide the public with safer transportation routes while in the Planning Area.

Alternative C
Impacts would be similar to those described under the Proposed Action Section.

No Action Alternative
Under the no action alternative direct impacts would be related to exposure of herbicides to maintain existing fuelbreaks. Indirect impacts to public health and safety would occur in the event of a large, fast moving wildfire as public safety may be compromised. Without fuel treatments potential for larger fires would occur causing increased impacts to air quality. This could increase the potential for public health issues related to smoke inhalation.

4.1.15 Rangeland Management

Proposed Action

The proposed action would have both direct and indirect impacts to livestock grazing operations. Direct impacts are expected to be minimal and would include temporary short term displacement of livestock during treatment and potential closure of some project areas to grazing until the treatment objectives have been achieved.

Other impacts would include the subsequent temporary suspension of AUMs from the areas closed to grazing, or more intensive management techniques such as herding livestock to untreated portions of the allotment(s). The treatments may limit the level of grazing rotation or deferment during the temporary closure however, the impacts would be minimal. Based on herbicide labels there are no anticipated direct impacts to livestock grazing from herbicide applications.

Indirect impact from treatments within shrub areas would be the subsequent increase in the amount of perennial grasses and forbs resulting in improved forage quality and quantity for grazing animals. The proposed treatments would reduce the potential for increased fire cycles and reduce the threat of large-scale wildfires which would lessen the need to temporarily close areas to grazing in the future. Additional impacts may include concentrated livestock grazing within seeded areas once they are established. There would be a benefit to grazing allotments and rangeland improvements since they would potentially be protected from wildfire.
Proposed fences would preclude livestock from accessing meadows, springs, and other areas in the allotments. It may concentrate livestock on meadow areas that are not fenced, though would likely improve dispersion of animals within the uplands habitats, especially with availability of water outside the meadow/riparian areas.

Improved road access and maintenance may provide greater access to portions of the allotments.

Alternative B

Direct impacts to livestock grazing are expected to be minimal. Livestock in the areas during times of implementation may be displaced temporarily. Improved road access and maintenance may provide greater access to portions of the allotments.

Potential for wildfire would remain high and the loss of available forage for livestock would be reduced. Burned areas closed to grazing may increase utilization in remaining unburned areas of the allotments.

Alternative C

Impacts would be similar to those described in the Proposed Action Section. The modification of the Kings River fuelbreak may allow permitted livestock to graze the lower sections of the Planning Area for a longer time period allowing the upper areas including meadows and wetlands to be rested or to have a longer growth period before livestock grazing occurs.

No Action Alternative
Under the No Action alternative livestock grazing would continue under the current management and permitted use. No additional vegetation treatments would be implemented within the project area beyond maintaining, as necessary, the existing fuelbreaks and roads projects. This alternative has the potential to result in an increased occurrence of large-scale wildfires on rangelands. The subsequent loss of sagebrush habitat from wildfires could require rehabilitation of the burned areas and temporary closures, reducing the availability of livestock forage. Wildfires could also result in long-term or permanent loss of native vegetation and the invasion of non-native and invasive species.

4.1.16 Recreation

Proposed Action
There would be minimal impacts to recreation from implementation of the proposed action. While the construction of fuelbreaks and road maintenance and improvements would protect recreation use areas and improve access for recreationists, the possibility of limited access and increased noise and dust levels during the operations associated with those activities exist over short periods of time.

Alternative B
Impacts to recreation from road maintenance and improvement would be the same as those described in the Proposed Action. However recreational use areas may be more prone to wildfire due to the lack of pro-active measures.

Alternative C
Impacts would be the same as those described in the Proposed Action Section.

No Action Alternative
If the no action is selected no new fuelbreaks would make recreation use areas more vulnerable to wildfire. Maintenance of existing fuelbreaks would limit the potential of wildfire to spread within areas of the planning area.

4.1.17 Soils

Proposed Action
The environmental impacts on soils could include disturbance up to 14,313 acres. Mechanical treatments (Dixie harrow and drill seeding) would scarify the soil surface to a depth of approximately four inches. Mowing and other mechanical treatments on the soil surface may compact soils when moist, but would not disturb soil horizon layers. These impacts should be minimal as there would be little back and forth travel along the same route. The application of herbicide would not disturb surface soils or alter existing soil structure. Prescribed burning would not disturb surface soils, however it would remove vegetation and surface litter therefore increasing the potential for water and wind erosion.

These impacts would be short term until recovery or re-sprout of existing vegetation or establishment of seeded species takes place.

Road improvements such as low water crossings may increase erosion and siltation into streams initially, however once established they should decrease the overall erosion potential in these areas. Restoration of riparian vegetation through seeding, seedling/plant plugging activities once wet meadow and spring recontouring takes place along with removal of grazing pressure, would stabilize and halt soil loss from head cutting and subsequent erosional processes.

Installation of water troughs outside, but adjacent to, the riparian areas of Bull Spring, Lone Willow Spring, and North of Old Man Spring would provide water sources that would promote distribution of cattle use, but likely would create localized areas of soil surface disturbance immediately adjacent to water troughs. Soil compaction through trampling would increase but loss to wind or water erosion would be minimal.

Seeding or planting of cheatgrass displacement areas would help stabilize the soils in these areas. Replacing cheatgrass with native and selected introduced species would help restore the natural ecological balance to soil processes in these areas.

The proposed actions would maintain soil and hydrologic processes and promote healthy, productive and diverse plant communities. The proposed action would maintain and improve ecological conditions with increased productivity, litter, soil fertility, infiltration and nutrient cycling.

Alternative B

Under this alternative approximately 217 acres of soils would be disturbed through road maintenance and improvement actions in areas previously disturbed. Road improvements such as low water crossings may increase erosion and siltation into streams initially, however once established they should decrease the overall erosion potential in these areas. Restoration of riparian vegetation through seeding, seedling/plant plugging activities once wet meadow and spring recontouring takes place along with removal of grazing pressure, would stabilize and halt soil loss from head cutting and subsequent erosional processes.

Installation of water troughs outside, but adjacent to, the riparian areas of Bull Spring, Lone Willow Spring, and North of Old Man Spring would provide water sources that would promote distribution of cattle use, but likely would create localized areas of soil surface disturbance immediately adjacent to water troughs. Soil compaction through trampling would increase but loss to wind or water erosion would be minimal.

Alternative C

Impacts would be similar to those described in the Proposed Action Section. The Kings River fuelbreak expansion would increase the amount of soils disturbed overall by approximately 1,937 acres, seeding should reduce erosion potential over the long term.

No Action Alternative
Under the no action alternative there would be no new disturbance to soils as fuelbreaks would not be constructed. However, in the event of a large wildfire, wind and water erosion caused by loss of vegetation in burned areas would occur. Impacts from erosion could range from low to high depending on the size of the fire, soil types impacted and whether emergency stabilization and rehabilitation treatments are implemented.

4.1.18 Special Status Species

Proposed Action
The proposed action would disturb approximately 4% (14,313 acres) of the total project area (345,735 acres), with 3% (10,511 acres) of the total disturbance occurring in previously undisturbed habitat and 1% (3,802 acres) of the total disturbance occurring in previously disturbed areas. Impacts to special status species may include temporary displacement of short duration from foraging habitats during construction of fuelbreaks and greenstrips, road maintenance, and restoration activities (including upland and riparian restoration, construction of exclosure fencing, and potential relocation or addition of troughs). Impacts to special status species may also include loss of a small percentage of suitable habitats for some species, gain of a small percentage of suitable habitats for some species, and improvement in the quality and diversity of upland and riparian habitats. Proposed fuels treatments may protect large areas of existing Special Status Species habitat from wildfire.

Raptors
Golden eagles, ferruginous hawks, northern goshawks, and Swainson's hawks primarily use the proposed treatment areas for foraging. Northern goshawks mainly use forested areas where no treatments are proposed. Impacts may include temporary displacement from foraging habitats, gain of a small percentage of suitable foraging habitats, loss of a small percentage of foraging habitats, and an increase in the available prey base through an increase in the quality of habitat for small mammals.

Migratory Birds
No impacts to the yellow-billed cuckoo or Lewis's woodpecker are expected since no treatments are proposed in woody riparian or forested areas. Impacts to loggerhead shrikes, sage thrashers, and Brewer's sparrows may include temporary displacement of short duration from foraging habitats during construction of fuelbreaks and greenstrips, road maintenance, and restoration activities (including upland and riparian restoration, construction of exclosure fencing, and potential relocation or addition of troughs) No displacement from active nests would be expected, since a nesting survey would be conducted for any disturbance activities conducted during the breeding season (March 1st – August 31st) and protective buffers around active nests established. Impacts may also include loss of a small percentage of suitable habitat consisting of dense sagebrush cover. Restoration of sagebrush stands to promote multiple age class stands and restoration of cheatgrass displacement areas would likely improve habitat quality for these species. Riparian restoration activities would likely increase the amount and quality of suitable meadow habitat available for foraging by increasing the availability of insect prey.

The planned fuels treatments would reduce sagebrush canopy cover and density in strategic areas, which would help to slow the spread of wildfire, reducing the risk of damage to or loss of sagebrush habitats for loggerhead shrikes, sage thrashers, and Brewer's sparrows. Fuelbreaks and greenstrips would protect existing sagebrush habitats, which often convert to less desirable habitats composed of invasive plant species after wildfire. Where possible, fuelbreaks and greenstrips would be established in areas of previous disturbance, thereby reducing the amount of existing sagebrush habitat impacted.

Bighorn Sheep

Impacts to bighorn sheep may include temporary displacement of short duration from a small percentage (0.8%) of occupied year-round habitat in the project area including riparian areas. Approximately 4.2% of potential bighorn sheep habitat may also be temporarily disturbed, although bighorn sheep are not currently known to use these areas. The installation of exclosure fencing may make access to riparian areas more difficult for bighorn sheep; however, wildlife friendly fence designs and the installation of steel pipe-rail fence in some areas will minimize these impacts. The potential relocation or addition of troughs may provide improved access to existing water and create additional water sources for bighorn sheep to use. Impacts from fuelbreaks and greenstrips may also include protection of existing bighorn sheep habitat from wildfire. Restoration of riparian areas will likely provide more available surface water for drinking and increase the amount of riparian vegetation such as sedges that provide a summer food source for bighorn sheep. See table below for a breakdown of estimated disturbance to bighorn sheep habitat types.

Table 24: Bighorn Sheep Habitat

Bighorn Sheep Habitat Type	Disturbance Type	Acres or Miles of Disturbance in Habitat	Total Acres of Habitat in Project Area	% of Habitat Type Disturbed
Occupied Year-Round	Fuelbreaks	104	**70,000**	0.1%
	Sage Blocks	279		0.4%
	Greenstrips	153		0.2%
	Riparian Restoration	29		< 0.1%
	Displacement Blocks	0		0
TOTALS		**565**	**70,000**	**0.8%**
Potential	Fuelbreaks	0	**11,000**	0
	Sage Blocks	0		0
	Greenstrips	0		0
	Riparian Restoration	0		0
	Displacement Blocks	460		4.2%
TOTALS		**460**	**11,000**	**4.2%**

Bats
Impacts to bat species may include an increase in insect prey availability through restoration of riparian areas which would likely increase the diversity and cover of vegetation and allow for more consistent surface flows. The possible addition of troughs may also increase insect prey availability and access to surface water.

Lonesome Milkvetch
Impacts to lonesome milkvetch would be unlikely to occur. One known population exists near the proposed Crowley-Jordan road maintenance. This population would be flagged and avoided to ensure that no impacts occur.

Western Burrowing Owls
Impacts to western burrowing owls may include temporary displacement of short duration from foraging habitats during construction of fuelbreaks and greenstrips, road maintenance, and restoration activities (including upland and riparian restoration, construction of exclosure fencing, and potential relocation or addition of troughs). No displacement from active burrows would be expected, since a burrowing owl survey would be conducted for any disturbance activities conducted during the breeding season (March 1st – August 31st) and protective buffers around active burrows established. Impacts may also include improvement in habitat quality and an increase in available prey through increases in habitat quality for small mammals.

Pygmy Rabbits
Impacts to pygmy rabbits may include loss of a small percentage of suitable but unoccupied sagebrush habitats to fuelbreaks and greenstrips. Other areas of existing high quality sagebrush habitat would be protected from destruction by wildfire through fuelbreaks, greenstrips, and road maintenance. Restoration of sagebrush stands to promote multiple age classes would likely increase habitat quality for pygmy rabbits in the long-term. Restoration of cheatgrass displacement areas would also increase habitat quality for pygmy rabbits. No displacement from fuels treatments or restoration activities would be expected, since a pygmy rabbit survey would be conducted in any suitable habitat areas proposed for disturbance and 400 ft. avoidance buffers established around any active burrows or burrow complexes found. No removal or manipulation of sagebrush would occur within any 400ft. avoidance buffers established.

Greater Sage-Grouse
Impacts to sage-grouse from construction of fuelbreaks and greenstrips may include loss of less than 0.1% of summer sagebrush habitat, loss of 0.3% of winter sagebrush habitat, and 0.1% of nesting sagebrush habitat. Summer, winter, and nesting habitat delineations overlap substantially, so total loss of habitat would be small. Construction of fuelbreaks and greenstrips would result in loss of only 0.1% of R-0 habitat (highest quality habitat for sage-grouse), although actual high quality habitat loss is likely much smaller since the R-0 habitat classification doesn't adequately represent small-scale areas of previous disturbance. Construction of fuelbreaks and greenstrips may also contribute to habitat fragmentation by creating open areas with little cover that sage-grouse may need to cross. Sage-grouse movement would not be restricted in these areas; however, crossing areas of more open habitat could increase the risk of predation. Approximately 46 miles of road

maintenance would occur within the boundaries of sage-grouse summer habitat, 75 miles would occur within the boundaries of winter habitat, and 63 miles would occur within the boundaries of nesting habitat. Road maintenance activities would not result in any habitat loss; however, improved road conditions from road maintenance may increase hunting pressure on sage-grouse in this area. Any increase in hunting pressure is likely to be small since road maintenance would be performed only on existing roads that already provide access for hunters. Additional impacts from road maintenance, fuelbreaks and greendstrips may include temporary displacement of short duration from the disturbance areas during maintenance and construction periods. No impacts to lekking or nesting birds would be expected from road maintenance or construction activities since disturbance activities would occur outside of the sage-grouse lekking and nesting seasons (March 1st through June 30th). The planned fuels treatments would reduce sagebrush canopy cover and density in strategic areas, which would help to slow the spread of wildfire, reducing the risk of damage to or loss of sagebrush habitats for sage-grouse. Fuelbreaks and greenstrips would protect existing sagebrush habitats, which often convert to less desirable habitats composed of invasive plant species after wildfire. Where possible, fuelbreaks and greenstrips would be established in areas of previous disturbance, thereby reducing the amount of existing sagebrush habitat impacted. See table below for a breakdown of estimated disturbance to sage-grouse habitat types.

Impacts from upland and riparian restoration activities may include temporary displacement of short duration from disturbance areas during implementation. Temporary displacement of sage-grouse from riparian areas during brood-rearing may also occur, but would be unlikely since most areas targeted for riparian restoration are currently in a degraded condition and less suitable than other available brood-rearing habitats in the project area. No impacts to lekking or nesting birds would be expected from restoration activities since they would occur outside of the sage-grouse lekking and nesting seasons (March 1st through June 30th).

Treatments of sagebrush in identified sage blocks to promote multiple age class stands would likely result in a temporary loss of a small percentage of suitable habitat, but would likely also result in a long-term gain and improvement in habitat quality for sage-grouse. The maximum amount of estimated disturbance associated with sage blocks would include 0.2% in sage-grouse summer habitat, 3.5% in winter habitat, and 3.7% in nesting habitat. Approximately 0.6% of R-0 (highest quality sage-grouse habitat) would also be affected. Actual disturbance to sage-grouse habitat would be substantially less than the estimated maximum amount since summer, winter, and nesting habitat delineations overlap substantially, treatments would create a mosaic pattern, and treatments would be conducted in small portions of the sage blocks over an extended period of time. Restoration of cheatgrass displacement areas could result in a gain of approximately 4,018 acres of suitable habitat for sage-grouse. Displacement blocks currently make up approximately 0.2% (423 acres) of designated winter sage-grouse habitat and 0.2% (315 acres) of designated nesting habitat in the project area.

Riparian restoration would affect approximately 0.2% of sage-grouse designated summer habitat, 0.1% of designated winter habitat, and 0.1% of designated nesting habitat.

Estimates of riparian restoration disturbance take into account all areas within and including proposed riparian exclosure fences. Meadow and channel restorations within the proposed exclosures would increase the quality of late brood-rearing habitat for sage-grouse by increasing the cover and diversity of vegetation and contributing to more consistent surface flows. Forb density within the exclosures would likely increase as well as the quantity of insect prey providing increased food availability for sage-grouse chicks. Exclosure fences would contribute to increasing the quality of brood-rearing habitat for sage-grouse by allowing recovery of vegetation and spring/meadow functionality through exclusion of cattle. Exclosure fences constructed of barbed wire and t-posts may cause sage-grouse collisions and entanglement; however, fences will be marked to increase visibility and reduce the risk of collisions. Wooden posts will not be used in fence construction and perch deterrents will be installed on t-posts to discourage raptor perching and reduce the risk of predation from aerial predators. Highly visible steel pipe-rail fencing may also be used which reduces the risk of collisions and eliminates the possibly of entanglement. Risk of increased predation from aerial predators for steel-pipe rail fence is unknown; however, this type of fence is currently used around NDOW water developments and extensive photo documentation has not provided any evidence of this type of predation (E. Partee, Personal Communication, 02/29/2012).

According to Walker and Naugle (2011), West Nile virus (WNV) emerged as a potential threat to sage-grouse populations in 2002 and has been a continued source of mortality in low- and mid-elevation populations (highest confirmed elevation at which WNV occurs is 2300 meters). The dominant vector of WNV in sagebrush habitats is the mosquito (*Culex tarsalis*) which breeds in warm, standing water with submerged vegetation. Both natural and artificial water sources can serve as mosquito breeding habitat and include ephemeral puddles, vegetated pond edges, hoofprints, overflowing stock tanks, stock ponds, seep and overflow areas below earthen dams, and irrigated agricultural fields. A majority of sage-grouse habitat within the project area occurs below 2300 meters, but the actual risk of WNV to sage-grouse populations within the project area is unknown.

Construction of exclosure fencing and riparian restoration activities aimed at restoring meadow and stream channel function would likely reduce mosquito breeding habitat by: 1) Repairing headcuts which would reduce the occurrence of plunge pools as a source of standing water during low flows. 2.) Excluding cattle from moist riparian areas effectively reducing the number of hoofprints that could collect water and allowing natural processes to fill in existing hoofprints. 3.) Restoration of riparian soil and vegetation functionality would likely lead to more consistent surface flows thereby reducing periods of non-flowing water in pools. Relocating existing troughs outside of exclosures would not create additional mosquito breeding habitat, and placement of troughs in drier upland areas should eliminate the risk of creating additional hoofprints likely to fill with water. Adding troughs in some areas could create a small amount of additional mosquito breeding habitat; however, proper maintenance of troughs would ensure that organic matter would not accumulate (which could provide breeding habitat for mosquitos) and that troughs do not overflow and create additional wet areas and small pools. The restoration of riparian areas would likely remove more mosquito breeding

habitat than would be contributed to the system by the addition of a small number of troughs in upland areas. The risk of WNV to sage-grouse populations in the area would likely remain the same or decrease.

Table 25: Sage Grouse Habitat

Sage-Grouse Habitat Type	Disturbance Type	Acres or Miles of Disturbance in Habitat	Total Acres of Habitat in Project Area	% of Habitat Type Disturbed
Summer	Fuelbreaks	8	**128,000**	< 0.1%
	Sage Blocks	298		0.2%
	Greenstrips	0		0
	Riparian Restoration	305		0.2%
	Displacement Blocks	0		0
	Road Maintenance	46 miles		NA
TOTALS		**611**	**128,000**	**0.5%**
Winter	Fuelbreaks	647	**237,000**	0.3%
	Sage Blocks	8,253		3.5%
	Greenstrips	0		0
	Riparian Restoration	305		0.1%
	Displacement Blocks	423		0.2%
	Road Maintenance	75 miles		NA
TOTALS		**9,628**	**237,000**	**4.1%**
Nesting	Fuelbreaks	288	**215,000**	0.1%
	Sage Blocks	8,001		3.7%
	Greenstrips	0		0
	Riparian Restoration	305		0.1%
	Displacement Blocks	315		0.2%
	Road Maintenance	63 miles		NA
TOTALS		**8,909**	**215,000**	**4.1%**
R-0	Fuelbreaks	51	**96,818**	0.1%
	Sage Blocks	555		0.6%
	Greenstrips	0		0
TOTALS		**606**	**96,818**	**0.6%**
R-1	Fuelbreaks	3	**11,424**	< 0.1%
	Sage Blocks	5		< 0.1%
	Greenstrips	0		0
TOTALS		**8**	**11,424**	**0.1%**
R-2	Fuelbreaks	472	**102,289**	0.5%
	Sage Blocks	7,527		7.4%

Sage-Grouse Habitat Type	Disturbance Type	Acres or Miles of Disturbance in Habitat	Total Acres of Habitat in Project Area	% of Habitat Type Disturbed
	Greenstrips	0		0
TOTALS		**7,999**	**102,289**	**7.8%**
R-3	Fuelbreaks	0	**13,412**	0
	Sage Blocks	0		0
	Greenstrips	0		0
TOTALS		**0**	**13,412**	**0**
R-4	Fuelbreaks	48	**11,820**	0.4%
	Sage Blocks	138		1.2%
	Greenstrips	0		0
TOTALS		**186**	**11,820**	**1.6%**

Alternative B
Impacts to special status species would be identical to those described in the Proposed Action Section above with the exceptions that disturbance would be limited to road maintenance and riparian restoration activities and protection of existing special status species habitat from wildfire would be reduced.

Alternative C
Impacts to special status species would be identical to those described in the Proposed Action Section above. Total estimated habitat disturbance would increase by 1936 acres and protection of existing special status species habitat from wildfire would increase.

No Action Alternative
Without protection provided by fuelbreaks, greenstrips, and improved roads large areas of special status species habitat would continue to be threatened by wildfire. Existing sagebrush habitats would likely convert to less desirable habitats after wildfire, making them less suitable for many special status species. Not implementing habitat restoration activities would allow continuing degradation of sagebrush habitats and riparian areas in the planning area, making them less suitable habitat for special status species.

4.1.19 Vegetation

Proposed Action
Approximately 14,313 acres of vegetation could be altered by the proposed actions. Impacts would be expected to be low as a majority of the fuelbreaks would be constructed in areas where vegetation has been previously impacted by wildfire, seedings, and roads. The proposed action includes seeding with fire resistant species to ensure re-establishment of less flammable perennial vegetation within the treatment zone. The proposed action also includes the application of herbicides to control invasive annual

vegetation while promoting the release of native species and the successful establishment of seeded species. Species composition of vegetation would change within treated areas due to these seedings. Construction of the fuelbreaks would protect remaining big sagebrush communities along the range front from loss due to wildfire.

Restoration of Cheatgrass Displacement areas would improve vegetation characteristics within the planning area, by replacing annual vegetation with native and some introduced perennial vegetation. This vegetation would stabilize soils and allow native species an opportunity to re-colonize the displacement areas. This would increase the amount of habitat available to wildlife.

Fencing of meadows would reduce livestock grazing pressure, allowing existing and planted native vegetation species an opportunity to rebound, establish and increase around selected springs and stream areas. This would assist in soil stability with potential to improve the larger spring complex area.

Treatments within even aged, late seral, sagebrush stands would promote species diversity and a variety of age classes. The areas treated would break up fuel continuity and reduce overall fuel loading creating breaks within the vegetation that will slow or stop an advancing wildfire. These breaks would help to create a more balanced age-class mosaic within these even aged big sagebrush communities. Reducing shrub competition should release and allow for increase of forbs and native bunchgrasses within the treatment area. Remnant grass patches show site potential and would expand if sagebrush was reduced. The reduction of sagebrush dominance would improve the watershed conditions; improve the plant diversity and production of forage for wildlife, expanding habitat complexity along with edge effect, ecotone, development.

Alternative B

If this alternative is chosen there would be very minor impacts to vegetation. Minimal disturbance to vegetation would take place along existing roads and during meadow and spring restoration activities. Restoration of riparian vegetation through seeding, seedling/plant plugging activities once wet meadow and spring recontouring takes place along with removal of grazing pressure, would stabilize or increase plants pecies abundance and diversity.

Installation of water troughs outside, but adjacent to, the riparian areas of Bull Spring, Lone Willow Spring, and North of Old Man Spring would remove grazing pressure on riparian vegetation, within the exclosure, increasing vigor and diversity. However, installation of water troughs outside these exclosures would create localized areas of concentrated grazing pressure immediately adjacent to water troughs. Vegetation reduction or loss through intensified grazing and trampling immediately adjacent to the troughs would increase but should be minimal.

Alternative C

Impacts would be similar to those described in the Proposed Action Section with an additional 1,937 acres of disturbance. Additional vegetation would be removed with the

implementation of the Kings River fuelbreak. The area would be re-seeded with a mixture of native and introduced species which would provide additional forage for livestock and wildlife. This would assist in relieving grazing pressure on native vegetation on the upper west portion of the Montana Mountains allowing for an overall increase in the vegetation health over the larger area.

No Action Alternative
If the no action alternative is chosen there would be no direct impacts to vegetation. In the event of a large wildfire native shrubs would be lost and annual invasive weed species would establish and spread.

4.1.20 Visual Resource Management

Proposed Action
The Visual Resource Management Class IV is the most liberal of all the management classes, and allows for extensive modification to the existing landscape. Impacts to visual resources would be low as fuelbreaks and restoration treatments would be blended with the surrounding topography (see proposed action), repeating basic elements of line, form, color, and texture. Casual observers would see few intrusions to the view shed. Fencing springs and meadow areas would create linear intrusions to the viewshed. These intrusions would be localized to small areas and would not dominate the setting.

Alternative B
There would be no direct or indirect impacts to visual resources beyond what is present.
Alternative C
Impacts would be the same as those described in the Proposed Action Section with the exception of the Kings River fuelbreak, which would cause additional linear features along the valley floor, upper elevations in the viewshed would not be impacted.

No Action Alternative
There would be no direct or indirect impacts to visual resources.

4.1.21 Wilderness Study Areas

Proposed Action
The proposed action would have no direct impacts on the Disaster Peak Wilderness Study Area. Improved access may indirectly cause a small increase visitation to the area. Potential reduction the risk of large-scale wildfires spreading into the WSA could protect the naturalness of the area.

Alternative B
Impacts under this alternative would be the same as those described in the Proposed Action Section.

Alternative C
Impacts under this alternative would be the same as those described in the Proposed Action Section.

No Action Alternative
Under the no action there would be no adverse impacts to the Disaster Peak WSA.

4.1.22 Wildlife

Proposed Action
The proposed action would disturb approximately 4% (14,313 acres) of the total project area (345,735 acres), with 3% (10,511 acres) of the total disturbance occurring in previously undisturbed habitat and 1% (3,802 acres) of the total disturbance occurring in previously disturbed areas. Impacts to wildlife species from the proposed fuels treatments may include temporary displacement from suitable habitats, loss of a small percentage of suitable habitats for some species, and gain of a small percentage of suitable habitats for some species. Impacts from restoration activities may include temporary displacement of short duration from implementation areas and improvement in the quality and diversity of sagebrush and riparian habitats. Riparian restoration would likely improve access to surface water and availability of forbs and wetland vegetation for many wildlife species. Restoration of cheatgrass displacement areas would likely improve habitat quality for many wildlife species. Proposed fuels treatments and road maintenance may protect large areas of existing wildlife habitat. Some small rodents and/or reptiles may be lost from the treatments requiring mechanical vegetation removal; however, the equipment travels slow enough that most would be able to avoid harm.

Exclosure fencing may make access to riparian areas more difficult for mule deer and pronghorn antelope; however, wildlife friendly fence designs and the installation of steel pipe-rail fence in some areas will minimize these impacts. The potential relocation or addition of troughs may provide improved access to existing water and create additional water sources for pronghorn and mule deer to use. Approximately 6.1% and 4.6% of crucial winter and year-round mule deer habitat respectively would be disturbed. Approximately 9.9% winter range, 0.4% summer range, and 8.5% year-round pronghorn habitat would be disturbed. Improved road conditions from road maintenance may increase hunting pressure on pronghorn and mule deer in this area. Any increase in hunting pressure is likely to be small since road maintenance would be performed only on existing roads that already provide access for hunters. . See table below for a breakdown of estimated disturbance in mule deer and pronghorn habitats.

Table 26: Mule Deer Habitat

Mule Deer Habitat Type	Disturbance Type	Acres of Disturbance in Habitat	Total Acres of Habitat in Project Area	% of Habitat Type Disturbed
Crucial Winter	Fuelbreaks	109	**21,000**	0.5%

Mule Deer Habitat Type	Disturbance Type	Acres of Disturbance in Habitat	Total Acres of Habitat in Project Area	% of Habitat Type Disturbed
	Sage Blocks	0		0
	Greenstrips	63		0.3%
	Riparian Restoration	0		0
	Displacement Blocks	1,110		5.3%
TOTALS		**1282**	**21,000**	**6.1%**
Year-Round	Fuelbreaks	211	**246,000**	0.1%
	Sage Blocks	6,837		2.8%
	Greenstrips	64		< 0.1%
	Riparian Restoration	305		0.1%
	Displacement Blocks	4,021		1.6%
TOTALS		**11,438**	**246,000**	**4.6%**
Summer	Fuelbreaks	0	**42,000**	0
	Sage Blocks	0		0
	Greenstrips	0		0
	Riparian Restoration	0		0
	Displacement Blocks	0		0
TOTALS		**0**	**42,000**	**0**

Table 27: Pronghorn Habitat

Pronghorn Habitat Type	Disturbance Type	Acres or Miles of Disturbance in Habitat	Total Acres of Habitat in Project Area	% of Habitat Type Disturbed
Winter Range	Fuelbreaks	799	**47,000**	1.7%
	Sage Blocks	2,924		6.2%
	Greenstrips	384		0.8%
	Riparian Restoration	0		
	Displacement Blocks	561		1.2%
TOTALS		**4,668**	**47,000**	**9.9%**
Summer Range	Fuelbreaks	84	**161,000**	0.1%
	Sage Blocks	175		0.1%
	Greenstrips	65		< 0.1%
	Riparian Restoration	305		0.2%
	Displacement Blocks	0		0
TOTALS		**629**	**161,000**	**0.4%**

Year-Round	Fuelbreaks	0	**98,000**	0
	Sage Blocks	5,153		5.3%
	Greenstrips	0		
	Riparian Restoration	0		
	Displacement Blocks	3,153		3.2%
TOTALS		**8,306**	**98,000**	**8.5%**

Alternative B

Impacts to wildlife species would be identical to those described in the Proposed Action Section above with the exceptions that disturbance would be limited to road maintenance and riparian restoration activities and protection of existing wildlife habitat from wildfire would be reduced.

Alternative C

Impacts to wildlife would be identical to those described in the Proposed Action Section above. Total estimated habitat disturbance would increase by 1936 acres and protection of existing wildlife habitats from wildfire would increase.

No Action Alternative

Without protection provided by fuelbreaks, greenstrips, and improved roads large areas of wildlife habitat would continue to be threatened by wildfire. Existing sagebrush habitats would likely convert to less desirable habitats after wildfire, making them less suitable for many wildlife species. Not implementing habitat restoration activities would allow continuing degradation of sagebrush habitats and riparian areas in the planning area, making them less suitable habitat for wildlife species.

5.0 CUMULATIVE IMPACT ANALYSIS

The Council of Environmental Quality (CEQ) regulations implementing NEPA defines cumulative impacts as "…[T]he impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or Non-Federal) or person undertakes such actions." Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

The cumulative impact assessment areas for this EA lies within multiple watersheds (Montana Mountains Map 5: Planning Area Boundary and Cumulative Assessment Area).

Past, Present, and Reasonably Foreseeable Future Actions

On the basis of aerial photographic data, agency records and GIS analysis and interdisciplinary team discussion the following past and present actions, have been identified:

Livestock Grazing-
Livestock grazing has a long history in the region dating back to the 1800's. Today, it remains the dominant use of the entire cumulative impact assessment area. Throughout its history, ranching has remained a dispersed activity characterized by localized areas of more intensive use. The current intensity and character of livestock grazing is anticipated to remain consistent into the foreseeable future.

Mineral Resources -
The Cordero mine located in the northeastern portion of the range was an important quicksilver mine. Production of mercury is recorded as beginning in 1935 and continued sporadically until the 1990s. Low grade uranium showings along the west front of the range south of Horse Creek also exist. This area was explored by Chevron in the early 1980s. There is still active uranium exploration occurring in the Planning Area. There are several gravel pits within the Planning Area as well which provide road base for the surrounding area.

Currently the southern end of the Planning Area contains a 75 acre Lithium Exploration project. Mineral activities consist of drilling and creation of roads to support exploration. The southwestern edge of the assessment area contains a Uranium Exploration parcel. Current activities on the parcel consist of drilling and creation of roads to support exploration.

The level of mining activity in the assessment area would depend on future values of minerals and precious metals. It is anticipated that mining and exploration would remain at current levels within this area in the future due to the geology of the area. There are currently no pending applications for development.

Wildfire/Fuels Management- Past wildfire events have been located on the valley bottoms and flanks of the Montana Mountains. Emergency Stabilization and Rehabilitation treatments have been implemented on a case by case basis in these areas (see Section 3.1.10) where seedings would be most successful based on soils and site potential. It is anticipated that fire would continue to increase in frequency and spread in areas characterized as having cheatgrass mono-cultures. Future fires would be subject to Emergency Stabilization and Rehabilitation treatments on a case by case basis.

Fuels treatments have occurred within the Planning Area (as described in Section 3.1.10) in the past. Due to the importance in protecting critical sage-grouse and sagebrush obligate species habitat, it is anticipated that intensified fuels management and treatments would increase.

Recreation
There are many opportunities in the cumulative assessment area that offer a variety of past, present, and future recreation uses. Recreation use would generally remain at current levels of visitation as economic conditions and cost of travel may slow recreation. Predominant uses include; hunting, fishing, hiking and camping.

5.1 Cumulative Impacts

5.1.1 Air Quality

Past and Present Actions
Ground-disturbing activities from minerals, wildfire management and recreation have generated low air quality impacts in the impact assessment area. These air quality impacts include generation of fugitive dust in areas where ground disturbing activities are occurring. Generally the impacts are short-term and are localized to specific areas and cease once the ground-disturbing activity is completed. Grazing generates little to no impact to air quality within the impact Planning Area. Wildfires within the assessment area have generated smoke and dust on a more regional level. These impacts to air quality are generally limited to when the fire is burning. However, short term blowing dust and ash can occur in areas after the fire has been suppressed and during seeding of burned areas. Re-establishment of vegetation through implementation of fire rehabilitation projects reduces impacts to air quality as vegetation is re-established and soils become stabilized.

Reasonably Foreseeable Future Actions
Impacts to air quality from reasonably foreseeable future actions would remain similar to those analyzed under past and present actions for livestock grazing. There is potential for increased ground-disturbing activities from mineral exploration which would increase dust and vehicle emissions into the air. These impacts would be localized and short term. Impacts from recreation use would be similar to past and present actions. Impacts to air quality from future wildfires should be reduced as implementation of fuel treatments would result in smaller less intense wildfire activity.

Cumulative Impact
Proposed Action
Air quality within the cumulative impact assessment area has been impacted through time. Implementation of the proposed action combined with past, present, and reasonably foreseeable actions should have low incremental impacts to air quality with fewer smoke emissions from large fires due to increased fuels management emphasis and installation of fuelbreaks to protect wildlife habitat.

Alternative B
Air quality within the cumulative impact assessment area has been impacted through time. Implementation of the proposed action combined with past, present, and reasonably foreseeable actions should have low incremental impacts to air quality. Wildfire smoke impacts would increase as fewer fuelbreaks would be built and larger fires could occur.

Alternative C
Implementing this alternative combined with past, present, and reasonably foreseeable actions should have low incremental impacts to air quality. Fire management impacts

would decrease the potential for smoke impacting air quality as larger fuelbreaks would be built. Prescribed fire would increase impacts to air quality in the short term.

No Action Alternative
Implementation of the no action combined with past, present, and reasonably foreseeable actions should have minimal incremental impacts to air quality. Fire management impacts would increase as the potential for smoke impacting air quality as fewer fuelbreaks would be built and larger fires could occur.

5.1.2 Cultural Resources

Past and Present Actions
Since many Great Basin prehistoric sites are surface or near surface sites, any ground disturbing activities within site boundaries can destroy site integrity, spatial patterning and may make a determination of site function more difficult to ascertain. Datable organic features are either destroyed or contaminated.

Previous wildfire and rehabilitation, localized grazing, road construction/maintenance, camping (including that associated with hunting), and gravel pits have caused these types of impacts to cultural resources. Mining, however, has not been a major factor in the human use of the Montana's. Occasional casual use and exploratory mining does occur but impacts are minimal.

Grazing has probably affected a larger number of sites than is documented. Looting sometimes occurs but inadvertent actions from recreation, rock hounding and other off-road activities have affected cultural resources as well. The project area has been subjected to wildfires that directly and physically affected an unknown number of cultural resources through the burning, melting and fracturing of artifacts and features. Direct and indirect impacts may have occurred to cultural resources through the emergency stabilization and rehabilitation program, as well.

Reasonably Foreseeable Future Actions
Due to weather patterns common to Northern Nevada and the encroachment of highly flammable cheatgrass it is reasonable to expect that future wildfires would occur in the Montana range. These potential wildfires may impact sites through the burning of structures, the melting or fracturing of lithic tools and debris and other destructive processes.

Recreational use (OHV use, hiking, camping, hunting, rockhounding, etc.) is expected to increase as the local population increases and these activities sometimes coincide with sensitive cultural resources causing displacement and mixed deposits of prehistoric/historic and modern debris. Recreational use can also lead to opportunistic looting of inadvertently discovered artifacts

Cumulative Impact
Proposed Action
Previous and present land management practices and other human activities (such as OHV and other recreational use) as well as reasonably foreseeable future actions as

described above have contributed to the overall condition of cultural resources in the project area. However, the proposed action, if successful, would result in improved native vegetation. Since there may be a substantial improvement to the ecological condition over time, the health and vigor of certain other plants might also improve accordingly. Site vandalism and looting may be somewhat muted if the native vegetation planting under the proposed action is successful by reducing ground, and therefore artifact, visibility.

Alternative B
Implementing this alternative combined with past, present, and reasonably foreseeable actions should have low incremental impacts to cultural resources. Fewer fuelbreaks would be constructed so direct damage to cultural resources would be less. However, cultural resources would be more vulnerable to damage from wildfire.

Alternative C
Implementing this alternative combined with past, present, and reasonably foreseeable actions should have low incremental impacts to cultural resources. Fire management impacts would expose and may damage cultural resources as a larger fuelbreak would be built and prescribed fire would be used. These impacts are expected to be localized and remain low due to implementation of mitigation measures to reduce impacts. Fuelbreaks would protect and or slow the spread of wildfire protecting large areas containing cultural resources.

No Action Alternative
Failure to implement the proposed action is highly likely to increase the probability of wildfires that can have significant impacts to cultural sites (melting and shattering of obsidian artifacts for example). Since the proposed action that would lead to an improvement in native vegetation conditions would not be implemented under this alternative there may be an increasing decline in ecological condition over an extended period of time. This, in turn, could lead to a slight increase in impacts to cultural resources through soil erosion, even if the anticipated higher likelihood of wildfire is not realized. This alternative would not affect foreseeable increases in OHV and other recreational use and the resulting impacts to archaeological sites.

5.1.3 Invasive Non-native Species

Past and Present Action
Past and present actions from livestock grazing, minerals exploration and development, road maintenance, wildfire and recreation have promoted the spread of noxious weeds and invasive, non-native species within areas disturbed from these actions. In particular areas where recent road maintenance has occurred, areas of overgrazing and more intensive Off-Highway Vehicle (OHV) use areas. Implementation of mitigation measures that include fire rehabilitation and mineral related reclamation has reduced the potential for establishment and spread of invasive species.

Reasonably Foreseeable Future Actions

Impacts from reasonably foreseeable future actions on noxious weeds and invasive, non-native species are expected to remain similar to those analyzed under past and present actions. Generally it is anticipated that noxious weeds and invasive, non-native species are expected to expand over time with increase in disturbance activities described above.. Recreation use from OHV travel is likely to promote the spread and introduction of additional noxious weeds and invasive, non-native species not currently present in the area. These impacts may be mitigated through public information campaigns. Existing mineral exploration activities would continue and could promote the spread of weeds and invasive species within disturbed areas. These impacts would be dependent on the size of areas disturbed. Impacts from weeds and invasive species in these areas would be controlled based on development of mitigation measures and permit stipulations. Future fuels reduction or other vegetation projects within the assessment area have the potential to promote the spread of invasive/noxious weeds. However, mitigation measures such as follow up treatments with herbicides and seeding with competitive native and introduced perennial species would be incorporated into project actions. In addition, improving the health of native plant communities through project actions and mitigation measures would result in these plant communities becoming less susceptible to establishment and spread of noxious weeds and invasive, non-native species.

Implementation of fuelbreaks would reduce the size and spread of wildfire thereby reducing the potential of establishment and spread of noxious weeds and invasive, non-native species.

Cumulative Impact

Proposed Action

Noxious weeds and invasive, non-native species may incrementally establish and spread within the assessment area. Based on implementation of permit requirements, mitigation measures and the proposed action the establishment and spread of noxious weeds and invasive, non-native species would remain low. Intensified fuels management may promote spread of noxious weeds and invasive, non-native species in treated areas but application of mitigation measures such as herbicide treatments and seeding of competitive perennial species would nullify this affect. Following implementation of the proposed actions, large areas of habitat would be less vulnerable to wildfire and establishment of noxious weeds and invasive, non-native species species following fires.

Alternative B

Incremental impacts from past, present, reasonably foreseeable future actions and implementation of Alternative B would be the same as described in Alternative A. However, there would be lower potential of establishment and spread of noxious weeds and invasive, non-native species as fuels management would be limited to road maintenance and maintenance of existing fuelbreaks.

Alternative C

Same as Alternative A. More intensive fuels management treatments would initially impact larger areas which initially would increase the size of areas vulnerable to noxious

weeds and invasive, non-native species establishment due to short term impacts from the use of prescribed fire. However, these impacts would remain low based on long term maintenance of fuelbreaks to control the spread of weeds.

No Action Alternative
Incremental impacts would remain low. There would be less disturbance generated from development of fuelbreak treatments. Subsequently, large areas of sage-grouse habitat would continue to be at risk of loss from wildfire. Should large fires occur, potential fo spread of noxious weeds and invasive, non-native species would be greater.

5.1.4 Migratory Birds

Refer to Section 5.1.18 (Special Status Species).

5.1.5 Native American Religious Concerns

Past and Present Actions
In the past much of the cumulative assessment area was utilized by the Ft. McDermitt Paiute-Shoshone Tribe for traditional uses such as food, wood and herb gathering, hunting, camp sites, sacred sites and various other uses. The historical and current uses identified within the past and present actions such as grazing, transportation and access, and wildfire have had an impact on the traditional uses of the tribe. Grazing has likely had some impact on the distribution and number of native species used for food, medicinal, and ceremonial purposes by the Tribe. Wildfires that have burned within the assessment area have also affected the number and distribution of the native species, due to the invasion of cheatgrass after a wildfire occurs. Fire rehabilitation efforts from wildfire in the past have also contributed to a decrease in native vegetation by the planting of non-native species such as Crested Wheatgrass. Maintenance of existing roads has impacted the traditional uses by giving tribal members better access to and within the Planning Area.
Mineral exploration and recreation have caused few impacts to the traditional uses associated with the tribe. There is mineral exploration within the assessment area; however it has generally been small exploration plots that do not disrupt large portions of the assessment area. Recreation has caused no known impacts to traditional uses.

Reasonably Foreseeable Future Actions
Impacts from reasonably foreseeable future actions would remain similar to those analyzed under past and present actions relating to livestock grazing, wildfire, mineral exploration, recreation and transportation and access. Future impacts associated with the planting of non-native species in fire rehabilitation efforts should decrease as the BLM incorporates more native species into seed mixes used in fire rehabilitation efforts.

Cumulative Impact
Proposed Action
There would be impacts from the proposed action on vegetation (sagebrush) used by Tribal members. These impacts would occur on a small scale across the entire

assessment area. The remainder of the assessment area would have no other impacts due to the proposed action than the benefit of enhanced wildfire protection. The cumulative impacts discussed in the past, present and reasonably foreseeable future would continue at similar rates as at present. It seems unlikely, with current information, that the collective impacts combined with the proposed action would cause additional impacts to resources used by Native Americans.

Alternative B
Incremental impacts would be low. Reduced disturbance footprints in pre disturbance areas would have little effect on Native American values.

Alternative C
Similar to the Proposed Action.

No Action Alternative
If the no action is chosen there would be no impacts to Native American Religious Concerns beyond what already exists as described in the past, present, and reasonably foreseeable future actions.

5.1.6 Threatened and Endangered Species

Refer to Section 5.1.10 (Fisheries), and Section 5.1.20 (Special Status Species).

5.1.7 Water Quality

Past and Present Actions
Historically, cattle grazing occurred over the entire planning area. Measureable impacts to water quality are variable in time (both seasonally and over the long term) and space. Impacts include increases of bacteria to water sources, increased sediment loading where riparian vegetation has been over utilized, and potential increases in surface water temperatures where riparian vegetation has been over utilized or where ground and surface water interactions have been disrupted due to erosion. Currently, grazing is managed by the WDO on 282,458 (82%) acres of the assessment area. The remainder of grazing within the assessment area is either managed by the BLM in Oregon or by private parties.

There is no known contamination of ground or surface water from the activity at Cordero Mine. Historical surface activity at the Cordero Mine had the potential to impact approximately 12 miles of stream through increases in sediment loading. Most, if not all, of the flow along this stream length is likely intermittent at best and these impacts would have ceased along with surface disturbing activities at the mine. Construction of roads related to the Lithium Exploration project has had the potential to impact up to 18.5 miles of stream in or adjacent to the assessment area. These impacts would include increased sediment loading in the streams with the most measureable impact occurring during or soon after construction. After establishment, these roads would a similar degree of impact

on streams as previously existing roads. This impact cannot be quantified due to the variability of the impact due to climate and fluctuation in use.

Between the years 1900 and 2011, 24 fires were recorded and mapped in the planning area. These fires impacted 83,096 (24%) of the planning area and had the potential to impact approximately 310 miles of stream. These impacts can include extreme increases in surface water temperature while the fire is burning, increases in nutrient loading from runoff of ash and soot, and increases in sediment loading to streams until riparian and upland vegetation becomes reestablished. Because of the variability of these impacts over time and space, the overall impacts cannot be quantified.

Impacts to water quality from recreation activities have primarily resulted from use of OHVs through wetlands and across streams. Both of these impacts lead to increases of sediment to streams which are generally short lived and do no result in long term measurable impacts to water quality. Currently there are 262 mapped stream crossings in the planning area.

Reasonably Foreseeable Future Actions

The BLM is currently working toward developing a new grazing permit for the Horse Creek allotment. However, no changes in permit terms and conditions have been fully defined or agreed upon. No other allotments within the planning area are undergoing a permit renewal. Therefore there is no reasonably foreseeable change in impacts from cattle grazing based on changes in permits. The 2011-2012 water year, however, has resulted in less than average snow pack and the BLM is preparing to respond to the resultant drought conditions. This may include a reduction of cattle use within the area. This may lead to a change in impact to water quality. Less use by cattle may lead to an increase in water quality. Conversely, water shortages may lead to a greater than normal concentration of cattle around water sources which may decrease water quality. This change in impact would likely only persist for one grazing season, depending on successive water availability.

The Lithium Exploration project is the only proposed mineral resource activity in the area and may lead to impacts to water quality if the creation of a mine is permitted and implemented. Based on the mine's exploration plan of operations area, activity could impact the same 18.5 miles of stream already potentially impacted by the creation of new roads. Actual mine activity will likely occur in a much smaller area which is unlikely to have an effect on any channelized water that flows through or out of the planning area. The mine would not be utilizing heap leach systems and would not be expected to have an impact on groundwater quality.

If wildfire frequency increases, as expected, impacts to water quality would increase proportionately. Types of impacts would remain the same as those that have occurred in the past. However, with increased emphasis being placed on protection and restoration of sage grouse habitat, ES&R activities in the planning area will likely decrease sediment loading impacts to water quality through expedited vegetation reestablishment. There is potential for these impacts to occur throughout the entire planning area.

Recreation is also expected to increase, however it is difficult to assess the impacts to water quality from this increase. Because of the existing access routes in the planning area, it is not likely that the number of stream crossings would increase. An increase of use at each crossing would increase the number of times sediment is disturbed and transported, but it is unlikely that this would cause a measureable increase in erosion or deposition relative to the currently existing environment.

Cumulative Impact

Proposed Action

Installation and maintenance of exclosure fences under the proposed action will have a countervailing cumulative effect to the decreases in water quality caused by cattle grazing. This effect is likely to impact up to 49 miles (~5%) of stream within the planning area.

Water quality is not likely to be impacted by the cumulative effects of the proposed action and mineral resource activities.

Management of fuels and increased wildfire suppression capabilities through road maintenance under the proposed action will likely have a countervailing effect to the impact on water quality from wildfires and an additive effect to the rehabilitation and preservation of water quality caused by ES&R/ fuels management activities. These impacts are likely to occur throughout the entire planning area.

The removal of one stream crossing (Bull Spring) and reinforcing three other stream crossings (4th of July Meadow) under the proposed action will have a countervailing effect on the decrease of water quality due to OHV stream crossing. This effect would impact approximately 37 miles (~4%) of stream within the planning area.

Alternative B

Cumulative impacts under Alternative B would be identical to those described under the Proposed Action.

Alternative C

Cumulative impacts under Alternative C would be identical to those described under the Proposed Action.

No Action Alternative

If the no action is chosen there would be no impacts to Water Quality beyond what already exists as described in the past, present, and reasonably foreseeable future actions.

5.1.8 Wetlands and Riparian Zones

Past and Present Actions

Historically, cattle grazing has occurred over the entire planning area. Measureable impacts to wetland and riparian zones are variable in time (both seasonally and over the

long term) and space. Impacts include over-utilization of riparian vegetation and alteration of stream bank and meadow soils, both of which can lead to increased erosion, loss of wetland and riparian soils, increased rates of groundwater loss from meadows, and alteration of natural surface flow patterns. Historic erosion and incision has not been quantified or had exact causal factors determined within the planning area, however qualitative assessments confirm that cattle continue to have impacts on wetland and riparian zones and that many of the wetland and riparian zones have been degraded to some extent by increased erosion (both historic and currently active). Currently, grazing is managed by the WDO on 282,458 (82%) acres of the assessment area. The remainder of grazing within the assessment area is either managed by the BLM in Oregon or by private parties. Within the Horse Creek and Jordan Meadows allotments, 81 acres and 17 acres of wetland and riparian zones have been fenced to exclude cattle use, respectively. Proportionately, this has led to an increase of cattle use on the remaining wetland and riparian zones by 3% and 19%, respectively.

There are no known impacts to wetland or riparian zones at Cordero Mine. Current activity related to the Lithium Exploration project is not occurring in or adjacent to wetland or riparian zones and is not known to have had an impact on these areas.

Between the years 1900 and 2011, 24 fires were recorded and mapped in the planning area. 52 acres of the wetland and riparian zones that exist in the grazing allotments where impacts from the Proposed Action and alternatives are expected to occur were impacted by these fires, 27 acres (5% of wetland and riparian zones) in the Horse Creek Allotment and 25 acres (4% of wetland and riparian zones) in the Jordan Meadows. These impacts can include temporary loss of riparian vegetation and temporary increases in erosion and deposition. Because of the variability of these impacts over time and space, the overall impacts cannot be quantified.

Impacts to wetland and riparian zones from recreation have resulted from camping in meadows and use of OHVs through meadows and across streams. Both of these impacts lead to loss or damage of riparian vegetation, compaction of riparian and wetland soils, and alteration of stream banks. All of these impacts, generally, can cause loss of wetland or riparian zone habitat through erosion. These effects are highly localized and occur over relatively short time frames, however repeated use of wetland and riparian zones can lead to persistent degradation of wetland and riparian zones. Because of the dispersed nature of this use in time and space, it is difficult to quantify the impacts. Degradation of riparian functionality due to recreation would be reflected qualitatively in PFC assessments (see Section 3.1.8), however PFC ratings do not highlight the causes of disturbance.

Reasonably Foreseeable Future Actions

The BLM is currently working toward developing a new grazing permit for the Horse Creek allotment. However, no changes in permit terms and conditions have been fully defined or agreed upon. No other allotments within the planning area are undergoing a permit renewal. Therefore there is no reasonably foreseeable change in impacts from cattle grazing based on changes in permits. The 2011-2012 water year, however, has

resulted in less than average snow pack and the BLM is preparing to respond to the resultant drought conditions. This may include a reduction of cattle use within the area. This may lead to a change in impact to wetland and riparian zones. Less use by cattle may lead to a decrease in total riparian vegetation consumption by cattle; however drought conditions may lead to lower overall riparian vegetation production. Additionally, water shortages may lead to a greater than normal concentration of cattle around water sources which may lead to higher than normal utilization of wetland and riparian zones. This change in impact would likely only persist for one grazing season, depending on successive water availability.

The Lithium Exploration project is the only proposed mineral resource activity in the area and is not expected to impact and wetland or riparian zones based on the mine's exploration plan of operations area.

If wildfire frequency increases, as expected, impacts to wetland and riparian zones would increase proportionately. Types of impacts would remain the same as those that have occurred in the past. However, with increased emphasis being placed on protection and restoration of sage grouse habitat, ES&R activities in the planning area will likely decrease post-fire erosion of wetland and riparian zones through expedited vegetation reestablishment and soil stabilizing measures. There is potential for these impacts to occur throughout the entire planning area.

Recreation is also expected to increase, however it is difficult to assess the impacts to water quality from this increase. Because of the existing access routes in the planning area, it is not likely that the number of stream crossings would increase. An increase of use at each crossing would increase the degree of stream bank alteration. This may lead to impassibility of some crossings which would encourage use of new crossings. Where this occurred, increases in degradation of wetland and riparian zones would increase. The uncertain nature of recreational use makes the likelihood that this would occur or the degree to which this would occur makes it impossible to quantify what these impacts may be.

Cumulative Impact

Proposed Action

Meadow stabilization and rehabilitation projects along with riparian exclosure fencing maintenance and installation would have a countervailing effect on the impacts to these specific areas from cattle grazing. By installing new exclosures, however, it is possible that cattle use will be concentrated on other wetland or riparian areas. Installation of troughs adjacent to the new exclosures would decrease this phenomenon. Without accounting for the distributional effects of the new troughs, new exclosures would increase use on the remaining wetland and riparian areas by approximately 1% within the Horse Creek allotment and approximately 4% in the Jordan Meadows allotment. Effects from this impact may include increased utilization of riparian vegetation and increases in stream bank alteration proportionate to the increase in use.

Wetland and riparian zones are not likely to be impacted by the cumulative effects of the Proposed Action and mineral resource activities.

Management of fuels and increased wildfire suppression capabilities through road maintenance under the Proposed Action will likely have a countervailing effect to the impact on wetland and riparian zones from wildfires and an additive effect to the rehabilitation and preservation of wetland and riparian zones caused by ES&R/ fuels management activities. These impacts are likely to occur throughout the entire planning area.

The removal of one stream crossing (Bull Spring) and reinforcing three other stream crossings (4th of July Meadow) under the proposed action will have a countervailing effect on the degradation of wetland and riparian zones due to OHV stream crossing.

Alternative B
Cumulative impacts under Alternative B would be identical to those described under the Proposed Action.

Alternative C
Cumulative impacts under Alternative C would be identical to those described under the Proposed Action.

No Action Alternative
If the no action is chosen there would be no impacts to riparian areas beyond what those described in the past, present, and reasonably foreseeable future actions.

5.1.9 Fisheries

Past and Present Actions
Past and present actions have caused impacts to fishery habitats from livestock grazing, wildfire, recreation and road maintenance. The impacts to the fishery habitats from these past and present actions, in general, include: loss of streamside vegetation, increased sedimentation, increased stream channel width, and loss of undercut streambank habitat. These impacts to fisheries have been reduced through implementation of mitigation measures. Loss of streamside vegetation due to wildfire has been mitigated by re-establishment of vegetation from fire rehabilitation projects. Impacts from mineral activities are limited as gravel pits and mining/exploration projects have not occurred within areas containing perennial streams.

Reasonably Foreseeable Future Actions
Reasonably foreseeable future actions for livestock grazing, road maintenance, minerals exploration, and recreation use would impact fisheries. The expected impacts to the fishery habitat would be similar to the past and present actions to include: loss of streamside vegetation, increased sedimentation, increased stream channel width, and loss of undercut streambank habitat. It is anticipated that these impacts would incrementally increase overtime. Implementation of mitigation measures would reduce these impacts.

Based on implementation of the proposed action, impacts from wildfire should lessen the size and intensity of wildfire.

Cumulative Impact

Proposed Action

Based on few perennial streams within the project area and implementation of mitigation measures, permit stipulations, and achieving Standards for Rangeland Health the incremental cumulative impacts on the fisheries within the assessment area would be low.

Alternative B

Incremental cumulative impacts would be low as fuels treatments would be limited to existing disturbed areas. Implementation of mitigation measures, and maintaining Standards for rangeland health would overall have few impacts to fisheries.

Alternative C

Incremental cumulative impacts would be similar to the proposed action.

No Action Alternative

If the no action is chosen there would be no impacts to fisheries beyond those described in the past, present, and reasonably foreseeable future actions. However, under the no action alternative, impacts to salmonid species could intensify from habitat lost to potential large wildfire events.

5.1.10 Fire and Fuels Management

Past and Present Actions

Past grazing practices have reduced native perennial grasses which served to increase cheatgrass establishment through competition. The elimination of most native perennial grasses increased cheatgrass establishment and promoted wildfire spread. Present grazing systems and fuelbreaks have allowed for an increase in perennial grasses which stay green longer reducing the length of the fire cycle. Past and present fuel treatments have changed fire behavior by reducing intensity and in some cases stopped fires from spreading. Recreational use may increase the potential for human caused fire within the area. Sparks from recreation vehicles and campfires have caused fires.

Reasonably Foreseeable Future Actions

Grazing impacts are expected to remain similar to those described under present actions. Development of future fuels management projects would be based on monitoring and the success of the currently proposed actions. Proposed and existing fuels treatments would be maintained to ensure fuelbreak effectiveness, which should reduce the size and intensity of future wildfires. Impacts from recreation would be similar to those described under past and present actions.

Cumulative Impact

Proposed Action

Effects from past, present, and RFFAs combined with the proposed action would reduce the size of wildfires. Sage-grouse and sagebrush obligate species habitat would be protected from large wildfire events. Infrastructure from minerals exploration activities would also be protected from wildfire.

Alternative B

Incremental impacts would result in smaller disturbance footprints from road maintenance as disturbance would occur in previously disturbed areas. Fuelbreaks may not be as effective in protecting sagebrush obligate species habitat as fuelbreaks would be located on existing roadways and may not be strategically oriented to slow the spread of wildfire. Habitat and rangeland restoration treatments would not occur. Mineral exploration areas would be protected by fuelbreaks depending on the location of infrastructure with respect to road location.

Alternative C

Incremental impacts would be similar to the proposed action alternative. More surface disturbance would occur to construct fuelbreaks.

No Action Alternative

Cumulative effects of the no action would include potential for wildfires to burn larger areas. Wildlife habitat and rangeland rehabilitation would occur on a case-by-case basis and would take longer to achieve resource benefits.

5.1.11 Geology and Minerals

Past and Present Actions

Past and present actions have generated few impacts to minerals.

Reasonably Foreseeable Future Actions

High interest in mineral resource exploration and development is likely to continue on the south, west, and north flanks of the Planning Area, with continued moderate interest throughout the remainder. Few new impacts from livestock grazing would occur. Increased recreation use may pose safety issues in areas of active exploration. Fuelbreaks would add some level of protection for any infrastructure generated from existing or proposed mineral exploration and development.

Cumulative Impact

Proposed Action

Incremental impacts would include greater protection of mineral development infrastructure as increased fuelbreak treatments would occur. If approved and implemented, elements of this project would be incorporated into the required plans for operation and reclamation of the mineral activities. Mineral operators would improve and maintain roads to the extent necessary to accomplish their operations, subject to the standards that would be implemented in this Plan. Reclamation of their operations would

take into account future potential for fuel characteristics and fire planning. No additional incremental impacts would occur beyond those described under past, present and RFFAs.

Alternative B
Incremental impacts would be dependent on location of mineral development with respect to existing roads. Mineral operators would improve and maintain roads to the extent necessary to accomplish their operations, subject to the standards that would implemented in this Plan. Minerals operations and reclamation would proceed without particular regard to future potential for fuel characteristics and fire planning, with the exception of roads being utilized that existed prior to the mineral operation. Those would be left in a condition consistent with the terms of this plan. A lower level of infrastructure protection would occur as fuelbreaks would be smaller in width and may not be strategically located to protect specific areas. No additional incremental impacts would occur beyond those described under past, present and RFFAs.

Alternative C
Similar to the proposed alternative.

No Action Alternative
Cumulative effects of the no action would include potential for wildfires to burn larger areas. Fuelbreaks protecting minerals infrastructure would occur on a case-by-case basis and treatments would occur over a longer period of time. Mineral operators would improve and maintain roads to the extent necessary to accomplish their operations, and reclaim their operations without particular regard to future potential for fuel characteristics and fire planning.

5.1.12 Lands and Realty

No cumulative impacts are expected to Lands and Realty.

5.1.13 Lands with Wilderness Characteristics

Not present within any of the proposed treatment areas.

5.1.14 Public Health and Safety

Past and Present Actions
Wildfires in the past along roadways have posed public safety threats by reducing visibility from smoke. Livestock grazing and recreation poses few impacts to public safety. Fuelbreaks serve to protect the public land users in the event of fire.

Reasonably Foreseeable Future Actions
Wildfires would continue to burn within the assessment area due to human and natural causes. Construction of future fuelbreaks would serve as more effective deterrents to slow or stop wildfire and improve public safety. An increase in recreation use could increase emergency responses necessary to retrieve recreationists. This potential impact

is expected to be low due to the number of people using the area. Few safety issues are caused by livestock management.

Cumulative Impact

Proposed Action

It is anticipated that past, present and reasonably foreseeable future actions when combined with the proposed action would improve safety to the public along highways and to residents in the area. Wildfires would still occur within the assessment area however fire size and intensity would decrease due to more intensive efforts to construct and maintain fuelbreaks. More recreation use would create additional impacts from human uses including increased potential for injuries. Impacts from livestock grazing are expected to be similar to those described under past and present actions.

Alternative B

Fewer fuelbreaks would be installed making areas more vulnerable to wildfire spread posing safety hazards from wildfire. All other impacts would be similar to those described under past, present, and reasonably foreseeable future actions.

Alternative C

Incremental public health and safety impacts would be similar to the proposed action. Larger fuelbreaks may provide a higher level of public safety in areas.

No Action Alternative

Cumulative effects of the no action would include potential for wildfires to burn larger areas. Fuelbreaks providing public safety would occur on a case-by-case basis and treatments would occur over a longer period of time.

5.1.15 Rangeland Management

Past and Present Actions

Past and present activities have affected livestock grazing through the removal of livestock forage within disturbed areas. Fencing areas for minerals exploration and to protect riparian areas have limited livestock access to small amounts of forage within those areas. Wildfire at the lower elevations has removed large areas of forage or restricted access to forage. Implementation of fire rehabilitation projects serve to re-establish forage vegetation and mitigate some of these impacts once vegetation is established. Recreation use has caused impacts due to damage or vandalism of range improvements and difficulties in managing livestock from fence gates being left opened.

Reasonably Foreseeable Future Actions

Impacts to grazing from reasonably foreseeable future actions would remain similar to those analyzed under past and present actions relating to minerals activity and grazing. Increasing recreation use could cause an incremental increase in damage to range improvements and complicate livestock management in areas. It is anticipated that impacts from wildfire should lessen as the size and intensity of wildfire would be reduced based on continuing to construct and maintain fuelbreaks.

Cumulative Impacts

Proposed Action

Incremental impacts would include reduced potential for wildfire spread and improving habitat conditions based on habitat restoration projects. Larger areas of rangeland would be protected. Impacts related to minerals exploration and recreation use would continue and would be dependent on the amount of mineral exploration and recreation use in the area.

Alternative B

Smaller potential to reduce wildfire spread would occur. Fuelbreaks would be limited to existing roadways and may be smaller and or not strategically placed in areas. More rangeland would be vulnerable to wildfire affecting livestock forage. Impacts from mineral exploration and recreation use would be dependent on the size, degree and the number of visitors in the area.

Alternative C

Similar to those described under the proposed action. A larger fuelbreak and seeded area proposed in Kings River Valley would provide additional protection of rangeland in that area and also provide additional forage.

No Action Alternative

If the no action is chosen there would be no impacts to grazing beyond those described in the past, present, and reasonably foreseeable future actions. The no action could result in less effective control of wildfire allowing increased acreage to burn destroying forage for livestock.

5.1.16 Recreation

Past and Present Actions

Past and present actions from livestock grazing, minerals actions, and wildfire has affected the setting and subsequent recreational experience to some users and have reduced recreational use access in areas. Fuels management projects have protected areas for recreation use from wildfire. Past minerals exploration has increased access into portions of the range.

Reasonably Foreseeable Future Actions

Impacts from reasonably foreseeable future actions would remain similar to those analyzed under past and present actions relating for livestock grazing. Increased minerals activity may close areas for recreation use but also may improve or create additional access for recreation use. Impacts to recreation use from wildfire should be reduced based on continued construction of fuelbreaks.

Cumulative Impact

Proposed Action

Incremental impacts would include protecting larger areas used for recreation through construction of fuelbreaks. All other impacts would be similar to those described under past, present, and reasonable foreseeable future actions.

Alternative B

Smaller potential to reduce wildfire spread would occur. Fuelbreaks would be limited to existing roadways and may be smaller and or not strategically placed in areas. More areas used for recreation would be vulnerable to wildfire. Impacts from mineral exploration and recreation use would be dependent on the size, degree and the number of visitors in the area. Impacts from livestock management would remain similar to past and present actions.

Alternative C

Similar to those described under the proposed action. A larger fuelbreak and seeded area proposed in Kings River Valley would provide additional protection of recreation use areas.

No Action Alternative

Under the no action, impacts to recreation would occur beyond those described in the past, present, and reasonably foreseeable future actions. The no action would result in less effective control of wildfire increasing the potential for larger recreation areas to burn.

5.1.17 Soils

Past and Present Actions

In the past livestock grazing excesses removed or substantially reduced the vigor of native plant communities, increased soil loss to erosion and severely altered soil functions and processes that effect range health. Current grazing management systems have helped to reduce past soil impacts and improved current soil functionality. In addition, impacts to soils from mineral activities, and recreation, have increased the potential for soil erosion from wind and water depending on the size of the disturbance areas. These impacts have been reduced through implementation of mitigation measures and application of Best Management Practices (BMPs). Wildfire has removed large areas of vegetation exposing soils to erosion in the short term, increased expansion of cheatgrass and other invasive native and non-native annuals for the long-term. These affects have been partially mitigated through implementation of fire rehabilitation projects and protection from wildfire through development of fuelbreaks.

Reasonably Foreseeable Future Actions

Impacts to soils from livestock grazing are expected to be similar to those identified under present actions Impacts to soils from mineral actions would continue to be low based on implementation of permit requirements, BMPs and other mitigation measures. Increased recreation use could increase impacts to soils from the removal of vegetation

and soil compaction from OHV use. Wildfire impacts would be reduced through continuing implementation of fuelbreaks.

Cumulative Impact

Proposed Action

Short term impacts from implementation and long term reduction of impacts from wildfire would result from construction of fuelbreaks. Soil loss by wind or water erosion and establishment and expansion of noxious weeds and invasive, non-native species from wildfires would be reduced over time. Proposed habitat restoration actions would assist in stabilizing and improving soil conditions, through establishment and increase in perennial vegetation cover. All other impacts would be similar to those described under past, present, and reasonable foreseeable future actions.

Alternative B

Potential to reduce wildfire impacts under this alternative would be limited to fuelbreak placement only along existing roadways thus decreasing size of areas strategically protected, within the project area. Soils would continue to be vulnerable to wildfire impacts, especially soil loss through wind and water erosion following wildfire. Impacts to soils from mineral exploration and recreation use would be dependent on disturbance size, season of use and the number of visitors accessing and using the area. Impacts from livestock management would remain similar to present actions. Reduction of habitat restoration activities in the project area would allow current impact trends to continue into the foreseeable future.

Alternative C

Impacts to soils would be similar to those described under the proposed action. The larger fuelbreak and seeded areas proposed in Kings River Valley could create minimal erosion to soils in the short term until seeded species established while providing protection to soils in the long term. Habitat restoration actions would improve soil stability in the short and long term.

No Action Alternative

Impacts to soils from the no action alternative would be similar to those described in the past, present, and reasonably foreseeable future actions. Increased potential for large wildfire events would persist. A large wildfire would eliminate some and reduce other perennial vegetation cover, consume surface litter and substantially impact biological crusts within the area leading to increased potential soil erosion, both short and long term.

5.1.18 Special Status Species

Past and Present Actions

Livestock grazing has contributed to loss of habitat and decline of habitat quality in both upland and riparian areas for many special status species through reduction in the cover and diversity of native vegetation and through the spread of non-native invasive species such as cheatgrass. Recreation use in the area may have temporarily displaced some special status species from suitable habitat areas depending on the intensity and duration

of the disturbance and individual species' tolerance to disturbance. Mining and exploration projects in the area resulted in loss of some special status species habitat, potential habitat fragmentation for sage-grouse and other special status species, and variable levels of disturbance depending on intensity and duration of disturbance and individual species' tolerance. Implementation of environmental protection measures minimized disturbance impacts to many special status species. Past wildfires have resulted in loss of quality special status species habitat and facilitated cheatgrass invasion; however, ES&R treatments have helped to recover some of the habitat areas lost. Fuels treatments have resulted in decreased habitat suitability for some special status species and an increase in habitat suitability for some special status species. Fuels treatments likely contributed to protection of existing quality habitat for special status species including sage-grouse in the area.

Reasonably Foreseeable Future Actions

Impacts to special status species from livestock grazing, mineral exploration, recreation, wildfires, ES&R treatments, and fuels treatments would be similar to those described in the Past and Present Actions Section above. Potential increases in recreational use could create additional disturbance and potential for temporary displacement of special status species from suitable habitats. Potential increases in fuels treatments would contribute to the protection of existing quality special status species habitats and likely slightly change the species distributions and composition in the treatment areas through changes in the structure and composition of vegetation.

Cumulative Impact

Proposed Action

Incremental impacts from past, present, and reasonably foreseeable future actions combined with the proposed action would likely result in a small loss of suitable habitat for some special status species and may also result in a small gain of suitable habitat for some special status species. The distribution and composition of special status species that use proposed fuels treatment and restoration areas would likely change slightly through changes in the structure and composition of vegetation. Restoration activities would increase overall habitat quality for special status species in upland and riparian areas. Implementation of environmental protection measures would minimize disturbance impacts to many special status species including pygmy rabbits, sage-grouse, burrowing owls, and other nesting birds. Protection of existing quality special status species habitats from wildfire would also increase.

Alternative B

Incremental impacts would be identical to those described under the Proposed Action Section above with the exceptions that disturbance would be limited to road maintenance and riparian restoration activities and protection of existing special status species habitat from wildfire would be reduced.

Alternative C
Incremental impacts would be identical to those described under the Proposed Action Section above with some additional habitat areas converted to fuelbreaks, which would increase the protection of existing special status species habitat from wildfire.

No Action Alternative
Impacts to special status species would be the same as those described in the Past, Present, and Reasonably Foreseeable Future Actions Section above. Protection of existing quality habitat for special status species from wildfire would be greatly reduced and increases in habitat quality and diversity from restoration projects would not occur.

5.1.19 Vegetation

Past and Present Actions
Past livestock grazing has resulted in impacts to the vegetation communities within the assessment area by eliminating or greatly reducing the native, perennial understory vegetation. Cheatgrass, introduced into the area in the early 1900's, has benefited from this reduction in perennial competition, allowing cheatgrass to spread throughout these vegetation communities, particularly along travel corridors and following wildfires. Implementation of current livestock grazing systems has resulted in improved vegetation community understory conditions. The mid to late seral understory plants species are slowly recovering, improving vegetation community conditions However, these communities may never be able to return to their historical values. Impacts to vegetation have also occurred from mineral exploration, removing vegetation through the construction of exploration access roads, creation of trenches and drill pads. Vegetation has also been impacted by OHV use along travel routes throughout the project area.

Wildland fires have removed large areas of vegetation, exposing soils to wind and water erosion following the event. These disturbances have altered plant communities and species composition in the short term and sometimes for the long term, due to exposure to cheatgrass and other invasive non-native annuals encroachment. These impacts have been partially mitigated through fire rehabilitation projects. Placement of fuelbreaks reduce potential for wildfire spread and large scale consumption of vegetation.

Reasonably Foreseeable Future Actions
Impacts to special status species from livestock grazing are expected to be similar to those described under present actions. Existing minerals exploration would impact vegetation through continued disturbance. Increases to recreational use would further impact vegetation communities, particularly from OHV use. These impacts would vary in degree based on the size and distribution of disturbance, season of use and the number of recreational visitors. Future development of fuelbreaks in the project area would increase protection for vegetation communities against large wildfires. Habitat improvement projects would enhance vegetation community health, increasing resilience to natural and human influenced disturbances.

Cumulative Impact

Proposed Action

Construction of fuelbreaks as described under the Proposed Action would reduce risk from wildfire to high value wildlife habitat in the long term. Habitat restoration projects would improve wildlife habitat conditions by promoting resilient, stable vegetation communities. All other impacts would be similar to those described under past, present and reasonable foreseeable future actions.

Alternative B

Lesser potential to reduce wildfire impacts would be realized as fuelbreaks would be limited to existing roadways and may be smaller and or not as strategically placed to mitigate fire behavior in the project area. Otherwise all other impacts would be similar to those described under the proposed action. Habitat restoration projects in meadows and springs would stabilize and re-vegetate degraded areas improving diversity and resiliency to disturbance and maintain and increase areas able to slow or effectively reduce spread of wildfires.

Alternative C

Similar to those described under the proposed action. A larger fuelbreak and seeded area proposed for the Kings River Valley area would provide some protection for at risk vegetation communities against wildfire spread in the project area. Habitat restoration would stabilize and re-vegetate degraded areas improving diversity and resiliency to disturbance.

No Action Alternative

Impacts to vegetation from the no action alternative would be similar to those described in the past, present, and reasonably foreseeable future actions. Increased potential for a large wildfire event would increase the potential for large scale removal of wildlife habitat.. Habitat restoration treatments would not be implemented and areas would continue to be at risk to diminishing rangeland health .

5.1.20 Visual Resource Management

No cumulative impacts are expected to Visual Resources Management.

5.1.21 Wilderness Study Areas

No cumulative impacts are expected to the Disaster Peak WSA.

5.1.21 Wildlife

Refer to Section 5.1.18 (Special Status Species).

6.0 MITIGATION AND MONITORING

6.1 Mitigation and Monitoring During and After Treatment

Monitoring of significant cultural resources would be conducted by the BLM if determined necessary to ensure the integrity of sites eligible or unevaluated for the National Register remain intact. If monitoring cannot ensure this then mitigation in the form of data recovery may be required. Provisions for appropriate monitoring and/or mitigation has been included in the Proposed Action.

All other mitigation and monitoring that would be implemented prior to or during treatment has been identified in the Proposed Action.

Prior to mechanical treatments of sage blocks for habitat restoration/fuels reduction, proposed treatment areas would be monitored to determine species present and vegetation structure. Following manipulation of sage blocks, monitoring would occur for two years to assess effects and vegetative species response prior to continuation of further manipulation.

All proposed treatments would be monitored post treatment annually until project establishment. Following establishment treatments would be monitored at least biennially to determine effectiveness of projects and assess maintenance needs.

Meadow restoration activities would be monitored annually for five years following treatment to determine effectiveness and any necessary follow-up treatment.

Monitoring would be implemented to ensure PLAN goals and objectives are achieved. In addition, monitoring would establish baseline data, gauge the effectiveness of treatments and mitigation measures, and would be used to determine the need for treatment maintenance. The methods used to monitor vegetation treatments may include a combination of photo point, paced and permanent density, line-point intercept, gap intercept, belt transects, production plots, and Rangeland Health Assessments. Monitoring for riparian restoration will follow the Multiple Indicator Monitoring (MIM) of Stream Channels and Streamside Vegetation protocol (Burton, Smith, and Cowley, 2011). Monitoring for invasive species would also include infestation size, density and damage potential. Monitoring would also include fire regime condition class evaluation and cheat grass displacement or “die off” monitoring.

7.0 CONSULTATION AND COORDINATION

Agency Coordination
Nevada Department of Wildlife
U.S. Fish and Wildlife Service

Native American Consultation
A consultation letter was sent to the following Tribes on March 2, 2011:

Fort McDermitt Paiute and Shoshone Tribe
Shoshone-Paiute Tribes of the Duck Valley Indian Reservation
Summit Lake Paiute Tribe
Winnemucca Indian Colony

Consultation meetings were held to discuss the Proposed Action with the Fort McDermitt Paiute and Shoshone tribe on June 21st, 2011 and with the Summit Lake Paiute Tribe on April 21 and May 19, 2012. Calls were placed to the Shoshone-Paiute Tribes of Duck Valley to arrange a consultation meeting on this project and others on May 6 and September 20, 2011. The Preliminary EA was sent to the above-listed tribes on April 25, 2012.

8.0 LIST OF PREPARERS

Bureau of Land Management

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Joey Carmosino	Recreation and Visual Resources
Debbie Dunham	Lands and Realty
Joanne Lowden	Wildlife, Special Status Species, T&E Species
Mark Hall	Native American Consultation
Derek Messmer	Invasive Non-Native Species, ES&R
Ron Pearson	Rangeland Management
Greg Lynch	Fisheries, T&E Species
John McCann	Water Quality, Wetland & Riparian
Patrick Haynal	Cultural Resources, Paleontology
Lynn Ricci	NEPA Compliance
Rob Burton	Soils and Vegetation
Ken Loda	Geology and Mineral Resources
Kristine Struck	Lands with Wilderness Characteristics/WSA

Nevada Department of Wildlife *(Cooperating Agency)*

Mark Freese	Western Region Supervisory Habitat Biologist
Ed Partee	Game Biologist

9.0 PUBLIC OUTREACH

The BLM coordinated with multiple interested agencies and governments early in the planning process and through public scoping of the PLAN. Four meetings and two field trips were held to receive important input which contributed towards development of the PLAN. Involvement included; the Nevada Department of Wildlife (Cooperating Agency), Nevada Division of Forestry, U.S. Fish and Wildlife Service, N-2 Grazing Board, University of Nevada Cooperative Extension, Natural Resources Conservation Service, affected permittees and other interested publics.

A scoping letter was sent to various interested parties on August 24, 2010. The scoping letter and associated maps were made available on the WDO's NEPA web page.

The preliminary EA was sent to the interested public for a thirty day comments period on September 30, 2011. Seven sets of comments were received. These were reviewed, analyzed and addressed in finalizing the EA

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10.0 MAPS

11.0 APPENDICIES

APPENDIX I
Standard Operating Guidelines for Herbicide Application

Application Method and Requirements

Only BLM approved herbicides would be used on this project. Herbicides would be applied by truck or ATV with a boom mounted sprayer, by hand using a backpack, or by aircraft. Treatments would be applied in the fall or spring outside of migratory bird nesting season and according to label directions.

Herbicide application would be done by a State Licensed Herbicide Applicator using standard-approved application techniques.

Any and all herbicide treatments would follow BLM procedures outlined in BLM Handbook H-9011-1 (Chemical Pest Control), and manuals 1112 (Safety), 9011 (Chemical Pest Control), and 9015 (Integrated Weed Management), and would meet or exceed state label standards. Treatments would comply with the United States Environmental Protection Agency (USEPA) label.

BLM procedures and methods would be followed as set forth in the Vegetation Treatment on BLM Lands in Thirteen Western States EIS (1991); Vegetation Treatment Using Herbicide on BLM Lands in Seventeen Western States EIS (2007); Winnemucca Field Office Environmental Assessment (EA) Herbicide Application for Control of Noxious Weeds EA No. NV-020-99-10 (January 19, 1999); and Programmatic EA of Integrated Weed Management on BLM Lands EA No. NV-020-08-11 (2008).

Re-applications of any herbicide would not be less than the persistence factor identified for the herbicide.

Buffer Zones

Current buffer zones are based from consultation and coordination with the Nevada Department of Wildlife (NDOW) and the US Fish and Wildlife Service. Application of BLM approved herbicides by truck or ATV would be limited to within fifty feet from any existing open water sources (creek, cattle troughs, lakes, and ponds) and areas of exposed bedrock. Application of herbicide by backpack sprayer would not occur within fifty feet of any existing open water source. No application of herbicide by truck, backpack, or ATV would occur within fifty feet of Lahontan cutthroat trout streams. Additional buffers required when applying herbicide by aircraft would include no application within 150 feet from any existing open water sources (creek, cattle troughs, lakes, and ponds) and areas of exposed bedrock. No application of herbicide would occur within 300 feet of Lahontan Cutthroat Trout streams when applied by aircraft. Twenty foot buffer zones would be required on edges of all treated areas when herbicides are applied by aircraft to reduce the potential for drift onto non-treatment areas. All label specific requirements would be adhered to, including the avoidance of areas where groundwater is expected at five feet or less below ground surface. Based on guidelines and conservation actions

identified in the "Western Association of Fish and Wildlife Agencies-Guidelines to manage Sage-grouse populations and their habitats" (Connelly, et al, 2000), application of herbicide would not occur within ¼ mile of any known sage grouse lek sites.

Project Inspection

A BLM approved Project Inspector (PI) would be on site within the project area at all times while the herbicide is being applied and would be responsible for ensuring that the treatment is applied as directed. Chemical label directions would be followed.

Storage and Mixing of Herbicide

No hazardous materials shall be stored or disposed of on-site. Fuel, oil, and grease needed for equipment maintenance during the working period may be stored on site where no leakage or spillage will contaminate the ground. Any spilled materials will be immediately cleaned up and disposed of and the BLM PI will be notified of the spill. No equipment maintenance, rinsing, or mixing of chemicals will be performed within, or near, any stream channel or waters where chemicals, petroleum products or other pollutants from equipment may enter these waters. Herbicides would not be stored on the project site. Product label directions and Material Safety Data Sheets would be available on site for reference in case of spill or exposure. All unused herbicides or empty containers would be disposed of by the licensed herbicide applicator in accordance with the USEPA label at an approved disposal site.

Weather Restrictions

Wind velocities for herbicide applications must be 6 mph or less for aerial application and 10 mph or less for ATV or truck application in all instances to reduce drift potential. Herbicide application would not occur during precipitation events. It may occur before or after precipitation events according to label directions.

APPENDIX II: Noxious Weed List

Nevada Administrative Code
(effective 10-31-05)
555.10 1. The following weeds are designated noxious weeds:

DEFINITIONS

Category ”A”: Weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all infestations

Category "B": Weeds established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur

Category "C": Weeds currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer

Common Name	**Scientific Name**
Category A Weeds:	
African Rue	*Peganum harmala*
Austrian fieldcress	*Rorippa austriaca*
Austrian peaweed	*Sphaerophysa salsula / Swainsona salsula*
Camelthorn	*Alhagi camelorum*
Common crupina	*Crupina vulgaris*
Dalmation Toadflax	*Linaria dalmatica*
Dyer’s woad	*Isatis tinctoria*
Eurasian water-milfoil	*Myriophyllum spicatum*
Giant Reed	*Arundo donax*
Giant Salvinia	*Salvinia molesta*
Goats rue	*Galega officinalis*
Houndstongue	*Cynoglossum officinale*
Hydrilla	*Hydrilla verticillata*
Iberian Star thistle	*Centaurea iberica*
Klamath weed	*Hypericum perforatum*
Leafy spurge	*Euphorbia esula*
Malta Star thistle	*Centaurea melitensis*
Mayweed chamomile	*Anthemis cotula*
Mediterranean sage	*Salvia aethiopis*
Purple loosestrife	*Lythrum salicaria, L.virgatum* and their cultivars
Purple Star thistle	*Centaurea calcitrapa*

Rush skeletonweed	*Chondrilla juncea*
Sow Thistle	*Sonchus arvensis*
Spotted Knapweed	*Centaurea masculosa*
Squarrose star thistle	*Centaurea virgata* Lam. Var. *squarrose*
Sulfur cinquefoil	*Potentilla recta*
Syrian Bean Caper	*Zygophyllum fabago*
Yellow Starthistle	*Centaurea solstiltialis*
Yellow Toadflax	*Linaria vulgaris*

Category B Weeds:

Carolina Horse-nettle	*Solanum carolinense*
Diffuse Knapweed	*Centaurea diffusa*
Medusahead	*Taeniatherum caput-medusae*
Musk Thistle	*Carduus nutans*
Russian Knapweed	*Acroptilon repens*
Sahara Mustard	*Brassica tournefortii*
Scotch Thistle	*Onopordum acanthium*
White Horse-nettle	*Solanum elaeagnifolium*

Category C Weeds:

Black henbane	*Hyoscyamus niger*
Canada Thistle	*Cirsium arvense*
Green Fountain grass	*Pennisetum setaceum*
Hoary cress	*Cardaria draba*
Johnson grass	*Sorghum halepense*
Perennial pepperweed	*Lepidium latifolium*
Poison Hemlock	*Conium maculatum*
Puncture vine	*Tribulus terrestris*
Salt cedar (tamarisk)	*Tamarix spp*
Water Hemlock	*Cicuta maculata*

APPENDIX III
Seeding Species and Rates

Native Species Seeding List*

Species	Type	PLS/LBS	PLS Seeds/ft^2
Gooseberry Leaf Globemallow	Forb	.1-.2	1-2
Maple Grove Flax	Forb	.5-1	4-9
Arrowleaf Balsamroot	Forb	.5-1	.5-1
Palmers Penstemon	Forb	.10-.20	1-3
Western Yarrow	Forb	.10-.20	6-12
Sandberg's Bluegrass	Grass	1-2	21-42
Bottlebrush Squirreltail	Grass	2-3	10-15
Bluebunch Wheatgrass	Grass	3-5	9-16
Canby's Bluegrass	Grass	1-2	21-42
Thurber's Needlegrass	Grass	2-4	7-14
Basin Wildrye	Grass	3-5	10-17
Indian Ricegrass	Grass	2-3	9-14
Snake River Wheatgrass	Grass	3-5	11-18
Sagebrush	Shrub	.1-.20	5-11
Spiney Hopsage	Shrub	1-2	4-7
Shadscale	Shrub	3-5	4-7

*****At least one forb and two grasses from the native species list would be used.

Introduced Species Seeding List

Species	Type	PLS/LBS	PLS Seeds/ft^2
Small Burnett	Forb	1-2	1-2
Lewis Flax	Forb	.5-1	3-6
Crested Wheatgrass	Grass	3-5	14-23
Siberian Wheatgrass	Grass	3-5	15-25
Forage Kochia	Sub-Shrub	.25-.50	.5-1

Notes: Seeding to establish just one species where absent-rate will be 2-3 times above rate.
Mixes and Rates:
Drill Seed Rate-20-40 PLS/ft^2
Aerial and Broadcast Rate-40-80 PLS/ft^2

APPENDIX IV
Fuels Management Best Management Practices for Sage-Grouse Conservation
Instruction Memorandum #FA IM 2010

1. Where applicable, design fuels treatment objectives to protect existing sagebrush ecosystems, modify fire behavior, restore native plants and create landscape patterns which most benefit sage-grouse habitat.

2. Provide training to fuels treatment personnel on sage-grouse biology, habitat requirements and identification of areas utilized locally.

3. Use fire prescriptions that minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of hydrophobicity).

4. Ensure proposed sagebrush treatments are planned with interdisciplinary input from BLM and/or state wildlife agency biologists and that treatment acreage is conservative in the context of surrounding sage-grouse seasonal habitats and landscape.

5. Where appropriate, ensure that treatments are configured in a manner (e.g., strips) that promotes use by sage-grouse (See Connelly et al., 2000*).

6. Where applicable, incorporate roads and natural fuel breaks into fuel break design.

7. Power-wash all vehicles and equipment involved in fuels management activities prior to entering the area to minimize the introduction of undesirable and/or invasive plant species.

8. Design vegetation treatments in areas of high fire frequency to facilitate firefighter safety, reduce the risk of extreme fire behavior; and to reduce the risk and rate of fire spread to key and restoration habitats.

9. Give priority for implementing specific sage-grouse habitat restoration projects in annual grasslands first to sites which are adjacent to or surrounded by sage-grouse key habitats. Annual grasslands are a second priority for restoration when the sites not adjacent to key habitat, but within two miles of key habitat. The third priority for annual grassland habitat restoration projects are sites beyond two miles of key habitat. The intent is to focus restoration outward from existing, intact habitat.

10. As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs and shrubs.

11. Emphasize the use of native plant species, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions.

12. Remove standing and encroaching trees within at least 100 meters of occupied sage-grouse leks and other habitats (e.g., nesting, wintering and brood rearing) to reduce the availability of perch sites for avian predators as appropriate, and resources permit.

13. Protect wildland areas from wildfire originating on private lands, infrastructure corridors and recreational areas.

14. Reduce the risk of vehicle or human-caused wildfires and the spread of invasive species by planting perennial vegetation (e.g. green-strips) paralleling road rights-of-way.

15. Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application and strictly managed grazed strips) to aid in controlling wildfire should wildfire occur near key habitat or important restoration areas (such as where investments in restoration have already been made).

* Connelly, J.W., M.A Schroeder, A.R. Sands, and C.E. Braun 2000. Guidelines to Manage Sage-grouse Populations and Their Habitats. Wildlife Society Bulletin 28:967-985.