U.S. Department of the Interior Bureau of Land Management

Environmental Assessment

DOI-BLM-NV-E020-2016-0025-EA

Targeted Grazing Fuel Breaks

PREPARING OFFICE

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> <u>Prepared by</u> U.S. Department of the Interior Bureau of Land Management

Elko District, Tuscarora Field Office

Table of Contents

1. Intro	oduction	3
1.1.	Background	3
1.2.	Location of Proposed Action	5
1.3.	Purpose and Need for Action	5
1.4.	Land Use Plan Conformance	6
1.5.	Relationship to Other Laws, Policies and Plans	7
2. Prop	posed Action and Alternatives	9
2.1.	No Action	9
2.2.	Proposed Action	9
2.3.	Alternatives Considered but Eliminated 1	4
2.4.	Unacceptable Consequences 1	4
3. Affe	ected Environment/ Environmental Effects 1	6
3.1.	Supplemental Authorities and Resource Concerns	6
3.2.	Affected Environment and Effects of the Alternatives 1	8
3.2.1	1. Cultural Resources 1	8
3.	2.1.1. Affected Environment	8
3.1	2.1.2. Environmental Effects	20
3.2.2	2. Soils	2
3.	2.2.1. Affected Environment	2
3.	2.2.2. Environmental Effects	25
3.2.3	3. Water Resources (Surface/Ground) 2	26
3.	2.3.1. Affected Environment	26
3.1	2.3.2. Environmental Effects	26
3.2.4	4. Air Quality	27
3.	2.4.1. Affected Environment	27
3.	2.4.2. Environmental Effects	27
3.2.5	5. Climate Change	28

Targeted Grazing Fuel Breaks EA

3.2.5.1. Affected Environment
3.2.5.2. Environmental Effects
3.2.6. Vegetation
3.2.6.1. Affected Environment
3.2.6.2. Environmental Effects
3.2.7. Livestock Grazing
3.2.7.1. Affected Environment
3.2.7.2. Environmental Effects
3.2.8. Recreation
3.2.8.1. Affected Environment
3.2.8.2. Environmental Effects
3.2.9. Visual Resource Management
3.2.9.1. Affected Environment
3.2.9.2. Environmental Effects
3.2.10. Native American Concerns
3.2.10.1. Affected Environment
3.2.10.2. Environmental Effects
3.2.11. Noxious Weeds and Invasive, Non-native Plant Species
3.2.11.1. Affected Environment
3.2.12. Wetlands and Riparian Zones
3.2.12.1. Affected Environment
3.2.15.1. Affected Environment
3.2.15.2. Environmental Effects
Consultation and Coordination76
4.1. Public Involvement and Scoping
4.2. Tribal Consultation and Information Sharing
4.3. List of Preparers
References

4.

5.

1. Introduction

1.1. Background

Recent trends in increasing frequency and size of very large wildfires continue to plague the Great Basin. The spread of cheatgrass (*Bromus tectorum*) and other annual invasive annual species throughout the Great Basin has exacerbated the problem. The result to vegetative communities has been a sagebrush system that is vulnerable to the spread/increase in invasive annual grasses and a subsequent increase in fire frequency. The increase in fire frequency further inhibits recovery of the sagebrush steppe and associated native plant communities. Preventing large scale fires is vital to maintaining intact sagebrush habitat and continuity throughout the Elko District Office (EDO). Employing fire prevention and reduction techniques, such as fuel breaks, can help in the prevention of large-scale catastrophic fires.

Established priorities for fire suppression consideration are (in order of priority) life, property, and natural resources. During multiple –fire outbreaks, wildland fires away from the wildland/urban interface (WUI) cannot always receive sufficient suppression resources to extinguish the fire. Proactive actions such as fuel breaks provide fire suppression resources with opportunities to safely engage wildfires and to be more effective across a larger area with potentially fewer resources.

The National Wildfire Coordination Group (NWCG) defines fuel breaks as "a natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into them can be more readily controlled" (NWCG 2012). Pro-active measures such as fuel breaks help to alleviate the amount of resources necessary to contain a fire in WUI areas and allow more suppression forces to be allocated to protect life, property, and important habitat in outlying areas. Fuel breaks are designed to reduce flame lengths, slow the spread of fast moving wildfire, and provide opportunities for firefighters to gain control of or contain a fire.

Research and decades of fire suppression experiences indicate fuel breaks have the potential to slow fires enough for suppression crews to control the incident, or alter fuel sufficiently to limit fire spread. EDO fire personnel have observed the effectiveness of established fuel breaks and have been provided a greater margin of safety for firefighters, reduced flame lengths, and slowed progression of wildfires.

Major highway corridors tend to have higher incidents of fire. Across northern Nevada fuel breaks have been constructed in strategic areas along these corridors to prevent fire spread to high value sagebrush habitats. These fuel breaks have shown success by slowing or stopping fires and by providing suppression personnel a safe place to tie in during initial attack activities.

The Secretarial Order 3336 (SO 3336) was issued in recognition that fire has had, and continue to have, large impacts on sagebrush ecosystems. The SO 3336 was aimed at increasing effectiveness of fire suppression resources, reducing the size of catastrophic wildland fires, and

specifies the potential use of targeted grazing to help address this risk. Several criteria were developed for 'demonstration plot' selection to further research the use of targeted grazing in this capacity on the landscape. The areas identified for possible treatments have gone through specific screening and selection criteria. Some of the screening and selection criteria are as follows:

- Focus to strategically reduce annual invasive fuels to reduce wildfire threat in or near priority sage-grouse habitats.
- The intent is not to improve an area dominated by invasive annual grasses into a functioning native plant community, but rather use livestock as the tool to create fuel breaks and conserve intact habitats.
- Targeted grazing to reduce fine fuels must be consistent with sage-grouse land use plan revisions.
- An evaluation to address the potential for large wildfires served as the basis for identifying the scale of targeted grazing needs. Targeted grazing "bands" or emphasis areas should connect across the landscape in which they are designed to minimize wildfire threats.
- Grazing plans and/or agreements would be developed cooperatively by livestock managers and agency personnel.
- Targeted grazing is not intended to create fuel breaks in intact stands of sagebrush.
- Fine fuel reduction objectives need to be met and in place at the start of the fire season each year.
- Resource impacts must continuously be monitored to ensure that unintended consequences don't occur.
- Winter grazing can be used to reduce carryover fuels going into the spring growing season.
- In dry spring seasons or during drought periods, livestock use will be curtailed if cheatgrass is not producing enough biomass to pose a fire threat.
- Livestock managers and agency personnel need to monitor regrowth of annual plants which may require moving livestock back to an area previously grazed to meet fuels management objectives.
- Targeted grazing objectives will be measured by a standardized monitoring protocol that quantifies the effects of targeted grazing on pilot project/demonstration areas.
- Based upon annual monitoring study results, adjustments in the season of use, livestock numbers or distribution, class of livestock, etc. should be implemented the following growing season if resource or livestock issues are significant.
- Monitoring results and reports will be shared widely in order to improve the implementation of future targeted grazing projects. Also, results from case studies, scientific literature, and other projects will be incorporated in future projects.

• Pilot projects/demonstration areas will be used to inform decisions on implementation of strategic, targeted grazing to reduce fuels in other areas. These early projects will be closely watched by agency and outside entities. Therefore, a good faith effort will be required by all parties involved to implement plans and adapt to changing conditions to improve the potential for success.

1.2. Location of Proposed Action

Four allotments on the Tuscarora Field Office have been identified: T Lazy S, Hadley, Carlin Field, and Blue Basin.

Legal Description (by allotment):

- T Lazy S: T 35N R 50E Section 32; T 34N R 50E Sections 6, 18, 20, 30, & 32; T 33N R 50E Section 6; T 32N R 50E Sections 8 & 18; T 33N R 49E Section 35; T 32N R 49E Sections 2 & 12
- Blue Basin: T 34N R 54E Sections 11- 14 & 23-25
- Carlin Field: T 33N R 53E Section 19
- Hadley: T 33N R 52E Sections 10 & 12

1.3. Purpose and Need for Action

The purpose of this action is to study producers' ability to utilize livestock grazing to establish and maintain strategically placed fuel breaks and protect sagebrush habitat.

The need for this project is to research targeted grazing fuel breaks to protect critical sagebrush obligate species habitat, including Sage-grouse habitat, from wildfire risk due to hazardous fine fuels presence and accumulation at a landscape level.

Protecting, conserving, and restoring healthy sagebrush-steppe ecosystems is a landscape-scale issue and requires a landscape-scale approach. Part of this landscape-scale approach is the need to develop common interagency metrics to validate fuels management in the sagebrush steppe, improve targeting of fuels reduction opportunities and implementation, explore incentives for livestock producers to implement targeted fuels and vegetation treatments, and explore opportunities to provide support to livestock grazing permittees and private landowners to implement fuel treatment actions as part of strategic, landscape efforts to protect, conserve, and restore sagebrush-steppe habitats (BLM, 2015).

1.4. Land Use Plan Conformance

Fuel break methods identified in the proposed action are consistent with the following applicable land use plans, as amended:

Elko Resource Management Plan

Although the Elko Resource Management Plan (RMP) does not specifically discuss fuel breaks, fuel breaks are exclusively constructed for the purpose of maintaining or improving rangeland resource values, which is discussed and allowed in the Elko RMP. The proposed action is in conformance with the following Elko RMP objectives:

- Maintain or improve the condition of the public rangelands to enhance productivity for all rangeland values.
- Conserve and enhance terrestrial, riparian and aquatic wildlife habitat.

Elko and Wells Resource Management Plans Fire Management Amendment

The proposed action is in conformance with the following Elko and Wells RMP Fire Management Amendment objectives:

- Vegetative manipulation, fuels reduction, greenstrips, fuel breaks and thinning should be maximized through the use of prescribed burning, mechanical, chemical and biological (including grazing) treatments to reduce wildfire fuel hazards. Annual target acreage levels to reduce hazardous fuels are 24,000 to 60,000 acres.
- Improve shrub cover and densities in western regions affected by fire in recent years. Maintain big game habitat and woodland integrity at higher elevations. Maintain sagebrush/perennial grass diversity at lower elevations. Prevent annual nonnative plant encroachment.
- Maintain and/or improve age class diversity of sagebrush. Maintain and/or improve the diversity of sagebrush and perennial grasses and forbs. Prevent further encroachment of annual and non-native plant species. Improve and/or maintain riparian areas to achieve proper functioning condition and other site specific multiple use objectives.
- Sage Grouse:
 - Use vegetation treatments to maintain or improve known habitats.
 - Minimize the amount of sage grouse habitat burned.

<u>Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management</u> <u>Plan Amendment</u>

The proposed action is in conformance with the following Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (SGPA) goals and objectives:

- **Goal SSS 1:** Conserve, enhance, and restore the sagebrush ecosystem upon which [greater sage-grouse (GRSG)] populations depend in an effort to maintain and/or increase their abundance and distribution, in cooperation with other conservation partners.
- **Objective SSS 1:** Manage land resource uses to meet GRSG habitat objectives, as described in **Table 2-2**. The habitat objectives will be used to evaluate management actions that are proposed in GRSG habitat. Managing for habitat objectives will ensure that habitat conditions

are maintained if they are currently meeting objectives or if habitat conditions move toward these objectives in the event that current conditions do not meet these objectives.

- **Objective SSS 2:** Maintain or improve connectivity between, to, and in [Priority Habitat Management Areas (PHMAs)] and [General Habitat Management Areas (GHMAs)] to promote movement and genetic diversity for GRSG population persistence and expansion.
- **Objective SSS 3:** Identify and implement GRSG conservation actions that can augment, enhance, or integrate program conservation measures established in agency and state land use and policy plans, to the extent consistent with applicable law.
- **Objective VEG 2:** On public lands, establish, maintain, and enhance a resistant and resilient sagebrush vegetative community and restore sagebrush vegetation communities to reduce GRSG habitat fragmentation and maintain or reestablish GRSG habitat connectivity over the long term (Chambers et al.2014).
- **Objective VEG 3:** Manage PHMAs and GHMAs for vegetation composition and structure, consistent with ecological site potential and to achieve GRSG habitat objectives (**Table 2-2**).
- **Objective VEG 5:** Reduce the amount of GRSG habitat loss due to wide-spread wildfires and invasion by nonnative species.
- **Objective VEG 9:** Manage upland habitat associated with riparian areas to promote cover relative to site potential to facilitate brood-rearing habitat (**Table 2-2**).
- **Objective FIRE 3:** Protect post-fire treatments in [Sagebrush Focal Areas (SFA)] first, followed by PHMAs outside of SFA, and then GHMAs from subsequent wildfires.
- **Objective FIRE 4:** Use pre-suppression efforts to reduce the size and impact of wildfires in SFA, PHMAs, and GHMAs.
- **Objective FIRE 5:** Protect and enhance PHMAs and GHMAs and areas of connectivity that support GRSG populations, including large contiguous blocks of sagebrush, through fuels management and incorporation of the [Fire and Invasives Assessment Tool (FIAT)] assessment (**Appendix H**).
- **Objective LG 1:** Manage permitted livestock grazing to maintain and/or enhance PHMAs and GHMAs to meet or make progress towards meeting all GRSG life-cycle requirements and habitat objectives (**Table 2-2**), based on site potential.

1.5. Relationship to Other Laws, Policies and Plans

43 Code of Federal Regulation, Subchapter D—RANGE MANAGEMENT (4000), Group 4100-Grazing Administration, Part 4100-Grazing Administration Exclusive of Alaska

• § 4130.1–1 Filing applications

Applications for grazing permits or leases (active use and nonuse), free-use grazing permits and other grazing authorizations shall be filed with the authorized officer at the local Bureau of Land Management office having jurisdiction over the public lands involved.

• § 4130.5 Free-use grazing permits.

(b) The authorized officer may also authorize free use under the following circumstances: (1) The primary objective of authorized grazing use or conservation use

is the management of vegetation to meet resource objectives other than the production of livestock forage and such use is in conformance with the requirements of this part; (2) The primary purpose of grazing use is for scientific research or administrative studies; or (3) The primary purpose of grazing use is the control of noxious weeds.

• § 4190.1 Effect of wildfire management decisions

(a) Notwithstanding the provisions of 43 CFR 4.21(a)(1), when BLM determines that vegetation, soil, or other resources on the public lands are at substantial risk of wildfire due to drought, fuels buildup, or other reasons, or at immediate risk of erosion or other damage due to wildfire, BLM may make a rangeland wildfire management decision effective immediately or on a date established in the decision. Wildfire management includes but is not limited to: (1) Fuel reduction or fuel treatment such as prescribed burns and mechanical, chemical, and biological thinning methods (with or without removal of thinned materials); and (2) Projects to stabilize and rehabilitate lands affected by wildfire. (b) The Interior Board of Land Appeals will issue a decision on the merits of an appeal of a wildfire management decision under paragraph (a) of this section within the time limits prescribed in 43 CFR 4.416.

Secretarial Order 3336

- Develop a science-based strategy to reduce the threat of large-scale rangeland fire to habitat for the greater sage-grouse and the sagebrush-steppe ecosystem through effective rangeland management (including the appropriate use of livestock), fire prevention, fire suppression, and post-fire restoration efforts at a landscape scale.
- Establish protocols for monitoring the effectiveness of fuels management, post-fire, and long-term restoration treatments and a strategy for adaptive management to modify management practices or improve land treatments when necessary.

An Integrated Rangeland Fire Management Strategy, Secretarial Order 3336 - Rangeland Fire <u>Prevention, Management, and Restoration</u>

- Implement large-scale experimental activities to remove cheatgrass and other invasive annual grasses through various tools.
- Commit to multi-year investments in science and research.
- Improve targeting of fuels reduction opportunities and implementation.

2. Proposed Action and Alternatives

2.1. No Action

Under the no action alternative livestock grazing would continue as permitted on the allotment. No fuel breaks would be grazed and current conditions would remain. Recovering sagebrush habitats representing important sagebrush obligate species, including sage-grouse, would remain at elevated risk of catastrophic wildfires.

2.2. Proposed Action

Targeted Grazing Fuel Breaks

The proposed action is to strategically graze fuel breaks on degraded sagebrush steppe now dominated by annual invasive or introduced grasses. Four allotments on the Tuscarora Field Office have been identified: Hadley (Figure 1), Carlin Field (Figure 1), T Lazy S (Figure 2), and Blue Basin (Figure 3). Current permittees would be asked to implement fuel treatment actions as part of strategic, landscape effort to protect and conserve sagebrush-steppe habitats (BLM, 2015). Priority Habitat Management Areas (PHMAs) exist on the leeward side of the grazing treatments. Grazing treatments would be restricted to specific areas dominated by cheatgrass or other introduced grasses. Past habitat improvement and rehabilitation treatments are currently in jeopardy of large fires carried largely by cheatgrass dominance in the lowlands. Establishment of grazed fuel breaks could limit the spread and damage caused by wildfires and could provide a more natural fire return interval on recovering or intact sagebrush habitat. The proposed action would provide a net conservation gain for greater sage grouse in the form of protecting PHMA from loss by wildfire and providing an opportunity for previously burned areas to rehabilitate back to sagebrush steppe.

Treatment objective

Grazing cheatgrass to a stubble height of 2 to 3 inches is the objective (Mosley & Roselle, 2006). Grazing would end as the stubble height objective was attained or plants became unpalatable to livestock (Mosley & Roselle, 2006; Vallentine & Stevens, 1992; Hempy-Mayer & Pyke, 2008). Reentry into already treated areas may be required if sufficient precipitation induces regrowth of cheatgrass (Diamond, Call, & Devoe, 2009; Mosley & Roselle, 2006). Dormant season grazing may be used, as needed, to assist in residual fuel reduction. Once treatment objectives are reached in a given area, livestock will be moved. Upon attainment of targeted grazing objectives for the treatment area, livestock will be removed within 48 hours of the BLM notifying the permittee. No motorized herding or vehicle travel off designated routes will be authorized. The following management tools may be used singly or in aggregate to achieve grazing objectives.

Grazing Season of Use

Strategic targeted spring grazing would take place on specific cheatgrass dominated areas or existing greenstrips (seedings of introduced grasses planted to reduce wildfire spread) to reduce fine fuel loads for the upcoming fire season (Diamond, Call, & Devoe, 2009). Substantial data collection would accompany the grazing treatments which would be administered through free use grazing permits (43 CFR §4130.5(b)(2)). Cheatgrass phenology would determine when livestock grazing could begin. Grazing would begin

when cheatgrass or introduced species were still palatable to livestock, prior to the dough stage (Vallentine & Stevens, 1992).

Livestock Numbers

No stocking rate or animal unit month (AUM) limit would be associated with the targeted grazing treatments. Free use grazing permits would be issued to the permittees for their respective allotments specifically for the targeted grazing treatment areas. Permittees for the T Lazy S, Hadley, Carlin Field, and Blue Basin allotments would be required to fill out applications for their respective targeted grazing treatment areas. Applications would have to be received by the Tuscarora Field Office no later than 7 days prior to proposed implementation. Authorization to implement grazing treatments would be mutually agreed upon between the authorized officer and grazing permittees for the T Lazy S, Hadley, Carlin Field, and Blue Basin allotments. Both livestock numbers and timing will be adjusted and varied to attain the aforementioned grazing stubble height objective. Removal will be dictated by use criteria being met, or cheatgrass becoming unpalatable, whichever comes first.

Livestock Management with Fencing

Fencing would be used to confine livestock and to achieve grazing objectives in the targeted grazing treatment areas. Approximately 40 miles of new fencing would be constructed and tied to existing fencing, to provide control of livestock and allow specific targeted grazing on cheatgrass and/or introduced grass dominated areas. Wire gates would be put in to maintain access on existing roads where needed. The fences would be three-strand (two barbed with smooth bottom) and built to BLM Handbook 1741-1 wildlife friendly standards. Fences would be marked with flight diverters to prevent bird strikes. New fences would be located in relatively close proximity to existing roads and fences to improve livestock utilization of target vegetation to meet fuels management objectives.

Livestock Water Distribution

Water hauling to portable troughs would be used to manage livestock distribution and meet fuels management objectives. Watering locations would be next to existing roadways. Roads may not be improved unless authorized by the BLM. The existing road, combined with targeted grazing areas, would enhance fire suppression activities (direct attack or conducting burnout operations). Water troughs must have bird ladders and would be removed within 48 hours of livestock removal from the targeted grazing treatment areas. Troughs would be placed more than twenty feet from fences to prevent flying animal strikes.

Supplements

 Mineral supplements, salt, and/or protein supplements (blocks or liquid) would be used to distribute livestock and meet fuels objectives. Mineral, salt, and/or protein supplements would be next to existing roadways and may be placed with water troughs. All supplements would be removed within 48 hours of livestock removal from the targeted grazing treatment areas.

Mowing

 Where the condition of the road, terrain and vegetation would allow, a deck mower (or any mechanical equipment designed to mow brush) could be used to reduce vegetation height on sites having vegetation dominated by either grasses or shrubs on either side of strategically located roads.

- Mowing can serve as an alternative fuels treatment tool in areas where livestock grazing cannot fully meet the fuels management objective or where scattered shrubs create a fire hazard in the targeted grazing fuel break.
- Some locations within treatment areas may have a scattered shrub component. Mowing would be conducted up to 300 feet from the windward border of the treatment area to enhance the targeted grazing treatment. Mowing these areas would slow fire spread from the shrub component. Mowing height would be four to eight inches, ground conditions permitting.
- Mowing would be predominately completed using agricultural tractor(s) and rotary cutter(s). Treatment areas would be focused in areas where residual herbaceous vegetation is abundant.
- Shrub mowing would occur during the cooler seasons (outside of nesting period) when fire risk is low and seasonal design features are followed.



Figure 1. Hadley and Carlin Field Proposed Treatment Areas









2.3. Alternatives Considered but Eliminated

- Other kinds of livestock to create fuel breaks

Although any kind of livestock (sheep, goat, cattle, etc.) could be considered for biomass removal, this project is being designed for the research of producer ability to use their livestock as a tool for biomass removal. As current permittees on the target allotments are cattle producers, cattle would be used to complete the targeted grazing treatments. Depending on permittees capabilities, different kinds of livestock could be used in the future as need is shown.

- Use of chemical herbicide to create fuel breaks

Although the use of chemical herbicides is a legitimate option for biomass control, the purpose of this project is to research and explore specifically the use of targeted grazing for fine fuel removal, using herbicide for fine fuels reduction is outside the scope of this project. Under direction of Secretarial Order 3336 and associated report *An Integrated Rangeland Fire Management Strategy*, Section 7(b) iii-Fuels:

Action Item #6: Explore opportunities to provide support to livestock grazing permittees and private landowners to implement fuel treatments actions as part of strategic, landscape efforts to protect, conserve, and restore sagebrush-steppe habitats. Action Item #7: Explore incentives for livestock producers to implement targeted fuels and vegetation treatments.

<u>Section 7(b) vii- Large-scale Activities to Remove Invasive Non-native Grasses</u> Action Item #5: Develop scalable and adaptive grazing management plans for reducing invasive annual grass and other fine fuels through targeted livestock grazing methods to diminish fire risk in priority greater sage-grouse areas to meet greater sage-grouse habitat goals.

2.4. Unacceptable Consequences

Certain consequences will be considered unacceptable. Should monitoring detect that these consequences are occurring, mitigation measures would be employed to prevent further unacceptable consequences. If the unacceptable consequences persist, the project may be modified or cease altogether.

- Excessive Erosion

If data or field observations identify excessive erosion, e.g. rills and/or pedestals, is taking place the following mitigation measures that may be employed include:

- use of quick dam flood barriers
- use of straw wattle
- use of silt fencing
- use of erosion control blankets
- increase the stubble height objective slightly

- Increase in Noxious Weeds

• A noxious weed inventory would be carried out by the monitoring group during the inventory and as the treatment progresses. If found, noxious weed locations

would be reported to the district weeds coordinator and promptly treated prior to spreading.

3. Affected Environment/ Environmental Effects

3.1. Supplemental Authorities and Resource Concerns

Table 1. Review of Supplemental Authorities and Resource Concerns

Element/Resource	Not Present	Present, NOT Affected	Present and Affected	Rationale
ACEC	Х			
Access		Х		Access would not be affected by any of
				the alternatives.
Air Quality			Х	Brought forward for analysis.
Aquatic Species	Х			
Climate Change			X	Brought forward for analysis.
Cultural Resources			X	Brought forward for analysis.
Energy (Oil/Gas)	Х			
Engineering	Х			
Environmental Justice		Х		
Farm Lands –	Х			
Prime/Unique				
Fire Management			Х	Brought forward for analysis.
Floodplains	Х			
Forestry and Woodland	Х			
Products				
Grazing/ Rangelands			X	Brought forward for analysis.
Human Health and Safety		Х		Human Health and Safety would not be
				affected by any of the alternatives.
Lands/Realty		Х		Lands/Realty would not be affected by
				any of the alternatives.
Lands with Wilderness	Х			As there are no Lands with Wilderness
Characteristics				Characteristics present in the project
				area, the resource will not be analyzed
				further.
Migratory Birds			Х	
Mining/Minerals		Х		Brought forward for analysis.
Native American			Х	Mining/Minerals would not be affected
Traditional Values				by any of the alternatives.
Non-Native, Invasive and			Х	Brought forward for analysis.
Noxious Species				
Rangeland Health (HFRA)			Х	Brought forward for analysis.
Recreation			Х	Brought forward for analysis.
Sensitive/Candidate			Х	Brought forward for analysis.
Species				
Socio-Economics		Х		Brought forward for analysis.
Soils			Х	
Threatened or Endangered	Х			Brought forward for analysis.
Species				
Vegetation			Х	Brought forward for analysis.
Visual Resources			Χ	Brought forward for analysis.
Waste – Hazardous or	Χ			
Solid				
Water Quality			X	Brought forward for analysis.
(Surface/Ground)				

Element/Resource	Not	Present, NOT	Present and	Rationale
	Present	Affected	Affected	
Wetlands/Riparian	Х			As there are no Wetlands or Riparian
_				Areas present in the project area, the
				resource will not be analyzed further.
Wild & Scenic Rivers	Х			
Wild Horses	Х			
Wilderness	Х			
Wildlife and Fisheries			Х	Brought forward for analysis.

3.2. Affected Environment and Effects of the Alternatives

3.2.1. Cultural Resources

3.2.1.1. Affected Environment

The term "cultural resource" encompasses any archaeological, historic, or architectural site, building/structure, or location that signifies some cultural, traditional, or religious importance to a specific cultural or social group. Cultural resources are defined as nonrenewable remains of human activity and once the objects in or the integrity of an archaeological or traditional resource are disturbed, nothing can recover the information that might have been gained through analysis of their relationships in past human history. The primary concern of cultural resource management, therefore, is to minimize the loss or degradation of culturally significant material remains, tangible and intangible. Protection of America's cultural resources began with the passage of the 1906 Antiquities Act. Next to pass was the Historic Sites Act of 1935. These two previous Acts were incorporated into the National Historic Preservation Act (NHPA) of 1966 and its amendments (54 U.S.C. § 300101, et seq., previously 16 U.S.C. § 470 et seq.). Protection of historic properties was reiterated in the Archaeological Resources Protection Act (ARPA) of 1979, and protection was broadened by the Native American Graves Protection and Repatriation Act (NAGPRA) in 1990. Although each of these acts has its own focus and orientation, collectively they require a comprehensive, multicultural, and multi-disciplined approach to managing cultural resources on public lands.

Section 106 (54 U.S.C. § 306108, et seq., previously 16 U.S.C. § 470f) of the NHPA requires that federal agencies consider the effects of their undertakings on historic properties. By definition, a historic property is a "prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP" and includes "artifacts, records, and remains that are related to and located within such properties" (36 CFR 800.16(I)(1)). In evaluating historic properties within undertakings, "effect" means alteration to the characteristics of a historic property qualifying it for inclusion in or eligible for the NRHP. If the property is determined not eligible for the NRHP, or the undertaking will not directly or indirectly affect the property, the action would be considered "no effect". An "adverse effect" is found when an undertaking may alter characteristics of the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. A "no adverse effect" is determined when the integrity and existing character of the NRHP-eligible historic property can be maintained through treatment plans, project modification, and other types of undertakings as outlined in Chapter 5 of the State Protocol Agreement (the 'BLM-SHPO Protocol') between Nevada BLM and Nevada State Historic Preservation Office (SHPO 2014). The term "adverse effect" in the Cultural Resources sections of this EA is used in the specific context and definition set in the NHPA, and not in NEPA.

The BLM-SHPO Protocol has a specific appendix (Appendix D) which outlines how the agency will handle the grazing permit renewal process and evaluate potential adverse effects (SHPO 2014, Page 64). Though the Targeted Grazing Fuel Breaks project does not involve the renewal of grazing permits, this protocol is construed to apply to all analysis of cultural resources in relation to grazing. According to Appendix D (SHPO 2014, Page 64), the "BLM recognizes the potential for grazing to affect historic properties through: (1) earth disturbance caused by the concentration of livestock in areas that also contain historic properties; and (2) construction, maintenance, and placement of grazing facilities such as fences, pipelines, water troughs, and salt/mineral blocks." Cultural resource concerns regarding livestock grazing and related effects focus on NRHP eligibility of historic properties, site type, and the potential impacts from livestock-related activities as outlined above. In accordance with 36 CFR Part 800, and 43 CFR Part 8100, as amended, BLM is required to identify and evaluate cultural resources within the area of potential effect from any current or future proposal for an undertaking such as a spring development (water pipeline and trough), fence, stock pond, or other action that concentrates livestock.

To evaluate the potential effects of the proposed actions for the Targeted Grazing Fuel Breaks project a Class I records search was conducted using BLM site records and maps, Geographical Information System (GIS) inventory, GLO survey plats, Master Title Plats, and the Nevada Cultural Resource Inventory System (NVCRIS) to determine previously surveyed acres and sites recorded within the boundaries of the 5 parcels which make up the Targeted Grazing Fuel Breaks project area. The Targeted Grazing Fuel Breaks project area covers approximately 9,393 acres, of which, 3,683 acres are public land and 5,710 acres are privately owned. At least 22 cultural resource surveys have been conducted within the complex covering approximately 1,164 acres or around 12.4% of the project area. Seventeen of these cultural surveys were conducted more than a decade ago so recent cultural work has been limited. It is possible that additional inventory areas and cultural resources are located within the project area because of missing spatial data from new, current, or older projects. As EDO archaeologists continue working on the cultural data management program, more data will become readily available for background research.

A Class II inventory of the project area will be completed prior to the implementation of the project. The survey areas includes a 100 foot buffer around the six proposed range improvement projects (fences), the four buffered corridors in which water hauls and mineral supplements are to be placed, and a 45 to 130 foot buffer around both livestock congregation areas (LCAs) on public lands within the Targeted Grazing Fuel Breaks project area, totaling approximately 2,134 acres.

3.2.1.2. Environmental Effects

Effects of the No Action Alternative

The analysis area for cultural resources would be those fenced areas identified for targeted grazing treatments. Under the "No Action" alternative, livestock grazing would remain unchanged, and no new range improvements or vegetation treatments would be authorized. Under this alternative, the potential for historic properties to be adversely affected is minimal as this alternative would not result in new ground disturbing activities or an increased time period and/or intensity of livestock use to unknown/unrecorded and sensitive cultural resources. Relative to adverse effects to historic properties, the magnitude of effect would not be measurable as existing conditions in the allotment would not change. Similar to the "Proposed Action" alternative, livestock impacts to historic properties in the Targeted Grazing Fuels Breaks project area would continue to be minimal, with the exception of in and around livestock congregation areas. Where there are concentrations of livestock utilization livestock grazing can accelerate natural weathering and erosion processes and result in a reduction of vegetative cover and soil disturbances areas. Additional impacts to cultural resource sites around congregation areas from grazing and trampling include modification, displacement, and increased erosion of artifacts, features, and organic middens. This can result in the loss of valuable information regarding site function, dates of use, plants and animals utilized, and past environments (Horne and McFarland 1993).

Effects of the Proposed Action

Under the Proposed Action, the timing and intensity of livestock grazing within the five parcels would be altered slightly to achieve the uniform grazing of treatment areas through livestock grazing. As the area is already grazed by cattle, little change is expected in the impact of the altered grazing schedule. The installation of new fencing and the placement of new water hauls and mineral supplements will create ground-disturbing activities through their installation. For the proposed range improvement projects, the Section 106 process would be completed prior to project implementation in compliance with the BLM-Nevada SHPO Protocol. Under this alternative, historic properties would not be adversely affected because all proposed projects would be modified to avoid any historic properties so as to avoid causing adverse effects.

Cumulative Effects of the Alternatives

Existing conditions within the Targeted Grazing Fuels Breaks project area are the result of past grazing activities on areas in which cultural resources were likely undisturbed since their deposition. Grazing activities have shown an effect on surficial and shallow subsurface cultural deposits through cattle trampling. The effect of cattle trampling is largely limited to the modification and displacement of artifacts. There are no other present or reasonably foreseeable actions in the project area.

The effect of the No Action alternative would be continued grazing of the area at the same level of intensity at which they are presently grazed. Past studies on the effect of cattle on archaeological sites at low density suggest that the cumulative effect through time is not significant.

The effect of the Proposed Action would be the construction of permanent fences, temporary water hauls and mineral supplements, and targeted grazing of the project area during certain parts of the year. The cumulative effect of increased grazing during a small part of the year would be very limited. Grazing in these areas during the rest of the year would cease based on a lack of available forage. Therefore, the cumulative effect of grazing on cultural resources in the project area is considered to be insignificant. The cumulative effect of new range improvement projects will be changes in cattle grazing patterns; new cattle trailing along the fences, and concentrated trampling and churning in the newly created LCAs (at the water hauls and mineral supplements). Because cultural resource inventories will be carried out prior to the implementation of the Proposed Action, and all historic properties will be avoided by new range improvement projects, there will be no significant cumulative effect on cultural resources through these improvements.

Mitigation

In the event that historic properties are documented during the cultural resources inventory within the project area, avoidance is the agreed mitigation strategy. Through avoidance of historic properties, historic properties within the project area will not be impacted, consequently the Proposed Action would result in a Finding of No Significant Impact and no adverse effect to cultural resources.

3.2.2. Soils

3.2.2.1. Affected Environment

T Lazy S Allotment

The T Lazy S Treatment has five Ecological Site types present. R024XY005NV (LOAMY 8-10 P.Z.), R024XY006NV(DRY FLOODPLAIN), R025XY003NV (LOAMY BOTTOM 8-14 P.Z.), R025XY014NV (LOAMY 10-12 P.Z.), and R025XY019NV (LOAMY 8-10 P.Z.). The soil associations for each ecological site are given in Table 2.

The dominant ecological type is R025XY019NV (LOAMY 8-10 P.Z.) which accounts for 60% of the treatment area. The soil associations present are principally silt loams that are well-drained, which have low infiltration rates leading to high runoff during storm events. Higher runoff indicates higher erosion rates and sediment movement if vegetation is not present to cover the ground surface and buffer the impact from raindrops.

R024XY005NV (LOAMY 8-10 P.Z) comprises 22 % of the treatment area. The soil associations present are principally sandy and gravelly loams that are well-drained, and have high infiltration rates leading to low runoff during storm events. Lower runoff indicates higher infiltration and lower erosion rates and sediment movement.

Site Number	Ecological Site	Soil Association	Hydro Group	%
R024XY005NV	LOAMY 8-10 P.Z.	Boulflat-Havingdon association	С	12.1
R024XY005NV	LOAMY 8-10 P.Z.	Orovada fine sandy loam, 4 to 15 percent slopes	В	4.7
R024XY005NV	LOAMY 8-10 P.Z.	Orovada gravelly fine sandy loam, 2 to 4 percent slopes	В	4.7
R024XY005NV	LOAMY 8-10 P.Z.	Rad silt loam, 2 to 4 percent slopes	В	0.6
R024XY006NV	DRY FLOODPLAIN	Geysen silt loam	С	11.2
R024XY006NV	DRY FLOODPLAIN	Iron Blossom silt loam	С	4.1
R024XY006NV	DRY FLOODPLAIN	Pocker silt loam	С	0.3
R025XY003NV	LOAMY BOTTOM 8- 14 P.Z.	Rose Creek loam, drained	В	0.0
R025XY003NV	LOAMY BOTTOM 8- 14 P.Z.	Welch-Bosco association	C	1.5
R025XY014NV	LOAMY 10-12 P.Z.	Susie Creek-Short Creek association	С	0.6
R025XY019NV	LOAMY 8-10 P.Z.	Bucan-Humdun association	С	4.5
R025XY019NV	LOAMY 8-10 P.Z.	Cherry Spring-Cortez-Chiara association	C	18.1
R025XY019NV	LOAMY 8-10 P.Z.	Cherry Spring-Orovada association	С	16.8
R025XY019NV	LOAMY 8-10 P.Z.	Chiara-Cherry Spring association	D	0.6
R025XY019NV	LOAMY 8-10 P.Z.	Tomera-Cherry Spring association	С	20.1

Table 2. Soil Parameters for TS Allotment

Hydrologic Groups are an indication of infiltration in soils. Group A has very high infiltration rates and Group D has the lowest infiltration rate (near zero).

Blue Basin Allotment

The Blue Basin Treatment has two Ecological Site types present: R025XY018NV (CLAYPAN 10-12 P.Z.) and R025XY019NV (LOAMY 8-10 P.Z.). The soil associations for each ecological site are given in Table 3.

R025XY018NV (CLAYPAN 10-12 P.Z.) accounts for 36% of the treatment area. The soil association is a gravelly loam but a claypan is present and infiltration is very low. The soil has a high runoff and the potential for erosion is very high so vegetation is needed to prevent erosion and gully formation.

R025XY019NV (LOAMY 8-10 P.Z.) comprise 64% of the treatment area. The soil association is a loam with a higher infiltration rate and less surface runoff. This indicates less erosion and soil movement during storm events

Table 3. Soil Parameters for Blue Basin Treatment

Site Number	Ecological Site	Soil Association	Hydro Group	%
R025XY018NV	CLAYPAN 10- 12 P.Z.	Donna-Stampede-Gance association	D	36
R025XY019NV	LOAMY 8-10 P.Z.	Hunnton-Wieland-Gance association	С	64

Carlin Field Allotment

The Carlin Treatment has four Ecological Site types present; R024XY006VV (DRY FLOODPLAIN), R024XY002NV (LOAMY 5-8P.Z.); R025XY019NV (LOAMY 8-10 P.Z.) and R024XY008NV (SODIC FLAT 8-10 P.Z.). The soil associations for each ecological site are given in Table 4.

025XY019NV (LOAMY 8-10 P.Z.) accounts for 56 % of the ecological sites in the Carlin Treatment area. It is a fine sandy loam that that has a high infiltration rate. A higher infiltration rate indicates lesser amounts of surface runoff and less erosion and sediment movement.

R024XY008NV (SODIC FLAT 8-10 P.Z.) comprise 41% of the treatment area. The soil association is a loam with a higher infiltration rate and less surface runoff. This indicates less erosion and soil movement during storm events.

Site Number	Ecological Site	Soil Association	Hydro Group	%
R024XY006NV	DRY FLOODPLAIN	Geysen silt loam	C	2
R024XY002NV	LOAMY 5-8 P.Z.	Beowawe silty clay loam, heavy subsoil variant	D	0.3
R024XY008NV	SODIC FLAT 8-10 P.Z.	Moranch-Ocala-Orovada association	В	41
R025XY019NV	LOAMY 8-10 P.Z.	Orovada-Humdun-Puett association	В	56

Table 4. Soil Parameters	for Carlin	Field Allotment
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Hadley Allotment

The Hadley Treatment has two Ecological Site types present; 025XY019NV (LOAMY 8-10 P.Z.) and R024XY005NV (LOAMY 8-10 P.Z. The soil associations for each ecological site are given in Table 5.

025XY019NV (LOAMY 8-10 P.Z.) comprise 48% of the Hadley Treatment area. The soil association is a loam and has a high infiltration rate. A high infiltration rate indicates a low surface runoff and low potential for erosion and sediment movement.

024XY005NV (LOAMY 8-10 P.Z.) comprise 42% of the Hadley Treatment area. The soil association is a loam and has a high infiltration rate. A high infiltration rate indicates a low surface runoff and low potential for erosion and sediment movement.

Table 5. Soil Parameters for Hadley Allotment

Site Number	Ecological Site	Soil Association	Hydro Group	%
R025XY019NV	LOAMY 8-10 P.Z.	Cherry Spring-Orovada association	С	48
R024XY005NV	LOAMY 8-10 P.Z.	Orovada gravelly fine sandy loam, 2 to 4 percent slopes	В	1
R024XY005NV	LOAMY 8-10 P.Z.	Orovada silt loam, 0 to 2 percent slopes	В	9
R024XY005NV	LOAMY 8-10 P.Z.	Orovada-Humdun association	В	42

3.2.2.2. Environmental Effects

Effects of the No Action Alternative

Under the No Action alternative current grazing management practices for livestock grazing would continue as permitted on the allotments. Large scale burns within the allotments could lead to vegetation loss and result in significant impacts to the land surface by erosion and gully formation from infrequent heavy rain events. Loss of pasture land by erosion may reduce the amount vegetation forcing operators to relocate livestock or find other means of providing livestock forage over time.

Effects of the Proposed Action

Implementing the Proposed Action would result in the creation of a fuel break within the targeted grazing treatment areas. Once objectives were obtained, and sustained throughout the spring, livestock grazing would cease on the treatment areas. Improper livestock grazing may remove vegetation which could lead to increase erosion and sediment movement without the buffering capability of vegetation to dissipate raindrop energy.

Cumulative Effects of the Alternative

Past, present and reasonably foreseeable actions and conditions within the cumulative effects area that have affected or could (in the future) affect soil resources include improper livestock grazing, wildfires, roads, recreation, invasive plants, vegetation management and climate change. The impact analysis is based on current conditions on soil quality in areas with stream drainages. General assumptions of how various kinds of land uses or conditions can affect infiltration and surface erosion. Typical direct and indirect negative short and long-term effects from ground disturbing activities include compaction and subsequent loss of infiltration, increased runoff and sediment movement, and accelerated erosion. In the case of climate change, the effects of temporal shifts in precipitation and snowfall patterns, and storm intensities would affect the soil layer recharge by infiltration and groundwater recharge.

Mitigation

The proposed vegetation treatments would reduce available plant material for consumption in a wildfire and allow for manageable fire suppression tactics. The fuelbreak would be have vegetation reduced to a stubble height of 2 to 3 inches for effective fire suppression and erosion prevention.

3.2.3. Water Resources (Surface/Ground)

3.2.3.1. Affected Environment

There are four treatments that comprise the proposed project: the T Lazy S, Blue Basin, Hadley, and Carlin Treatments. Water is not readily available in the treatments areas and when grazing is utilized water would be supplied to livestock. Each pasture has varying numbers of water sources and different levels of availability for water resources that are used by livestock and wildlife.

T Lazy S has no seeps or springs in the proposed project boundary. There are 17 miles of intermittent drainage on BLM land, 41 miles of intermittent drainage on private land, and 5.6 mile of perennial drainage on private land. Blue Basin Treatment has no seeps or springs and has 6.2 miles of intermittent drainage on BLM land. No perennial streams are present. Carlin and Hadley Treatments have no seeps or springs. Carlin does not have stream drainages and Hadley Treatments has 1.8 mile of intermittent drainage located on private land.

3.2.3.2. Environmental Effects

Effects of the No Action Alternative

The No Action Alternative would not change the current situation on the Treatment areas and would have little impact.

Effects of the Proposed Action

The Proposed Action is an adaptive management strategy, which includes a number of components, which could result in positive direct and indirect impacts in the Treatment areas. The placement and utilization of watering troughs to control livestock movements and provide adequate water supplies to livestock could potentially increase trampling. Any existing exclosures to restrict trampling, compaction and degradation of water sources would remain. Water quality monitoring within the pasture would continue.

Cumulative Effects of the Alternatives

Past, present and reasonably foreseeable actions and conditions within the cumulative effects area that have affected or would (in the future) affect water resources include livestock grazing, wildfires, roads, recreation, invasive plants, vegetation management and climate change. The impact analysis is based on current conditions for water resource areas including drainages, reservoirs, and groundwater wells and on general assumptions of how various kinds of land uses or conditions can affect infiltration and surface runoff. Typical direct and indirect negative short and long-term effects from ground disturbing activities include compaction and subsequent loss of infiltration, increased runoff and sediment movement, and accelerated erosion. Where prescriptive management actions are applied (such as a livestock grazing system), direct and indirect effects on riparian areas can be positive, especially over the long-term. In the case of

climate change, the effects of temporal shifts in precipitation and snowfall patterns, and storm intensities would affect the soil layer recharge by infiltration and groundwater recharge.

3.2.4. Air Quality

3.2.4.1. Affected Environment

Regional air quality is influenced by a combination of factors including climate, meteorology, the magnitude and spatial distribution of local and regional air pollution sources, and the chemical properties of emitted pollutants. Within the lower atmosphere, regional and local scale air masses interact with regional topography to influence atmospheric dispersion and transport of pollutants. The following sections summarize the climatic conditions and existing air quality within the Project Area and surrounding region.

Regional Climate

The Project Area is located in Elko County, west of the Ruby Mountains and the Humboldt-Toiyabe National Forest. The climate is arid and characterized by warm, dry summers and cold, wet winters.

The EPA and states set limits on permissible concentrations of air pollutants. The National Ambient Air Quality Standards (NAAQS) and Nevada Ambient Air Quality Standards (Nevada AAQS) are health-based criteria for the maximum acceptable concentrations of air pollutants at all locations to which the public has access.

Monitoring of air pollutant concentrations has been conducted in the region. These monitoring sites are part of several monitoring networks overseen by state and federal agencies, including: NDEP-Bureau of Air Quality Planning (BAQP) Clean Air Status and Trends Network (CASTNET), Interagency Monitoring of Protected Visual Environments (IMPROVE), and National Acid Deposition Program (NADP) National Trends Network (NTN).

3.2.4.2. Environmental Effects

Effects of the No Action Alternative

The No Action Alternative would produce emissions of air pollutants (mainly PM10 and PM2.5) from potential wildfires that could burn uncontrolled. The majority of PM_{10} and $PM_{2.5}$ emissions in the Project Area are attributed to fugitive dust sources, defined as those not able to be captured and routed to a control device. These fugitive sources include primarily wildfires, and to lesser degrees, vehicle travelon unpaved roads, and windblown disturbance.

Emissions of the criteria pollutants NO_x , CO, and volatile organic compounds (VOCs) occur primarily from fuel combustion sources including engines, heaters, heavy equipment, and mobile sources (heavy and light-duty vehicles) operating during the construction and operations phases of the Proposed Action. This construction is short term and these constituents would not be a concern. Small quantities of HAP emissions would not be a concern in this situation.

Effects of the Proposed Action

The Proposed Action Alternative could impact the current conditions. Wildfires could potentially be controlled quicker, burn less land and vegetation and reducing the release of PM10 and PM2.5 constituents into the atmosphere.

Cumulative Effects of the Alternatives

The past, present and future effects for air quality includes contributions from the Carlin Trend mining area. Air quality in the area is impacted by natural conditions such as fire and blowing dust, along with a variety of anthropogenic effects such as blowing dust from soil disturbance, vehicle exhaust emissions, and emissions from industrial and domestic sources such as mining activities, agricultural activities, etc.

Impacts from natural and anthropogenic emissions have not been high enough in the CESA to classify affected basins and as a result, air quality is generally considered to be good. The Proposed Action would potentially enhance air quality through a decrease in particulate matter generation and distribution.

The No Action Alternative would potentially contribute to a cumulative decline in air quality since it wildfire would burn uncontrolled and contribute more smoke to the atmosphere.

3.2.5. Climate Change

3.2.5.1. Affected Environment

According to the BLM's Instruction Memorandum (IM) No. 2008-171, "Guidance on Incorporating Climate Change into Planning and NEPA Documents," dated August 19, 2008, climate change considerations should be acknowledged in EA documents. The IM states that ongoing scientific research has identified the potential impacts on global climate of anthropogenic (man-made) GHG emissions and changes in biological carbon sequestration due to land management activities. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused CO₂ concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations." Several activities contribute to the phenomena of climate change, including emissions of GHGs (especially CO_2 and methane) from fossil fuel development, large wildfires and activities using combustion engines; changes to the natural carbon cycle; and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs could have a sustained climatic impact over different temporal scales. For example, recent emissions of CO_2 may influence climate for 100 years.

Current emissions within the vicinity of the Project Area include smoke from wildfires, vehicle combustion emissions, fugitive dust from travel on unimproved roads, ranch and mining activities, and wildland fires. Emissions of all pollutants are generally expected to be low due to the extremely limited number of sources in the vicinity of the Project Area. Existing climate prediction models are global in nature; therefore they are not at the appropriate scale to estimate potential impacts of climate change within the Project Area. Due to the short-term nature and scale of the Proposed Action, effects on climate change are not further analyzed in this EA.

3.2.5.2. Environmental Effects

Effects of the No Action Alternative

For the No Action Alternative, there would be potentially a sudden and uncontrolled increase in carbon contributions to the atmosphere due to wildfires.

Effects of the Proposed Action

For the Proposed Action, removal of vegetation to create a fuelbreak would result in a loss of stored carbon in the vegetation. However, the amount of carbon lost with treatment is much less than without the Proposed Action and the unchecked vegetation loss by wildfire. The removal of carbon due to wildfire is much greater than the carbon loss by the Proposed Action.

Cumulative Effects of the Alternatives

The past, present and future effects for climate change contributions from the Carlin Trend mining area. Changes in the carbon footprint in the area is impacted by natural conditions such as fire and man-made conditions, such as vehicle exhaust emissions, and emissions from industrial and domestic sources such as mining activities, agricultural activities, etc.

The Proposed Action would potentially enhance air quality through a decrease in particulate matter generation and distribution.

The No Action Alternative would potentially contribute to a cumulative loss in stored carbon. Wildfires would result in an uncontrolled burns putting carbon stored in the vegetation into the atmosphere.

3.2.6. Vegetation

3.2.6.1. Affected Environment

The analysis area for vegetation would be those fenced areas identified for targeted grazing treatments. The two most dominant ecological sites within the treatment areas are the Loamy 8-10" (Thurber's needlegrass, Wyoming big sagebrush) and the Dry Floodplain (Basin big sagebrush and Basin wildrye). The majority of these sites should be a dynamic balance of native perennial bunchgrasses with big sagebrush dominance by percent cover. However, this natural stand dynamic has been altered in favor of annual grasses due to fire. Fire has altered vegetation composition of the treatment areas to consist primarily of cheatgrass or introduced perennial species.

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 Flat 8-10" (greasewood, big sagebrush, basin wildrye), Saline Floodplain (basin big sagebrush, and basin wildrye), and the Sodic Bottom (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. Refer to Table 6 for acres associated with each ecosite.

ESD	Acres	% of Treated Area
SILTY 4-8 P.Z.	3.52	0.04
LOAMY BOTTOM 8-14 P.Z.	116.52	1.16
LOAMY 5-8 P.Z.	0.74	0.01
LOAMY 8-10 P.Z.	8,294.70	82.67
LOAMY 10-12 P.Z.	129.58	1.29
CLAYPAN 10-12 P.Z.	152.08	1.52
SODIC FLAT 8-10 P.Z.	27.56	0.27
SALINE BOTTOM	0.55	0.01
WET MEADOW	0.27	0.00
DRY FLOODPLAIN	1,307.79	13.03
TOTAL	10,033.31	

Table 6 Ecosite by Acres

3.2.6.2. Environmental Effects

Effects of the No Action Alternative

Under the No Action alternative current conditions would be expected to continue. Fine annual invasive fuel continuity would remain intact. These fuels would continue to promote fast moving fires. The risk of longer fire seasons due to early drying of these annual invasive fuels would remain high (Foster, et al., 2015). Recovering and intact sagebrush uplands would remain at elevated risk of wildfire.

Several native and crested wheatgrass seedings lie on the leeward side of the treatment areas in the mid and upper elevations. Big sagebrush and native forbs are slowly reestablishing back into these areas. If these areas are not protected from fire, invasion of cheatgrass is expected to occur due to wildfires (Foster, et al., 2015; Diamond, Call, & Devoe, 2012; Davies, Svejcar, & Bates, 2009; Wambolt, Walhof, & Frisina, 2001). Many of these recovering vegetation communities interface with lower elevation areas that have already been negatively impacted by past wildfire activity and have a substantial cheatgrass component. These lower elevation, fire affected areas, are identified for treatment. Landscape level fires such as the 2012 Willow Creek Fire, 2011 Indian Creek and Chukkar Canyon Fires, 2007 Red House and Bobs Flat Fires, 2006 Suzie and Basco Fires, and 2005 Esmeralda Fire have burned over 750,000 acres on the Tuscarora and Independence Mountains dating back to the 2005 fire season.

Effects of the Proposed Action

Under the Proposed Action alternative fine annual invasive fuel continuity would be broken. Annual invasive grasses would be grazed to a 2 to 3 inch stubble height to slow or stop fire spread (Diamond, Call, & Devoe, 2012; Mosley & Roselle, 2006; Vallentine & Stevens, 1992). Preventing wildland fire in leeward uplands would help maintain intact sagebrush systems and ensure recovery of those previously burned areas with successful rehabilitation efforts (Foster, et al., 2015).

If sufficient removal of biomass was achieved, reduction in cheatgrass density over time may be possible (Foster, et al., 2015; Hempy-Mayer & Pyke, 2008). Since cheatgrass has been shown to germinate readily in residual fall litter (Foster, et al., 2015), fall targeted grazing treatments may be used to further reduce spring fuel loads.

Water haul locations may have an increase in disturbance, reducing vegetative cover. Construction of new fencing may also cause a brief increase in disturbance. New fencing and water haul areas may serve as potential vectors for the introduction and/or spread of invasive species. Water haul sites in existing noxious weed infestations would be avoided. Monitoring for new infestations would be ongoing. If new infestations are found, they would be reported to the Bureau within 24 hours.

Cumulative Effects of the Alternatives

Cumulative effects of targeted grazing on cheatgrass may inhibit reproduction of the targeted plants. With inhibition of reproduction, cheatgrass density may decline and space could become

available for other plant species to move in or increase (Foster, et al., 2015; Hempy-Mayer & Pyke, 2008).

3.2.7. Livestock Grazing

3.2.7.1. Affected Environment

The analysis area for livestock grazing would be those fenced areas identified for targeted grazing treatments. Portions of four livestock grazing allotments within the Tuscarora Field Office have been identified for proposed treatments. The four allotments comprise of over 345,000 acres and include the T Lazy S, Hadley, Carlin Field, and Blue Basin allotments. Current livestock grazing authorized on these allotments is consistent with the terms and conditions of the respective, allotment specific, 10-year grazing permits. Use within the identified treatment areas has historically been low as water is insufficient to distribute livestock to the targeted grazing areas. Livestock are typically turned out in lower elevations, early in the year, and herded or moved to higher elevations as summer ensues. As areas dry up, livestock are moved to those areas with remaining available water, typically livestock wells. By late fall, livestock are herded to private ground where they spend the winter. The Table 7 identifies current permitted use on the allotments.

Allotment	Livestock Kind	Season of Use	AUMs
T Lazy S	Cattle	02/15-11/30	11,363
	Cattle	03/1-02/28	202
Hadley	Cattle	04/01-12/20	2,760
		07/01-12/20	1,310
		05/01-05/31	206
Carlin Field	Cattle	04/1-12/20	3,891
Blue Basin	Horse	04/01-09/01	62
	Cattle	04/01-11/15	4,208
Blue Basin	Cattle	04/01-11/15	3,141

Table 7. Allotment, Class of Livestock, Season of Use, AUMs

3.2.7.2. Environmental Effects

Effects of the No Action Alternative

Under the No Action alternative livestock grazing would continue as permitted on the allotments. Intact and recovering habitats would remain in jeopardy from large-scale, frequent wildfires. Large scale burns within the allotments could result in significant impacts to livestock operations, forcing operators to relocate livestock or find other means of providing livestock forage while burn areas recover.
Repeated fire would maintain vegetation in an herbaceous state, which would provide greater forage availability when compared to shrub-dominated plant communities. However, repeated fire can also degrade plant communities, removing perennial vegetation favoring invasive annual plants which respond rapidly following wildfire (Foster, et al., 2015). These plant species provide adequate early season forage but become unpalatable quickly and do not produce the same quantity of forage produced by perennial plant communities (Mosley & Roselle, 2006).

Effects of the Proposed Action

Implementing the Proposed Action would result in 9,576 acres of targeted grazed fuel breaks. A free-use grazing permit would be issued for the targeted grazing treatments. Remaining allotment acreages would continue under the existing permit. Grazing treatments would range from less than 1 percent on the Hadley to no more than 5 percent of the T Lazy S. Table 8 lists the public and private acres, total treatment acres per allotment, and percent treated of the allotment.

Allotment	Public Acres	Private Acres	Total Acres	Total Treatment Acres/Allotment	Treatment % of Allotment
T Lazy S	68,797	108,078	176,875	8,932	5.0
Hadley	27,323	69,314	96,637	440	0.5
Carlin Field	18,797	4,485	23,282	56	0.2
Blue Basin	37,700	13,250	50,950	148	0.3
Totals	152,617	195,127	347,744	9,576	2.8

Table 8. Allotment Acres

Once objectives are obtained, livestock grazing would cease on the treatment areas. Livestock operators may need to move livestock back into the treatment areas as cheatgrass has multiple growing seasons in any given year (Mosley & Roselle, 2006). Livestock producers may have to find alternative forage solutions if stubble height objectives in treatment areas are attained before the turn on dates of their permits.

Livestock management, and costs associated with livestock management are expected to increase during grazing treatments. Producers would incur additional costs associated with hauling water for distribution of livestock. Water haul contracts may cost \$125/hour or more. Yearling cattle water intake may range from 6 to 12 percent of their body weight. An 1100 lb. yearling may drink roughly 16.5 gallons per day. Additional costs for water troughs and supplements would also be incurred. Generally, 250 lb. mineral supplements can be \$110.00 or more while 250 lb. protein supplements start around \$120.00. As livestock would need moved, more time would be spend herding and additional riders may be necessary to complete the targeted grazing treatments or retreatments. A substantial amount of time would be spent assessing targeted grazing

treatment areas to ensure utilization objectives are met but not exceeded. Fencing repair and maintenance costs would be incurred including tools and supplies, i.e. pliers and T-posts.

Cumulative Effects of the Alternative

The cumulative impacts analysis area for livestock grazing is the same as the affected environment analysis area described above. Actions that could cumulatively affect livestock grazing are wildfire, vegetation treatments including noxious weed management, post-fire stabilization and rehabilitation treatments, construction and maintenance of transmission line projects, and recreation.

The No Action alternative would not have a fuel breaks constructed throughout the project area. Response time required to catch fires before they grow beyond the capabilities of initial attack would remain unchanged. Landscapes more distant from improved roads with intact sagebrush would remain most vulnerable to large fires. The result could be the continued trend of wildfires, post-fire burned lands rested from grazing for 1 to 5 years combined with activities such as transmission line construction could result in negative short-term cumulative impacts for some operators. Conversion from perennial plant communities to annual plant communities would reduce rangeland diversity and forage availability, putting further pressure on livestock operators. Recreation and vegetation treatments would continue to occur in the analysis area. Recreation disturbance is dispersed and would likely increase over time as would the occurrence of noxious weeds; however, these impacts would not result in cumulative effects to livestock grazing management. Transmission line construction may occur and limit herd access to some areas. Temporary disturbance associated with transmission line construction would be reclaimed and may result in a short-term loss of AUMs.

Cumulative effects for the action alternative are anticipated. The costs associated with targeted livestock grazing are expected to be considerably higher during treatment. The costs are expected to be somewhat offset when compared to consequences of largescale wildfires. Under the action alternative wildfire size is anticipated to decrease (Diamond, Call, & Devoe, 2009) preventing livestock producers from having to find alternatives for livestock forage. Native habitat and seeded vegetation treatments may remain over the long-term, providing quality forage for livestock grazing (Foster, et al., 2015).

3.2.8. Recreation

3.2.8.1. Affected Environment

The analysis area for recreation is the proposed project area as proposed project disturbance would only occur in this area. The area receives moderate seasonal use, primarily by hunters in the fall. Other recreational activities include camping, biking, hiking, off-highway vehicle (OHV) use, horseback riding, rock hounding, and bird and wildlife watching.

The Target Grazing project area sits within Nevada Department of Wildlife (NDOW) Hunt Unit 064 and 068. Hunt Unit 064 is an area of approximately 312,000 acres of which 1,084 acres comprises the targeted grazing area that includes both public and privately held lands, and which is less than 1% of the unit group acreage. Hunt Unit 068 is an area approximately 1,060,000

acres of which 8,600 acres comprises the targeted grazing area that includes both public and privately held lands and is less than 1% of the unit group acreage. Range improvements concurrent with livestock management have served to aid wildlife management objectives and then by association hunting experiences as well.

3.2.8.2. Environmental Effects

Effects of the No Action Alternative

The No Action alternative would result in no fuel breaks being constructed in the project area, no targeted grazing, no temporary fence construction, and no mineral or water hauls sites. There would be no immediate direct impact to recreational activities.

In the future, increased risk of large wildfires may affect the experiences of visitors. Fires may result in damage to roads, vegetation, and trails. Large fires may lead to recreational activity closures during the fire, and often during recovery. Fires may create dusty environments that are undesirable to visitors, and the scenic quality may be degraded. Dozer lines and hand lines created during suppression may become unofficial trails that can encourage cross-country use and detract from the recreationalist's experience.

Effects of the Proposed Action

Under the Proposed Action there may be direct impacts to recreational activities, but they are likely to be minimal and largely short-term. These may include degradation of the scenic quality due to the construction of fuel breaks. Construction of fencing may create a hindrance by having to open and close gates, though access through will remain open. Scenic quality may also be temporarily hindered by trough and supplement locations. The supplement bins and water troughs would be removed upon seasonal completion of the treatments.

Over the long term, the Proposed Action may serve to limit the negative effects of large wildfires on recreational activities in the area.

Cumulative Effects of the Alternatives

The area of analysis for cumulative impacts for recreation is the proposed project area. Actions that could cumulatively impact the resource are transmission lines and wildfire.

Under the No Action alternative the effects of past, present and future foreseeable actions would likely result in a continuation of current trends in recreational activity. Fire would remain an important influence on the landscape and on recreational opportunities. Impacts by fire on recreation may be felt during and after the fires. Past fires have contributed to the spread of non-native annual grasses that lead to more intense fire behavior, and future fires are expected to continue that trend. The development of transmission lines in the project area may result in short term impact to the resource during construction, and long term impact due to road construction. There may be positive and negative impacts from road building, as roads may increase access, but detract from solitude.

Under the Proposed Action alternative, the cumulative effects of transmission lines, and wildfire would have some impacts on the recreation resource. Road building associated with transmission line development may lead to better access for recreationalists, but may detract from the experience of those desiring solitude. The negative impacts from fire would be expected to decrease over time under the action alternative. Construction of fencing and gates may be a hindrance but would not likely affect the overall experience of visitors.

Mitigation

Recreational use within grazing allotments may result in causing some conflicts with grazing operations primarily regarding the securing of fence gates. For example, when visitors to public lands leave fence gates open that were previously closed this results in livestock wandering away which can cause concern for the grazing permit holder. Public roads intersecting with pasture fences that have had a history of gates being left open should be identified and if applicable a cattle guard considered as an alternative. These guards would restrict the livestock from leaving an individual pasture within the allotment and prevent the public from leaving the gates open.

3.2.9. Visual Resource Management

3.2.9.1. Affected Environment

The Visual Resource Management (VRM) system designates classes for BLM-administered lands in order to identify and evaluate scenic values to determine the appropriate levels of management during land use planning (Table X., "BLM Visual Resource Management Classes"). Each management class portrays the relative value of the visual resources and serves as a tool that describes the visual management objectives (BLM, 1986).

Class	Description
Ι	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
Ш	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any change must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the character should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes

Table 9.	BLM	Visual	Resource	Management	Classes
			Itesource	1. Ianagement	

Class	Description
	should repeat the basic elements found in the predominant natural features of the characteristic landscape.
IV	The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.
	Source: BLM, 1986

Approximately 1,325 acres of the project area are currently designated as VRM Class II, and the remainder acreage is designated as VRM Class IV. The objective of Class IV is to provide for management activities that allow for major modification of the existing character of the landscape, while making every attempt to minimize the visual impact of the activities through careful location, minimal disturbance and repeating the basic elements of form, line, color, and texture (BLM, 1986). The objective of Class II is to retain the existing character of the landscape. The level of change to the character landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer.

A portion of the proposed project area is within the I-80 low visibility corridor. The I-80 corridor was designated as a low visibility corridor in the Elko and Wells Resource Management Plans in order to minimize visual impacts along 1.5 miles on either side of the interstate (BLM, 1986). Within this three-mile wide low visibility corridor, the objective for visual resources is for management actions not to be evident in the characteristic landscape.

Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape (BLM, 1986). The proposed targeted grazing action should not attract attention to the casual observer because grazing has historically taken place in these areas and motorists on I-80 are accustomed to these practices.

3.2.9.2. Environmental Effects

Effects of the No Action Alternative

The No Action Alternative would not result in any changes to the landscape or alter the visual resource characteristics within the analysis area.

Effects of the Proposed Action

Under the proposed action there would be some direct impacts to visual resources however these impacts would be minimal and consistent with the current VRM Class II and IV designations of these locations.

Range facilities such as fences tend to be a translucent grey in color and blend favorably with grey and grey-green settings. To further blend favorably with the setting facilities would be painted according to the BLM's Standard Environmental Color Chart and utilize the BLM's Best Management Practices for Visual Resource Management Manual.

Cumulative Effects of the Alternatives

Because there are no appreciable impacts between the alternatives or reasonably foreseeable projects or past projects within the analysis area, cumulative impacts to visual resources are not expected.

Mitigation

The basic landscape elements of form, line color and texture would not change within the allotment under any management alternative. Potential impacts to visual resources would be analyzed and mitigated as allotment management activities are proposed in the future.

3.2.10. Native American Concerns

3.2.10.1. Affected Environment

Federal law, Executive Order (EO) 13175 (Consultation and Coordination with Indian Tribal Governments) of 2000, and agency guidance require the BLM to consult with Native American tribal governments concerning the identification of cultural values, religious beliefs, and traditional practices of the Native American peoples that may be affected by actions on BLM-administered lands. This consultation includes the identification of places (i.e., physical locations) of traditional cultural importance to the affected Native American tribes. Places that may be of Native American traditional cultural importance include, but are not limited to:

- Locations associated with the traditional beliefs concerning tribal origins, cultural history, or the nature of the world.
- Locations where religious practitioners go, either in the past or the present, to perform ceremonial activities based on traditional cultural rules or practice; Ancestral habitation sites; Trails; Burial sites; and Places from which plants, animals, minerals, and waters believed to possess healing powers or used for other subsistence purposes, may be taken.
- Some of these locations may be considered sacred to particular Native American individuals or tribes.

- In 1992, the National Historic Preservation Act (NHPA) was amended to explicitly allow that "properties of traditional religious and cultural importance to an Indian tribe may be determined to be eligible for inclusion on the National Register of Historic Places." If a resource has been identified as having importance in traditional cultural practices and the continuing cultural identity of a community, it may be considered a "traditional cultural property" (TCP). To qualify for nomination to the NRHP, a TCP must:
 - Be more than 50 years old;
 - Be a place with definable boundaries;
 - Retain integrity; and
 - Meet certain eligibility criteria as outlined for cultural resources in the NHPA (Section 3.2.3 Cultural Resources).

In addition to NRHP eligibility, some places of cultural and religious importance also must be evaluated to determine if they should be considered under other federal laws, regulations, directives, or policies. These include, but are not limited to, the Native American Graves Protection and Repatriation Act of 1990, American Indian Religious Freedom Act of 1978, Archaeological Resources Protection Act (ARPA) of 1979, and Executive Order (EO) 13007 (Sacred Sites) of 1996.

The effects of federal undertakings on properties of religious or cultural significance to contemporary Native Americans are given consideration under the provisions of EO 13007, American Indian Religious Freedom Act, and recent amendments to the NHPA. As amended, the NHPA now integrates Indian tribes into the Section 106 compliance process and also strives to make the NHPA and National Environmental Policy Act procedurally compatible. Furthermore, under Native American Graves Protection and Repatriation Act, culturally affiliated Indian tribes and the BLM jointly may develop procedures to be taken when Native American human remains are discovered on federal land.

Tribal Consultation/Information Sharing: The EDO has an ongoing invitation for consultation and information sharing with the groups listed in the Table 10 below. Consultation and communication with these tribal/band governments would include letters, phone calls, e-mails, and visits with individual Tribal/Band Environmental Coordinators. To date, letters to potentially effected Tribal Councils have been sent, face-to-face consultation has occurred with one Tribal Council and information sharing with one Environmental coordinator. Future meetings would be scheduled as needed to discuss targeted grazing. Formal Consultation has yet to be requested by the tribes thus far contacted, but, information sharing, and if initiated, BLM initiated formal government to government (G2G) consultation, will continue throughout the life of the project.

Tribal ethnographic resources are associated with the cultural practices, beliefs, and traditional history of a community. In general, ethnographic resources include places in oral histories or traditional places, such as particular rock formations, the geothermal water sources, or a rock

cairn; large areas, such as landscapes and view sheds; sacred sites and places used for religious practices; social or traditional gathering areas, such as dancing grounds; natural resources, such as plant materials or clay deposits used for arts, crafts, or ceremonies; and places and natural resources traditionally used for non-ceremonial uses, such as trails, herb gathering locations, or camping locations.

Table 10. Summary of Native American Consultation/Information Shar	ing (Consultation is
On-Going)	

Name of Tribe or	Date of	Type of Contact	Comments/Notes
Danu	Contact		
Te-Moak Tribe of the Western Shoshone Indians of Nevada	10-25- 2016	Letter	Informational letter and invitation to open G2G Consultation
	12-9-2016	Information Sharing	Meeting with Environmental Coordinator at the Elko Band Environmental Office.
Battle Mountain Band Council of the Te- Moak Tribe	10-25- 2016	Letter	Informational letter and invitation to open G2G Consultation.
	11-10- 2016	Consultation Meeting	Meeting with Council in Battle Mountain, NV. Requested use of tribal monitors archeological survey and fence installation.
Shoshone-Paiute Tribes of the Duck Valley Reservation.	10-25- 2016	Letter	Informational letter and invitation to open G2G.
Elko Band Council of the Te-Moak Tribe	10-25- 2016	Letter	Informational letter and invitation to open G2G Consultation
	11-1-2016	Information Sharing	Meeting with Environmental Coordinator.
	12-9-2016	Information Sharing	Meeting with Environmental Coordinator at Elko Band Environmental Office.
South Fork Band Council of the Te- Moak Tribe	10-25- 2016	Letter	Informational letter and invitation to open G2G Consultation
Wells Band Council of the Te-Moak Tribe	10-25- 2016	Letter	Informational letter and invitation to open G2G Consultation
	12-9-2016	Information Sharing	Meeting with Environmental Coordinator at Elko Band Environmental Office.

The NEPA process does not require a separate analysis of impacts to religion, spirituality, or sacredness. As a result, references to such beliefs or practices convey only the terminology used by participants involved in the ethnographic studies and tribal consultation and information sharing. This terminology does not reflect any BLM evaluation, conclusion, or determination that something is or is not religious, sacred, or spiritual in nature, but conveys only the information that has been gathered through tribal consultation and coordination and current and historic ethnographic study.

3.2.10.2. Environmental Effects

Effects of the No Action Alternative

No new concerns are anticipated under the No Action alternative.

Effects of the Proposed Action

BLM acknowledges that there are resources in the area that may be of concern to the tribal communities contacted. The act of cattle grazing, while potentially indirectly adversely impacting Native American sites of spiritual/cultural/traditional nature, is unlikely to impact areas of traditional or contemporary importance or use. The types of resource uses during traditional activities and current religious practices that may be located in the area, or that might be impacted are unknown. BLM understands that consultation and information sharing is ongoing for the life of the project. If a tribal community informs BLM during the comment period that any action chosen will disrupt traditional and religious practices and have an adverse impact upon other resources of tribal concern, BLM will consider that information.

Mitigation

Grazing is recognized and as an acceptable use of lands administered by the BLM under the Federal Land Policy and Management Act of 1976 (FLPMA). However, in accordance with the National Historic Preservation Act (P.L. 89-665), the National Environmental Policy Act (P.L. 91-190), the American Indian Religious Freedom Act (P.L. 95-341), the Native American Graves Protection and Repatriation Act (P.L. 101-601) and Executive Order 13007, the BLM must also provide affected tribes an opportunity to comment and consult on proposed actions. BLM must attempt to limit, reduce, or possibly eliminate any negative impacts to Native American traditional/cultural/spiritual sites, activities, and resources.

As stated above, if, as a result of this project of targeted grazing and associated vegetation treatments, all applicable laws, regulations, directives, SOPs, and stipulations and limitations will apply.

BLM reserves the right to alter proposed activities proposed in this EA. Because consultation and information sharing is ongoing, if BLM is informed that any portion of the project might impact locations having traditional/cultural or religious values to Native Americans, BLM will insure that its actions do not unduly or unnecessarily burden the pursuit of traditional religion or traditional values in the project area.

3.2.11. Noxious Weeds and Invasive, Non-native Plant Species

3.2.11.1. Affected Environment

The BLM manages both noxious and non-native, invasive plant species in accordance with federal and state regulations. A noxious weed is defined as "any plant or plant product that can directly or indirectly injure or cause damage to crops, livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment" (Plant Protection Act of 2000). Invasive species are managed under the Invasive Species Executive Order 13112, which directs federal agencies to take actions to prevent the introduction of invasive, non-native species and control their impact if introduced.

The State of Nevada also regulates noxious weeds. Under the Nevada Revised Statute (NRS), a noxious weed is defined as "any species of plant which is, or is likely to be, detrimental or destructive and difficult to control or eradicate" (NRS 555.005 – Control of insects, pests, and noxious weeds). Noxious weeds are classified into three categories based on the statewide importance, distribution, and the ability of eradication or control measures to be successful.

Based on existing data and field observations, populations of two noxious weeds and four nonnative invasive plant species are known to occur within the project areas (Table 11). Infestations are primarily located along roadways and at lower elevation sites. Existing integrated pest management (IPM) tools, compatible with targeted grazing, would be utilized to control broadleaf pressure.

Species	Species	Status (Noxious ¹ or	Targeted Grazing
Common Name	Scientific Name	Non-native Invasive)	Project Area
Cheatgrass	Bromus tectorum	Invasive	All
Halogeton	Halogeton glomerus	Invasive	TS
Hoary cress	Cardaria draba	Category C, noxious	TS, North Elko
			Greenstrip
Russian thistle	Salsola tragus	Invasive	TS
Scotch thistle	Onopordum	Category B, noxious	North Elko
	acanthium		Greenstrip, Hadley
Tumblemustard	Sisymbrium	Invasive	TS
	altissimum		

Table 11. Noxious Weeds According to Status and Project Area Location

1 **Category A** includes weeds that are generally not found or that are limited in distribution throughout the State subject to a) active

exclusion from the State and active eradication wherever found and b) active eradication from the premises of a dealer of nursery stock.

Category B includes weeds that are generally established in scattered populations in some counties of the State subject to a)

Species	Species	Status (Noxious ¹ or	Targeted Grazing
Common Name	Scientific Name	Non-native Invasive)	Project Area

active

exclusion where possible and b) active eradication from the premises of a dealer of nursery stock.

Category C includes weeds that are generally established and generally widespread in many counties of the State subject to active eradication from the premises of a dealer of nursery stock.

Effects of the No Action Alternative

Current conditions of fine fuel accumulation attributed to cheatgrass are expected to remain. Noxious weed and invasive plant management would continue using existing integrated pest management techniques.

Effects of the Proposed Action

Livestock management flexibility (intensity, timing, and duration) for fine fuel reduction, in combination with compatible IPM techniques to control broadleaf weed pressure, will reduce weed densities and increase the likelihood of creating successful fuel breaks. Additionally, maintaining desirable plant species vigor and minimizing the creation of bare ground through proper grazing will allow for vegetative communities to be better able to withstand future weed invasion.

Ground disturbing activities associated with fence construction, vehicular traffic, and mowing may serve as potential vectors for the introduction and/or spread of invasive species. Following standard operating procedures (SOPs) such as washing equipment (including vehicles and transport trailers) prior to on-site arrival, using certified weed free seed in restoration, avoiding travel and staging in known weed infestations, and avoiding excessive ground disturbance and/or overgrazing that reduces desirable plant vigor will minimize adverse impacts.

Cumulative Effects of the Alternatives

The Cumulative Effects Study Area (CESA) for noxious weed and non-native invasive plants is the T Lazy S, Blue Basin, Hadley, and Carlin Field allotments. This CESA was selected because it has the same context for direct and indirect impacts. The following past, present, and reasonable foreseeable actions (PPRFA) that effect weeds in the CESA include grazing, road maintenance/construction, minerals and realty projects, wildland fires, and recreation.

All PPRFAs listed immediately above have the potential for ground disturbance and subsequently provide an opportunity for annual grass and broadleaf weed introduction and spread. Targeted grazing and existing IPM techniques aimed at controlling noxious weeds and non-native invasive plants, in conjunction with following SOPs, monitoring, and adaptive management will lessen these adverse impacts.

3.2.12. Wetlands and Riparian Zones

3.2.12.1. Affected Environment

The affected environment for wetlands and riparian zones consists of the proposed treatment areas and a 4-mile buffer surrounding each area (project areas). As stated in Section 3.2.6 (Vegetation), the affected environment has been converted from the desired vegetation communities to annual grass dominated vegetation communities.

The project areas contain mostly marginal stream systems (i.e., ephemeral type streams, intermittent type streams) and lack any springs or wetlands. Intermittent streams have flowing water only during the wet season (spring snow melt) and are normally dry during hot summer months. The project areas also have numerous ephemeral streams which flow briefly during and for a short time after periods of rainfall within the immediate vicinity. They are typically shallow with a small amount of scour, are normally dry for most of the year, lack green riparian vegetation/zones, and are mostly covered with upland plants (i.e., sagebrush, perennial grasses). These ephemeral and intermittent stream systems do not support wetland or riparian zones and the Proposed Action treatment areas will not impact them; therefore, they will not be discussed further in this document.

The project areas contain five perennial stream systems; however, none of the treatment areas cross over or into their riparian vegetation/zones and will not impact these streams. Therefore, they will not be discussed further in this document.

3.2.13. Wildlife and Fisheries

3.2.13.1. Affected Environment

The affected environment for wildlife and fisheries consists of the proposed treatment areas and a 4-mile buffer surrounding each area (project areas). As stated in Section 3.2.6 (Vegetation), the affected environment has been converted from the desired vegetation communities to annual grass dominated vegetation communities (See Figure 4). The species discussed below are those expected to occur in association with the desired vegetation communities. Some of these species may not be currently utilizing the project areas due to the annual grass conversion.

Figure 4. Proposed Action Site Visit Pictures



Big Game

Big game species, such as pronghorn (*Antilocapra americana*), elk (*Cervus canadensis*), and mule deer (*Odocoileus hemionus*), occur throughout Elko County and the project areas. These species use the project areas during migration periods and for summer and crucial winter range. Pronghorn are common in open, expansive terrain with gentle rolling to flat topography and eat grasses, forbs, shrubs, and occasionally cacti. In Nevada, low sagebrush and northern desert shrubs are their preferred vegetation types. Elk inhabit mostly high elevation terrain, migrating to lower elevations where forage is more readily available during the winter months. Elk are more grazers and their diets are comprised mostly of grasses and forbs during the summer months, but shift to dried grasses, shrubs, and tree bark during the winter months. Mule deer also occur in high elevations during the summer and move to lower elevations for the winter. In Nevada, mule deer prefer arid, open areas and rocky hillsides with common habitat containing bitterbrush and sagebrush. Mule deer mostly eat forbs and shrubs.

Mountain lions (*Felis concolor*) occur throughout Elko County and are generally found in dense cover or rocky, rugged terrain and where deer are plentiful. In Nevada, habitat is commonly associated with pinyon pine, juniper, and mountain mahogany. Mountain lions may occur within the project areas in association with the mule deer herd.

Upland Game and Furbearers

Furbearer species which may occur in the project areas include desert cottontail (Sylvilagus audubonii), black-tailed jackrabbit (Lepus californicus), red fox (Vulpes vulpes), and coyote (Canis latrans). Desert cottontails occur in a wide variety of habitats across Nevada: open upland habitat, sagebrush, and other desert-like grasslands and shrublands, riparian areas, and pinyon-juniper forests. Their diets consist mainly of grasses and forbs. Black-tailed jackrabbits are common in Nevada's desert and foothill landscapes. Jackrabbits live in the extreme environments of the desert and chaparral, where temperatures are hot during the day and cold at night, with low annual precipitation. They are common in brushlands, prairies, pasturelands, and meadows throughout much of the western United States. Their diets consist of grasses, forbs, and shrubs. The red fox is a highly adaptable species found in many habitats, including agricultural and shrub dominant vegetation typical of the project areas. They have a highly varied diet and will feed on small rodents (i.e., voles, mice), small birds and waterfowl, rabbits and hares, reptiles, insects, and some vegetation (i.e., grasses, tubers, berries). Coyotes are found in any type of habitat where they can find food and a place to hide. In Nevada, their diet consists mostly of rabbits and hares, rodents, carrion, and occasionally mule deer and pronghorn. However, coyotes are known to be opportunistic feeders and may also eat insects, forbs, grasses, fruits, and seeds.

Game bird species include partridge, quail, grouse, and doves, all of which are common in the sagebrush dominant vegetation type found in and near the project areas. Their diets consist of insects, forbs, grasses, and some shrubs.

Other Species

Rodent species, such as the Ord's kangaroo rat (*Dipodomys ordii*) and Townsend's ground squirrel (*Urocitellus townsendii*), are common to arid sagebrush and saltbush-greasewood communities. Reptile species likely to occur include the common sagebrush lizard (*Sceloporus graciosus*), Great Basin collared lizard (*Crotaphytus bicinctores*), Great Basin whiptail (*Cnemidophorus tigris*), western fence lizard (*Sceloporus occidentalis*), western rattlesnake (*Crotalus oreganus*), horned lizard (*Phrynosoma*), bullsnake (*Pituophis catenifer sayi*), Pacific gopher snake (*Pituophis catenifer catenifer*), and western terrestrial garter snake (*Thamnophis elegans*).

Fisheries

The project areas contain mainly ephemeral (flows briefly during and for a short time after periods of rainfall within the immediate locality) or intermittent (normally flows during the wet seasons but are dry during the summer months) streams. The project areas also contain five perennial streams; however, they would not be impacted by the proposed treatment areas. These streams do not sustain fish populations or wouldn't be impacted by the Proposed Action; therefore, fisheries will not be discussed further in this document.

3.2.13.2. Environmental Effects

Effects of the No Action Alternative

Under the No Action Alternative, some wildlife species (i.e., furbearer species) would stay and continue to use or inhabit portions of the project areas that are still suitable for use. These portions would be under increased pressure to sustain wildlife species populations and their needs, and would continue to be threatened by the potential for large wildland fire development. Other wildlife species (i.e., big game) would move to more favorable habitat in order to survive. However, this would cause an increased strain on the more favorable habitat, population declines through lack of highly nutritional food or decreased breeding success, and it would still have an increased risk of being removed due to large wildfires burning through the converted annual grass habitat. Over time, as the area remains in a converted state or favorable habitat is converted to annual grasses, wildlife species would no longer use the project areas for important life-stages (i.e., winter habitat) and would move even further away towards more favorable habitat. However, the strain on the next more favorable habitat would increase the risk of higher mortality rates by limited breeding success or starvation, decreasing the population numbers further.

Effects of the Proposed Action

Under the Proposed Action, noise and human activity would increase during fence construction and/or removal at the end of the life of the project, grazing activities (i.e., moving cattle, water tanks, and supplements), and mowing. However, these activities would be of short duration (i.e., occur only in year one, less than a month) during spring and/or fall depending on the activity. Fence construction/removal would only occur in year one/final year of implementation of the Proposed Action, and seeding and mowing activities would occur intermittently as necessary for the life of the Proposed Action.

Big game, upland game, and furbearer species would avoid the project areas until activities are completed daily and seasonally. However, this would place increased short-term stress on other portions of their habitat until all activities cease and they can move into the areas again. Other wildlife species might avoid the project areas as well; however, these species are not as mobile and would have a higher probability of mortality from fence construction, seeding, and mowing activities due to shelter collapses from equipment or posts being driven into the ground. As grazing activities and mowing continue over time, all wildlife species would adapt to the activities and continue to avoid the areas until activities cease each year/season.

Under the Proposed Action, approximately 40 miles of new fence would be constructed to contain cattle during the targeted grazing time periods. The project areas currently have fences that big game species already navigate, but they would have to adapt to the increased fence lines and new locations. Upland game bird species have a higher risk of strikes with the increased amount of new fences. The new miles of fences would have little impact on the predator furbearer species (i.e., red fox, coyote) because they can crawl/move under the bottom wire effortlessly. Prey furbearer and other wildlife species would be more susceptible to predation by raptor and other carnivorous bird species (i.e., loggerhead shrike [*Lanius ludovicianus*]), which would use the increased perching opportunities presented by the fence posts and wires.

Under the Proposed Action, cattle would be dispersed within the project areas using portable water troughs and supplements (i.e., mineral blocks, salt blocks, etc.); however, these items will be removed once the stubble height requirement has been met. The portable water troughs will increase the amount of water available in the project areas for wildlife use. Upland game birds have an increased risk of mortality when using water troughs due to the inability to exit the tank if they fall in. The supplements provided to help disperse cattle increase the mineral/salt/protein intake of wildlife species, as they will take advantage of the supplements provided once they are discovered. All of the above impacts from the portable troughs and supplements will occur over a very short time period.

Cumulative Effects of the Alternatives

The cumulative effects study area (CESA) for migratory bird species consists of the proposed treatment areas and a 4-mile buffer surrounding each area (project areas). As stated in Section

3.2.6 (Vegetation), the majority of the CESA has been converted from the desired vegetation community of shrub/perennial grass to an annual grass dominated vegetation community (see Figure 4).

Past actions within the CESA include livestock grazing management, mining exploration and development, rights-of-ways, recreational use, and wildfires. Each of these actions has contributed to the conversion of the original shrub/perennial grass-dominated habitat into annual grassland overrun by invasive species such as cheatgrass. Each of the actions above are modes of transportation for cheatgrass and other invasive weed seeds to be spread. Livestock moving across the landscape pick up seeds in their fur and carry them long distances into the middle of uninvaded habitat. Mining exploration and development surface disturbing activities and surface disturbance associated with building rights-of-ways (i.e., powerlines, pipelines, roads) created bare ground available for cheatgrass/invasive species establishment prior to reclamation activities. Mining equipment, recreational vehicles (i.e., 4x4 trucks, off-road vehicles), and rights-of-way construction equipment driven through patches of cheatgrass/invasive species in one area transported those seeds to another, uninvaded area. As seeds were dispersed throughout the shrub/perennial grass-dominated habitat, they established in bare ground areas or prior to native vegetation green-up. Wildfires became more prominent with the increase in dry cheatgrass/invasive species and wiped out the contiguous shrub/perennial grass-dominated habitat; thus furthering the bare ground/cheatgrass/invasive species establishment cycle and decreasing the fire return interval (time between fires in a defined area; i.e., from a 50 year return interval to 5-10 year return interval).

Present actions within the CESA include livestock grazing management, mining exploration and development, rights-of-ways, recreational use, vegetation treatments (i.e., reclamation, emergency stabilization, spraying weeds), and wildfires. Mitigation measures and stipulations have been established in order to control the spread of cheatgrass/invasive species during present actions. Mining, rights-of-ways, and commercial recreational use requires vehicles be washed off before entering a new area in order to avoid spreading more cheatgrass/invasive species seeds. Reclamation activities include cheatgrass/invasive species management actions (i.e., spraying herbicides, required management plans) and seeding protocols for all surface disturbing activities (i.e., mining, powerline construction, etc.). Wildfires are reclaimed similarly to these surface disturbing activities. However, other vectors for invasive species spread are still active in the form of public recreational vehicles, livestock grazing, and wildfires. The fire return interval continues to decrease as more and more shrub/perennial grass-dominated habitat is converted to cheatgrass/invasive species habitat/monocultures.

Reasonably foreseeable future actions include livestock grazing management, mining exploration and development, rights-of-ways, recreational use, vegetation treatments, and wildfires. Noxious and invasive weed treatment protocols, seeding protocols, reclamation requirements, and vegetation treatments will continue to decrease the spread of cheatgrass/invasive species. However, surface disturbing activities will continue to open up previously disturbed and undisturbed areas for development and, consequently, cheatgrass/invasive species' opportunities for establishment. Although requirements for cheatgrass/invasive species treatments would continue to be required, it doesn't decrease the already established populations within the CESA and surrounding area.

Under the No Action Alternative, the cumulative impacts would be increased. An increased risk of large wildfires threatening or removing shrub/perennial grass-dominated habitat outside of the CESA would continue to be a concern. It is expected that the removal of this habitat would expand the cheatgrass/invasive species populations, continuing the cycle of vegetation community conversion and decreased fire return intervals. Loss of shrub/perennial grassdominated habitat will decrease wildlife populations by removing important life-cycle habitat for their survival (i.e., crucial winter range). Wildlife species would eventually be removed entirely from the CESA as they move to other areas to survive. However, the new habitat areas can only support a certain population number before they begin to degrade. Increased wildlife species mortality due to starvation, dehydration, malnutrition and decreased breeding success would decrease the population quickly. Livestock grazing management would continue as it is now or change during a permit renewal; however, this would not slow the destruction of habitat by wildfires or decrease the population of cheatgrass. Mining, recreational use, and rights-of-way construction would continue to increase the opportunities for new or more cheatgrass/invasive species establishment. Vegetation treatments would continue to be conducted in response to wildfire or completed on small acreages for projects. Wildlife species and livestock are drawn to these seeded areas for the higher nutritional vegetation, suppressing the establishment of native and/or seeded species. Vegetation treatments for wildfires are closed to livestock grazing, but would still be grazed by wildlife species. It is expected that vegetation treatments would not increase native vegetation establishment or decrease cheatgrass/invasive species establishment, but would be invaded due to the grazing pressure from wildlife and livestock. It is expected that vegetation treatments would not increase native vegetation establishment or decrease cheatgrass/invasive species establishment, but would be invaded due to lack of establishment of seeded/native species. Wildlife species dependent upon prey for food would continue to hunt in the CESA, as the prey base is more adaptable to the cheatgrass/invasive species habitat. However, if these species can no longer support themselves, they would move to more appropriate habitat. The No Action Alternative would increase cumulative impacts within the CESA and in the surrounding contiguous shrub/perennial grass-dominated habitat.

Under the Proposed Action, the cumulative impacts are decreased by providing fuel breaks which allow fire suppression personnel and equipment a greater opportunity to contain wildfires at a smaller size and keep them in the cheatgrass/invasive species vegetation community. The risk of large wildfires consuming shrub/perennial grass-dominated habitat outside of the CESA would be decreased. Mowing the small shrub portion of the project areas and using livestock to graze the cheatgrass to a short stubble height provides an area where fire spread slows down and fire suppression crews can anchor to safely conduct fire suppression activities. Seeding the proposed grazing areas with fire-resistant and native vegetation would enhance these effects. Wildlife species (and livestock) would graze, use the portable water troughs/supplements when they are available, and would continue to use the CESA for life-cycle requirements. However, the project areas would be closed to livestock grazing once the stubble height is achieved, which would decrease the amount of grazing pressure on these areas. Conserving the shrub/perennial grass-dominated habitat outside of the CESA provides contingent habitat for wildlife species to utilize during important life-cycles, which would still strain the habitat, but would decrease the rate of mortality/population decreases. However, the vegetation treatments completed in response to the smaller fires would also provide suitable feed for wildlife species when necessary and rest the shrub/perennial grass-dominated habitat from use. All other actions within the CESA would have the same cumulative impacts as the No Action Alternative.

Mitigation

Under the Proposed Action, the increased amount of fences would negatively impact wildlife, especially ungulate big game species during migration and upland game bird species. The fences would be a 3-strand wire fence built to wildlife-friendly standards according to the BLM H-1741-1 Fencing Manual for mule deer, elk, and pronghorn species. These standards allow for these big game species to better navigate the new fences by clearing the top wires when jumping over or easily clearing the bottom smooth wire when crawling under and avoid getting trapped inside the project areas or tangled in the wires. In order to avoid upland game bird species striking the new fences/wires, the strands would be marked for higher visibility. This would also benefit big game species by increasing the visibility of where the new fences are located in order for them to more accurately navigate through or around them.

The portable water troughs pose a negative impact to upland game bird species if they fall/crash into the troughs. Therefore, the portable troughs would be fitted with wildlife escape ramps in order to decrease the risk of drowning these species (Taylor and Tuttle 2007). Also water troughs will be removed from the grazed areas within 48 hours following livestock removal.

3.2.14. Migratory Birds

3.2.14.1. Affected Environment

The affected environment for migratory birds consists of the proposed treatment areas and a 4mile buffer surrounding each area (project areas). As stated in Section 3.2.6 (Vegetation), the affected environment has been converted from the desired vegetation communities to annual grass dominated vegetation communities (see Figure 4). The species discussed below are those expected to occur in association with the desired vegetation communities. Some of these species may not be currently utilizing the project areas due to the annual grass conversion.

The Migratory Bird Treaty Act (MBTA) of 1918, as amended, implements treaties for the protection of migratory birds (see list at 50 CFR 10.13). Executive Order (EO) 13186, issued in

2001, directed actions that would further implement the MBTA. As required by MBTA and EO 13186, BLM signed a Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service (USFWS) in April 2010, which is intended to strengthen migratory bird conservation efforts by identifying and implementing strategies to promote conservation and reduce or eliminate adverse effects to migratory birds.

Per the MOU with USFWS, BLM should:

- Evaluate the effects of their actions on migratory birds and identify where take reasonably attributable to those actions may have a measureable negative effect on migratory bird populations;
- Develop conservation measures and ensure monitoring or the effectiveness of the measures to minimize, reduce or avoid unintentional take; and,
- Consider approaches to the extent practicable for identifying and minimizing take that is incidental to otherwise lawful activities including:
 - Altering the season of activities to minimize disturbances during the breeding season;
 - Retaining the integrity of breeding sites, especially those with long histories of use; and,
 - Coordinating with the USFWS when planning projects that are likely to have a negative effect on migratory bird populations and cooperating in developing approaches that minimize negative impacts and maximize benefits to migratory birds.

The BLM's conservation efforts focus on migratory bird species and some non-migratory bird species that are listed as Birds of Conservation Concern (BCC). BCC have been identified by the USFWS (2008) for different Bird Conservation Regions (BCR) in the United States. The project areas are entirely located in BCR 9 of the Great Basin region. Table 12 lists those species that may utilize the project areas during the year. For the purpose of this document, the term "migratory bird species" will include species listed under the MBTA (including raptor species) and the BCC species listed below.

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Common Name	Scientific Name
Bald eagle*	Haliaeetus leucocephalus
Ferruginous hawk*	Buteo regalis
Golden eagle*	Aquila chrysaetos
Calliope hummingbird	Stellula calliope
Lewis' woodpecker*	Melanerpes lewis
Willow flycatcher	Empidonax trailli

Common Name	Scientific Name
Loggerhead shrike*	Lanius ludovicianus
Pinyon jay*	Gymnorhinus cyanocephalus
Sage thrasher*	Oreoscoptes montanus
Green-tailed towhee	Pipilo chlorurus
Brewer's sparrow*	Spizella breweri
Sage sparrow	Amphispiza belli
Greater sage-grouse*	Centrocercus urophasianus
Black rosy-finch*	Leucosticte atrata
Williamson's sapsucker	Sphyrapicus thyroideus

* Species listed on the BLM Special Status Species List for the Elko District. These will be discussed in the Special Status Species section below.

3.2.14.2. Environmental Effects

Effects of the No Action Alternative

Under the No Action Alternative, some migratory bird species (i.e., raptors) would stay and continue to use or inhabit portions of the project areas that are still suitable for use. These portions would be under increased pressure to sustain migratory bird species populations and their needs, and would continue to be threatened by the potential for large wildland fire development. Other migratory bird species (i.e., sagebrush obligates) would move to more favorable habitat in order to survive. However, this would cause an increased strain on the more favorable habitat, local population numbers would decline through nesting/breeding failures, and it would still have an increased risk of being removed due to large wildfires burning through the converted annual grass habitat. Over time, as the area remains in a converted state or favorable habitat is converted to annual grasses, migratory bird species would no longer use the project areas for important life-stages (i.e., breeding) and would move further away towards more favorable habitat. However, the strain on the more favorable habitat would increase the risk of higher mortality rates by limited food sources, limited nest success, and decreased hatchlings, decreasing the population numbers further.

Effects of the Proposed Action

Under the Proposed Action, noise and human activity would increase during fence construction and/or removal at the end of the life of the project, grazing activities (i.e., moving cattle, water tanks, and supplements), and mowing. However, these activities would be of short duration (i.e., occur only in year one, less than a month) during spring and/or fall depending on the activity. Fence construction/removal would only occur in year one/final year of implementation of the Proposed Action, and mowing activities would occur intermittently as necessary for the life of the Proposed Action.

Similar to wildlife species, migratory bird species would also avoid the project areas until activities are completed daily and seasonally. Migratory bird species would choose nest sites away from the project areas if activities occur before they select nest sites during the migratory bird breeding season (April 1 to July 31). However, this would place added stress on other portions of their habitat until all activities cease or the next breeding season. There would be a higher probability of mortality from activities if they occur after migratory bird species have chosen nest sites due to equipment, people, or cattle crushing nests with eggs or abandonment of nests due to disruption. As grazing activities continue over time, migratory bird species would adapt and continue to avoid the project areas during foraging until activities cease and during nest site selection for the life of the Proposed Action.

Under the Proposed Action, approximately 40 miles of new fence would be constructed to contain cattle during the targeted grazing time periods. Migratory bird species have a higher risk of strikes with the increased amount of new fences. However, the increased perching opportunities presented by the fence posts and wires would provide a benefit during foraging, mating, and territory protection.

Under the Proposed Action, cattle would be dispersed within the project areas using portable water troughs; however, the troughs would be removed once the stubble height requirement has been met. The portable water troughs would attract insect species and be a source of more water. Migratory bird species have an increased risk of mortality when using water troughs due to the inability to exit the trough if they fall in and striking fence wires while foraging on the wing for insects.

Cumulative Effects of the Alternatives

The CESA for migratory bird species consists of the proposed treatment areas and a 4-mile buffer surrounding each area (project areas). As stated in Section 3.2.6 (Vegetation), the majority of the CESA has been converted from the desired vegetation community of shrub/perennial grass to an annual grass dominated vegetation community (see Figure 4).

Past actions within the CESA include livestock grazing management, mining exploration and development, rights-of-ways, recreational use, and wildfires. Each of these actions has contributed to the conversion of the original shrub/perennial grass-dominated habitat into annual grassland overrun by invasive species such as cheatgrass. Each of the actions above are modes of transportation for cheatgrass and other invasive weed seeds to be spread. Livestock moving across the landscape pick up seeds in their fur and carry them long distances into the middle of uninvaded habitat. Mining exploration and development surface disturbing activities and surface disturbance associated with building rights-of-ways (i.e., powerlines, pipelines, roads) created

bare ground available for cheatgrass/invasive species establishment prior to reclamation activities. Mining equipment, recreational vehicles (i.e., 4x4 trucks, off-road vehicles), and rights-of-way construction equipment driven through patches of cheatgrass/invasive species in one area transported those seeds to another, uninvaded area. As seeds were dispersed throughout the shrub/perennial grass-dominated habitat, they established in bare ground areas or prior to native vegetation green-up. Wildfires became more prominent with the increase in dry cheatgrass/invasive species and wiped out the contiguous shrub/perennial grass-dominated habitat; thus furthering the bare ground/cheatgrass/invasive species establishment cycle and decreasing the fire return interval (time between fires in a defined area; i.e., from a 50 year return interval to 5-10 year return interval).

Present actions within the CESA include livestock grazing management, mining exploration and development, rights-of-ways, recreational use, vegetation treatments (i.e., reclamation, emergency stabilization, spraying weeds), and wildfires. Mitigation measures and stipulations have been established in order to control the spread of cheatgrass/invasive species during present actions. Mining, rights-of-ways, and commercial recreational use requires vehicles be washed off before entering a new area in order to avoid spreading more cheatgrass/invasive species seeds. Reclamation activities include cheatgrass/invasive species management actions (i.e., spraying herbicides, required management plans) and seeding protocols for all surface disturbing activities (i.e., mining, powerline construction, etc.). Wildfires are reclaimed similarly to these surface disturbing activities. However, other vectors for invasive species spread are still active in the form of public recreational vehicles, livestock grazing, and wildfires. The fire return interval continues to decrease as more and more shrub/perennial grass-dominated habitat is converted to cheatgrass/invasive species habitat/monocultures.

Reasonably foreseeable future actions include livestock grazing management, mining exploration and development, rights-of-ways, recreational use, vegetation treatments, and wildfires. Noxious and invasive weed treatment protocols, seeding protocols, reclamation requirements, and vegetation treatments will continue to decrease the spread of cheatgrass/invasive species. However, surface disturbing activities would continue to open up previously disturbed and undisturbed areas for development and, consequently, cheatgrass/invasive species' opportunities for establishment. Although requirements for cheatgrass/invasive species treatments would continue to be required, it doesn't decrease the already established populations within the CESA and surrounding area.

Under the No Action Alternative, the cumulative impacts would be increased. An increased risk of large wildfires threatening or removing shrub/perennial grass-dominated habitat outside of the CESA would continue to be a concern. It is expected that the removal of this habitat would expand the cheatgrass/invasive species populations, continuing the cycle of vegetation community conversion and decreased fire return intervals. Loss of shrub/perennial grass-dominated habitat would decrease some migratory bird populations (i.e., songbirds, passerines) by removing important life-cycle habitat for their survival (i.e., nesting and breeding habitats).

For other migratory bird species (i.e. raptors, predators) it would decrease their populations by decreasing habitat for their prey species. Migratory bird species would eventually move to other areas to nest, breed, and hunt. However, the new habitat areas can only support a certain population number of breeding pairs and predators. Increased migratory bird species mortality due to decreased breeding success and lack of prey would decrease the population or force the species to leave in search of more prey. Livestock grazing management would continue as it is now or change during a permit renewal; however, this would not slow the destruction of habitat by wildfires or decrease the population of cheatgrass. Mining, recreational use, and rights-ofway construction would continue to increase the opportunities for new or more cheatgrass/invasive species establishment. Vegetation treatments would continue to be conducted in response to wildfire or completed on small acreages for projects. However, required nesting and breeding habitat (i.e., tall shrubs) for migratory bird species would not reestablish for approximately 20-30 years. With the decreased fire return interval, nesting and breeding habitat may never reestablish within the CESA. Vegetation treatments that include seeding native grass and forb species would provide an increase in food supplies in the short term for migratory bird species and their prey. However, it is expected that vegetation treatments would not increase native vegetation establishment or decrease cheatgrass/invasive species establishment. It is expected that vegetation treatments would not increase native vegetation establishment or decrease cheatgrass/invasive species establishment, but would be invaded due to lack of establishment of seeded/native species. Migratory bird species dependent upon prey for food would continue to hunt in the CESA, as the prey base is more adaptable to the cheatgrass/invasive species habitat. However, if these species can no longer support themselves, they would move to more appropriate habitat and so would the predator migratory bird species. The No Action Alternative would increase cumulative impacts within the CESA and in the surrounding contiguous shrub/perennial grass-dominated habitat for migratory bird species.

Under the Proposed Action, the cumulative impacts are decreased by providing fuel breaks which allow fire suppression personnel and equipment a greater opportunity to contain wildfires at a smaller size and keep them in the cheatgrass/invasive species vegetation community. The risk of large wildfires consuming shrub/perennial grass-dominated habitat outside of the CESA would be decreased. Mowing the small shrub portion of the project areas and using livestock to graze the cheatgrass to a short stubble height provides an area where fire spread slows down and fire suppression crews can anchor to safely conduct fire suppression activities. However, this would remove nesting and breeding habitat still present. Migratory bird species would forage in the areas during migration and hunt prey species present, use the portable water troughs/supplements when they are available, use the fence posts and wires for perches for hunting/foraging, and would continue to use the CESA for those life-cycle requirements still present. Conserving the shrub/perennial grass-dominated habitat outside of the CESA continues to provide nesting, breeding, and prey species habitat for migratory bird species; however, this may continue to strain that habitat's resources, but would decrease the rate of mortality/population decreases. All other actions within the CESA would have the same cumulative impacts as the No Action Alternative.

Mitigation

Under the Proposed Action, the increased amount of fences could negatively impact migratory bird species. In order to avoid wire strikes, the new fences/wires would be marked for higher visibility and portable water troughs would be placed away from fence lines (See Proposed Action Section.).

The portable water tanks could also have a negative impact to migratory bird species if they fall into the troughs. Therefore, the portable troughs would be fitted with wildlife escape ramps in order to decrease the risk of drowning these species (Taylor and Tuttle 2007). Also water troughs would be removed from the grazed areas within 48 hours following the removal of livestock.

Special Status Species

3.2.14.3. Affected Environment

The affected environment for special status species consists of the proposed treatment areas and a 4-mile buffer surrounding each area (project areas). As stated in Section 3.2.6 (Vegetation), the affected environment has been converted from the desired vegetation communities to annual grass dominated vegetation communities (see Figure 4). The species discussed below are those expected to occur in association with the desired vegetation communities. Some of these species may not be currently utilizing the project areas due to the annual grass conversion.

Endangered Species Act Listed Species

The US Fish and Wildlife Service (USFWS) identified five species listed as threatened or endangered under the Endangered Species Act (ESA) as occurring within Elko County, Nevada (2016). They include the Independence Valley speckled dace (*Rhinichthys oscululus lethoporus*), Clover Valley speckled dace (*Rhinichthys oscululus oligoporus*), bull trout (*Salvelinus confluentus*) in the Jarbidge River Distinct Population Segment (DPS), Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*), and yellow-billed cuckoo (*Coccyzus americanus*) western United States DPS.

Yellow-billed cuckoos are considered a riparian obligate species and are usually found in large tracts of cottonwood/willow habitats with dense sub-canopies, but may also be found in urban areas with tall trees (USFWS 2014). The presence of yellow-billed cuckoo in Elko County has been predicted (NNHP 2016), but not in the Upper Humboldt Watershed (NatureServe 2016).

The project areas contain only ephemeral (flows briefly during and for a short time after periods of rainfall within the immediate locality) or intermittent (normally flows during the wet seasons

but are dry during the summer months) streams. These streams do not sustain fish populations; therefore, the Independence Valley speckled dace, Clover Valley speckled dace, Lahontan cutthroat trout, and Jarbidge River DPS bull trout do not occur in the project areas and will not be discussed further. These same streams do not contain cottonwood/willow habitats (i.e., riparian vegetation/zones); therefore, suitable habitat for the yellow-billed cuckoo is not present in or adjacent to the project areas and will not be discussed further.

Other Special Status Species

The list of BLM-Sensitive Species for Nevada is updated every 5 years and was last updated in 2011. Species are listed as sensitive within individual BLM district offices and for the entire state. The Elko District sensitive species list is shown below in Table 2. For the purpose of this document, special status species discussions will not include sensitive species dependent on perennial water bodies, such as amphibians, fish, and mollusks.

Common Name	Scientific Name
Amphibians	
Northern leopard frog	Rana pipiens
Columbia spotted frog (including Toiyabe spotted frog subpopulation)	Rana luteiventris
Birds	
Northern goshawk	Accipiter gentilis
Golden eagle	Aquila chrysaetos
Western burrowing owl	Athene cunicularia hypugaea
Ferruginous hawk	Buteo regalis
Swainson's hawk	Buteo swainsoni
Greater sage-grouse	Centrocercus urophasianus
Western snowy plover	Charadrius alexandrinus nivosus
Peregrine falcon	Falco peregrinus
Pinyon jay	Gymnorhinus cyanocephalus
Bald eagle	Haliaeetus leucocephalus
Loggerhead shrike	Lanius ludovicianus
Black rosy-finch	Leucosticte atrata
Lewis' woodpecker	Melanerpes lewis
Sage thrasher	Oreoscoptes montanus
Brewer's sparrow	Spizella breweri
Fish	
Independence Valley tui chub	Gila bicolor isolata
Newark Valley tui chub	Gila bicolor newarkensis
Northern leatherside chub	Lepidomeda copei

Table 2. BLM Elko District Sensitive Species List

Common Name	Scientific Name
Lahontan cutthroat trout	Oncorhynchus clarki henshawi
Inland Columbia Basin redband trout	Oncorhynchus mykiss gairdneri
Relict dace	Relictus solitarius
Fish	
Independence Valley speckled dace	Rhinichthys osculus lethoporus
Clover Valley speckled dace	Rhinichthys osculus oligoporus
Bull trout	Salvelinus confluentus
Townsend's big-eared bat	Corynorhinus townsendii
Big brown bat	Eptesicus fuscus
Spotted bat	Euderma maculatum
Silver-haired bat	Lasionycteris noctivagans
Hoary bat	Lasiurus cinereus
California myotis	Myotis californicus
Western small-footed myotis	Myotis ciliolabrum
Long-eared myotis	Myotis evotis
Mammals	
Little brown myotis	Myotis lucifugus
Fringed myotis	Myotis thysanodes
Long-legged myotis	Myotis volans
Yuma myotis	Myotis yumanensis
Western pipistrelle	Pipistrellus hesperus
Brazilian free-tailed bat	Tadarida brasiliensis
Pallid bat	Antrozous pallidus
Pygmy rabbit	Brachylagus idahoensis
Dark kangaroo mouse	Microdipodops megacephalus
Preble's shrew	Sorex preblei
Pika	Ochotona princeps
Bighorn sheep	Ovis canadensis
Insects	
Mattoni's blue	Euphilotes pallescens mattonii
Mollusks	
California floater	Anodonta californiensis
Humboldt pyrg	Pygulopsis humboldtensis
Duckwater Warm Springs pryg	Pyrgulopsis villacampae
Vinyards pyrg	Pyrgulopsis vinyardi
Grated tryonia	Tryonia clathrata
Plants	
Meadow pussytoes	Antennaria arcuata
Goose Creek milkvetch	Astragalus anserinus
Elko rockcress	Boechera falcifructa

Common Name	Scientific Name
Barren Valley collomia	Collomia renacta
Broad fleabane	Erigeron latus
Beatley buckwheat	Eriogonum beatleyae
Plants	
Lewis buckwheat	Eriogonum lewisii
Deeth buckwheat	Eriogonum nutans var. glabratum
Grimy mousetails	Ivesia rhypara var. rhypara
Grimes vetchling	Lathyrus grimesii
Davis peppergrass	Lepidium davisii
Owyhee prickly phlox	Leptodactylon glabrum
Tiehm blazingstar	Mentzelia tiehmii
Idaho beardtongue	Penstemon idahoensis
Least phacelia	Phacelia minutissima
Cottam cinquefoil	Potentilla cottamii
Obscure buttercup	Ranunculus triternatus
Nachlinger catchfly	Silene nachlingerae

Note: Special Status Species not mentioned in the following narrative do not occur within the project areas because of lack of habitat or other important life-stage requirements.

Birds. Several special status raptor species nest and breed within the surrounding habitat of the project areas, such as the western burrowing owl and golden eagle. The greatest use of the project areas by special status raptor species is for foraging purposes. The diet for large raptors, such as the golden eagle, consists of rabbits (mostly black-tailed jackrabbits), ground squirrels, other medium-sized mammals, and carrion. The diet for other special status raptors, such as ferruginous hawks and northern goshawks, consists of rabbits, ground squirrels, birds, bats, insects, reptiles, amphibians, food they steal from other raptors, and sometimes carrion.

Other special status bird species that may occur in the project areas are the loggerhead shrike, sage thrasher, Brewer's sparrow, and black rosy-finch. Loggerhead shrikes are songbirds who inhabit open country with scattered low, exposed perches (i.e., shrubs, fence posts) and who possess raptor-like habits. Their diet consists of insects, amphibians, reptiles, small mammals, birds, and sometimes carrion. They are most famous for impaling prey on thorns or barbed wire to eat later. Loggerhead shrikes are year-round residents and may utilize the project areas for foraging. Sage thrashers are considered a "sagebrush obligate" species which prefers running secretively along the ground rather than taking flight when disturbed. They use the tallest sagebrush to conceal their nests, built on or near the ground, and mostly feed on insects, ants, grasshoppers, and ground beetles captured while running on the ground. They prefer sagebrush dominated habitats and may utilize the project areas for foraging during their migration to preferred nesting habitat. Brewer's sparrows are another "sagebrush obligate" species dependent upon the sagebrush steppe for breeding. They build their nests no less than 8 inches from the ground in tall, dense sagebrush. During the breeding season, they spend up to three-quarters of

their foraging time in shrubs, as opposed to bare ground, and glean insects such as caterpillars, leaf beetles, weevils, grasshoppers, ants, and spiders. Brewer's sparrows may utilize the project areas for foraging during their migration to preferred nesting habitat. Black rosy-finches breed and nest above treeline, but winter in open country, such as the high desert, sagebrush steppe. They eat seeds and insects that they pick up during ground foraging. Black rosy-finches may utilize the project areas for foraging during their winter stays.

Greater Sage-Grouse

After a 12-month review, USFWS (2010) found that listing the greater sage-grouse (sage-grouse) as threatened or endangered under the ESA throughout its range was warranted but precluded by higher priority listing actions. Consistent with the *National Greater Sage-Grouse Conservation Measures* report (Sage-Grouse National Technical Team 2011), BLM served as the lead federal agency in preparing several Environmental Impact Statements (EISs) with associated Resource Management Plan (RMP) amendments for 11 western states to establish sage-grouse conservation measures. These documents address a range of alternatives focused on specific conservation measures across the range of the sage-grouse (BLM 2015). The *Nevada and Northeastern California Greater Sage-Grouse Approved RMP Amendment* (SGPA) was approved in September, 2015, and encompasses the project areas. In October, 2015, the USFWS (2015) found that listing the sage-grouse was not warranted due to the updated regulatory mechanisms within the RMP Amendments approved for the 11 western states. The sage-grouse was removed from the candidate species list, but is still considered a BLM Sensitive Species.

The decision area within the SGPA is classified into Habitat Management Areas, defined as follows (BLM 2015):

- Priority Habitat Management Areas (PHMAs) BLM-administered lands identified as having the highest value to maintaining sustainable sage-grouse populations. Areas of PHMA largely coincide with areas identified as priority areas for conservation in the USFWS's Conservation Objectives Team (COT) report. These areas include breeding, late brood-rearing and winter concentration areas and migration or connectivity corridors.
 - Sagebrush Focal Areas (SFAs) A subset of PHMA, SFAs were derived from sagegrouse stronghold areas described by the USFWS in a memorandum to the BLM titled *Greater Sage-Grouse: Additional Recommendations to Refine Land Use Allocations in Highly Important Landscapes* (USFWS 2014 as cited in BLM 2015). The memorandum and associated maps provided by the USFWS identify areas that represent recognized strongholds for sage-grouse that have been noted and referenced as having the highest densities and other criteria important for the persistence of the species.
- General Habitat Management Areas (GHMAs) BLM-administered lands where some special management will apply to sustain sage-grouse populations; these are areas of occupied seasonal or year-round habitat outside of PHMA.

• Other Habitat Management Areas (OHMAs) — BLM-administered lands identified as unmapped habitat in the Draft Land Use Plan Amendment (LUPA)/EIS that are within the planning area and contain seasonal or connectivity habitat areas. With the generation of updated modeling data (*Spatially Explicit Modeling of Greater Sage-Grouse Habitat in Nevada and Northeastern California*; Coates et al. 2014 as cited in BLM 2015) the areas containing characteristics of unmapped habitat were identified and are now referred to as OHMAs.

Elko County contains 995,800 acres of PHMA (including SFA); 995,800 acres of GHMA; and 1,000,600 acres of OHMA on BLM-administered lands (BLM 2015). The Proposed Action treatment areas would occur entirely within GHMA and/or OHMA according to the map in the SGPA (BLM 2015, pg. 1-3) and the most recent mapping effort completed by Coates et al (2016). See Figures 5 and 6 below for the difference in the two mapping types. Impact analysis will remain the same regardless of which map is used because they both show the entire treatment areas for the Proposed Action fall within GHMA and/or OHMA.

Seasonal use characteristics for the Proposed Action project areas include the following:

- Nesting habitats are occupied from April 1 through June 30 (BLM 2015).
- Early brood-rearing habitat is used by female sage-grouse with chicks for up to three weeks following hatching. Early brood-rearing habitat descriptions can be found in Connelly et al., 2004, the Sage-Grouse National Technical Team Report (NTT, Sage-grouse National Technical Team 2011), and the SGPA (BLM 2015). Early brood-rearing habitat is used from May 15 through June 15 (BLM 2015).
- Definition and use of late brood-rearing habitat is dependent on many factors including precipitation during spring and early summer and availability of forbs throughout the summer. Late brood-rearing habitats are generally used from June 15 through September 15 (BLM 2015).
- Use of winter habitats depends on winter severity, but winter habitats are generally occupied from November 1 through February 28 (BLM 2015).

The NTT recommends a 4-mile protective buffer for sage-grouse and the SGPA requires a 4-mile buffer for Disturbance Cap Calculations (BLM 2015). However, there are no occupied or pending sage-grouse leks located within four miles of the project areas and the Proposed Action doesn't have any classified anthropogenic disturbance proposed (see Appendix E, BLM 2015).

In accordance with the SGPA, more specific habitat delineations within the project areas were modeled (see Figure 7): nesting, upland brood-rearing and wintering habitats (Coates et al. 2016). Upland brood-rearing habitats coincide with early and late brood-rearing habitats within the SGPA (BLM 2015). However, the project areas have been converted to annual grasslands,

overrun by cheatgrass, with very small islands of sagebrush or widespread individual plants (see Figure 4) and do not meet the criteria for each of the habitat delineations above.

Declines in sage-grouse populations in the Great Basin region have been greatly influenced by habitat loss caused by wildfire and invasive weeds (Connelly et al. 2004; USFWS 2013). Cheatgrass is an invasive annual grass that has led to increased wildfire frequency and subsequent loss of the sagebrush communities important to sage-grouse (Connelly et al. 2004, USFWS 2013). Fire frequency is increased with cheatgrass invasion as the establishment of cheatgrass causes substantial competition for resources used by native shrub steppe species (Connelly et al. 2004, USFWS 2013). The likelihood of future fires can lead to the loss of perennial grasses and shrubs that are needed for multiple life stages for sage-grouse (Crawford et al., 2004). Additionally, corvids (i.e. crows, ravens) are effective nest predators of sage-grouse, taking eggs and possibly recently hatched chicks, and their abundance has been related to higher nest predation rates of sage-grouse (Connelly et al. 2004; Prather and Messmer 2010).

The project areas reside in the Tuscarora, Cortez, North Fork, and South Fork Population Management Units (PMUs). Six other PMUs occur in Elko County, which supports the highest density of leks in Nevada and the largest contiguous sage-grouse population in the State. Recently (between 1999 and 2015), wildfires have reduced sage-grouse habitat in Elko County. NDOW data indicates that sage-grouse populations within Elko County have been declining since 1998.

Mammals. Fifteen species of BLM sensitive bats have the potential of occurring within the project areas. They roost in anything from caves, mine shafts, loose tree bark, buildings, cracks and crevices, and rock piles. Bat species that migrate do so in the spring and fall; however, some species go into torpor or hibernation. It is expected that these bat species may occur in the project areas as a foraging or migrating visitor. The dark kangaroo mouse is found in sparsely vegetated sites, such as sagebrush, black greasewood, shadscale, horsebrush, and rabbitbrush. Their diet consists mostly of seeds and sometimes of insects. The dark kangaroo mouse may occur within the project areas. Preble's shrews are associated with arid and semiarid shrub-grass habitats such as the sagebrush-grass habitats in Nevada. Their diets consist of insects, worms, centipedes, and mollusks. Preble's shrews may occur within the project areas.

Plants. Several sensitive plant species may occur in the project areas; however, there are no known or recorded individuals or populations.







Figure 6. Mapped Habitat Management Areas According to Coates et al.





3.2.14.4. Environmental Effects

Effects of the No Action Alternative

Under the No Action Alternative, some special status species (i.e., rodents, raptors) would stay and continue to use or inhabit portions of the project areas that are still suitable for use. These portions would be under increased pressure to sustain special status species populations and their needs, and would continue to be threatened by the potential for large wildland fire development. Other special status species (i.e., sagebrush obligate birds) would move to more favorable habitat in order to survive. However, this would cause an increased strain on the more favorable habitat, local population numbers would decline through nesting/breeding failures, and it would still have an increased risk of being removed due to large wildfires burning through the converted annual grass habitat. Over time, as the area remains in a converted state or favorable habitat is converted to annual grasses, special status species would no longer use the project areas for important life-stages (i.e., breeding) and would move further away towards more favorable habitat. However, the strain on the more favorable habitat would increase the risk of higher mortality rates by limited nest success and decreased hatchlings, decreasing the population numbers.

Effects of the Proposed Action

Under the Proposed Action, noise and human activity would increase during fence construction and/or removal at the end of the life of the project, grazing activities (i.e., moving cattle, water tanks, and supplements), and mowing. However, these activities would be of short duration (i.e., occur only in year one, less than a month) during spring and/or fall depending on the activity. Fence construction/removal would only occur in year one/final year of implementation of the Proposed Action, and seeding and mowing activities would occur intermittently as necessary for the life of the Proposed Action.

Similar to wildlife and migratory bird species, special status animal species would also avoid the project areas until activities are completed daily and seasonally. Special status bird species would choose nest sites away from the project areas if activities occur before they select nest sites during their breeding season (generally April 1 to July 31 for songbirds and March 1 to August 31 for raptors). However, this would place added stress on other portions of their habitat until all activities cease or the next breeding season. There would be a higher probability of mortality from activities if they occur after special status bird species have chosen nest sites due to equipment, people, or cattle crushing nests with eggs or abandonment due to disruption. As grazing activities continue over time, special status bird species would adapt and continue to avoid the project areas during foraging until activities cease and nest site selection for the life of the Proposed Action. Some special status mammal species (i.e., bats) would continue to use the area for foraging and during migration periods because most activities occur during daylight hours. Other special status mammal species (i.e., rodents) would avoid the area for nest/den

selection during times of high activity and would also have an increased risk of mortality due to nest/den destruction from fence posts, equipment caving them in, etc. However, they would continue to utilize the area for foraging purposes once activities cease for the day or seasonally. Special status plant species may be killed by fence posts being driven into the ground and cattle trampling.

Under the Proposed Action, approximately 40 miles of new fence would be constructed to contain cattle during the targeted grazing time periods. Special status bird species have a higher risk of strikes with the increased amount of new fences. However, the increased perching opportunities presented by the fence posts and wires would provide a benefit during foraging, mating, and territory protection. Special status mammal species (i.e., bats) would also have an increased risk for fence strikes during foraging and migration, especially near the portable water troughs. Other special status mammal species (i.e., rodents) would have an increased risk of predation due to the increased opportunities for bird predators to perch on the fence posts and wires. Special status plant species that survive the fence construction would be protected from livestock grazing after the initial targeted grazing periods; however, wildlife species could still forage on them.

Under the Proposed Action, cattle would be dispersed within the project areas using portable water troughs; however, the troughs would be removed once the stubble height requirement has been met. Special status bird and bat species have an increased risk of mortality when using water troughs due to the inability to exit the trough if they fall/crash into the water.

Cumulative Effects of the Alternatives

The cumulative effects study area (CESA) for special status species consists of the proposed treatment areas and a 4-mile buffer surrounding each area (project areas). As stated in Section 3.2.6 (Vegetation), the affected environment has been converted from the desired vegetation community of shrub/perennial grass- to an annual grass-dominated vegetation community (see Figure 4).

Past actions within the CESA include livestock grazing management, mining exploration and development, rights-of-ways, recreational use, and wildfires. Each of these actions has contributed to the conversion of the original shrub/perennial grass-dominated habitat into annual grassland overrun by invasive species such as cheatgrass. Each of the actions above are modes of transportation for cheatgrass and other invasive weed seeds to be spread. Livestock moving across the landscape pick up seeds in their fur and carry them long distances into the middle of uninvaded habitat. Mining exploration and development surface disturbing activities and surface disturbance associated with building rights-of-ways (i.e., powerlines, pipelines, roads) created bare ground available for cheatgrass/invasive species establishment prior to reclamation activities. Mining equipment, recreational vehicles (i.e., 4x4 trucks, off-road vehicles), and rights-of-way construction equipment driven through patches of cheatgrass/invasive species in
one area transported those seeds to another, uninvaded area. As seeds were dispersed throughout the shrub/perennial grass-dominated habitat, they established in bare ground areas or prior to native vegetation green-up. Wildfires became more prominent with the increase in dry cheatgrass/invasive species and wiped out the contiguous shrub/perennial grass-dominated habitat; thus furthering the bare ground/cheatgrass/invasive species establishment cycle and decreasing the fire return interval (time between fires in a defined area; i.e., from a 50 year return interval to 5-10 year return interval).

Present actions within the CESA include livestock grazing management, mining exploration and development, rights-of-ways, recreational use, vegetation treatments (i.e., reclamation, emergency stabilization, spraying weeds), and wildfires. Mitigation measures and stipulations have been established in order to control the spread of cheatgrass/invasive species during present actions. Mining, rights-of-ways, and commercial recreational use requires vehicles be washed off before entering a new area in order to avoid spreading more cheatgrass/invasive species seeds. Reclamation activities include cheatgrass/invasive species management actions (i.e., spraying herbicides, required management plans) and seeding protocols for all surface disturbing activities (i.e., mining, powerline construction, etc.). Wildfires are reclaimed similarly to these surface disturbing activities. However, other vectors for invasive species spread are still active in the form of public recreational vehicles, livestock grazing, and wildfires. The fire return interval continues to decrease as more and more shrub/perennial grass-dominated habitat is converted to cheatgrass/invasive species habitat/monocultures.

Reasonably foreseeable future actions include livestock grazing management, mining exploration and development, rights-of-ways, recreational use, vegetation treatments, and wildfires. Noxious and invasive weed treatment protocols, seeding protocols, reclamation requirements, and vegetation treatments would continue/attempt to decrease the spread of cheatgrass/invasive species. However, surface disturbing activities will continue to open up previously disturbed and undisturbed areas for development and, consequently, cheatgrass/invasive species' opportunities for establishment. Although requirements for cheatgrass/invasive species treatments would continue to be required, it doesn't decrease the already established populations within the CESA and surrounding area. The fire return interval would continue to decrease and large wildfire risk would continue to increase.

Under the No Action Alternative, the cumulative impacts would be increased. An increased risk of large wildfires threatening or removing shrub/perennial grass-dominated habitat outside of the CESA would continue to be a concern. It is expected that the removal of this habitat would expand the cheatgrass/invasive species populations, continuing the cycle of vegetation community conversion and decreased fire return intervals. Loss of shrub/perennial grass-dominated habitat would decrease special status species populations by removing important life-cycle habitat for their survival (i.e., nesting, breeding, wintering). Special status species would eventually be removed entirely from the CESA as they move to other areas to survive. However, the new habitat areas can only support a certain population number before they begin to degrade.

Increased special status species mortality due to starvation, dehydration, malnutrition and decreased breeding success would decrease the population quickly. Livestock grazing management would continue as it is now or change during a permit renewal; however, this would not slow the destruction of habitat by wildfires or decrease the population of cheatgrass/invasive species. Mining, recreational use, and rights-of-way construction would continue to increase the opportunities for new or more cheatgrass/invasive species establishment. Vegetation treatments would continue to be conducted in response to wildfire or completed on small acreages for projects. Special status species are drawn to these seeded areas for the higher nutritional forage, suppressing the establishment of native and/or seeded species. It is expected that vegetation treatments would not increase native vegetation establishment or decrease cheatgrass/invasive species establishment, but would be invaded due to lack of establishment of seeded/native species. Special status species dependent upon prev for food will continue to hunt in the CESA, as the prey base is more adaptable to the cheatgrass/invasive species habitat. However, if these species can no longer support themselves, they would move to more appropriate habitat and so would the predator special status species. The No Action Alternative would increase cumulative impacts within the CESA and in the surrounding contiguous shrub/perennial grass-dominated habitat.

Under the Proposed Action, the cumulative impacts are decreased by providing fuel breaks which allow fire suppression personnel and equipment a greater opportunity to contain wildfires at a smaller size and keep them in the cheatgrass/invasive species vegetation community. The risk of large wildfires consuming shrub/perennial grass-dominated habitat outside of the CESA would be decreased. Mowing the small shrub portion of the project areas and using livestock to graze the cheatgrass to a short stubble height provides an area where fire spread slows down and fire suppression crews can anchor to safely conduct fire suppression activities. Conserving the shrub/perennial grass-dominated habitat outside of the CESA (specifically, protecting Priority Habitat Management Areas [PHMAs] for greater sage-grouse) provides contingent habitat for special status species to utilize during important life-cycles, which would still strain the habitat, but would decrease the rate of special status species mortality/population decreases. However, the vegetation treatments completed in response to the smaller fires would also provide suitable feed for special status species when necessary and rest the shrub/perennial grass-dominated (PHMA) habitat from use. All other actions within the CESA would have the same cumulative impacts as the No Action Alternative.

Mitigation

Under the Proposed Action, the increased amount of fences could negatively impact special status bird and bat species. In order for special status birds to avoid wire strikes, the new fences/wires would be marked for higher visibility. In order for special status bats to avoid wire strikes, water troughs would be placed away from fence lines (See Proposed Action Section.).

The portable water troughs could also have a negative impact to special status species if they fall/crash into the troughs. Therefore, the portable toughs would be fitted with wildlife escape ramps in order to decrease the risk of drowning these species (Taylor and Tuttle 2007). Also water troughs would be removed from the grazed areas within 48 hours following the removal of livestock.

Appendix A provides additional Required Design Features (RDFs) for sage-grouse impact mitigation.

3.2.15. Wildfire Management

3.2.15.1. Affected Environment

The analysis area for wildfire management is the proposed project area because proposed management actions would only occur within this area. A wide range of wildfire behavior may be exhibited in the project area depending on fuels, weather and topography. Sagebrush and annual grassland fires may result in high intensity fires with rapid rates of spread, while fires in perennial grasslands are often less intense. The concentration and values of resources at risk vary throughout the project area. Fire behavior and resources at risk dictate in large part the priorities, objectives and strategies for fire management. One tool that fire managers may use are fuel breaks. These are a natural or manmade change in fuel that serve to modify fire behavior and make the fire easier to control. Fuel breaks may lower flame lengths, slow rate of spread, and provide fire fighters safe places to anchor control lines.

The project area is identified within the Full Suppression Zone in the Elko District Bureau of Land Management Fire Management Plan dated June 15, 2016. The impacts of wildland fire are not desired in these areas and suppression priority is based on resource values with the protection of human life being the single overriding priority. The BLM's highest resource priority is to reduce the amount of Greater Sage-grouse (GRSG) habitat loss due to wide-spread wildfires and invasion by nonnative species. Fires that ignite can spread quickly in these types of fuels and escaped fires can easily reach the limits of initial attack response. Many areas have been modified significantly from their historical fire regime through the introduction of annual grasses which create a continuous and hazardous fuel bed. As more fires occur in these areas the annual grasses may increase and the departure from the historical fire regime will continue the cycle of large fire occurrence.

The following identifies the polygon types for fire management categories (FMCs) for the Elko and Wells Resource Management Plans Fire Management Amendment (FMA), as approved on September 29, 2004 that are located within the project area but are not considered GRSG Habitat.

• A-1 Urban Interface / Mining Areas / Areas of Development Current Condition: The primary vegetation type around these areas is sagebrush and perennial grasses with intrusions of cheatgrass and other annual vegetation. The management objective for these areas is to preserve and protect the developed features, life and property. This area also includes the rapidly growing urban interface around Elko and Spring Creek. Recreation sites may be developed or undeveloped, but are moderately to heavily used during the summer and fall months. This polygon is generally represented as Fire Regime 3 and in Fire Condition Class 3.

• B-8 Early Seral Sagebrush Grasslands Current Condition: The primary vegetation type in this area is sagebrush and perennial grasses in lower elevations and Utah juniper and pinyon pine at the higher elevations. However, because of frequent fire history and other vegetative disturbances in these areas, intrusions of annual invasive species and noxious weeds exist but do not dominate the area. Because of the current early seral conditions and low response potentials within these areas, future fire occurrences could potentially increase the amount of undesirable and invasive species in these areas to the extent that they could dominate the site. The management objectives for this area are to maintain and improve native vegetation conditions, limit the spread of annual invasive species and noxious weeds, protect critical watersheds, provide wildlife and livestock forage and provide woodland products from higher elevations. This polygon is generally represented as Fire Regime 3 and in Fire Condition Class 3.

All fuel breaks must have a road free of vegetation. The road free of vegetation acts as the break in fuel continuity which is the true fuel break. All fire lines regardless of size or fire behavior have to break the continuity or availability of fuel to an advancing fire. The three components of the fire triangle are heat, oxygen and fuel. The one component that can be manipulated by man is the fuel component in the form of fuel breaks.

All fires must be engaged at some level from ground resources. Aerial resources may or may not be effective for slowing the advancement of fire. To completely extinguish a wildland fire, ground resources will be required. The fuel break also improves safety to fire resources by providing quick ingress and egress in case of emergencies associated with changing fire conditions.

Fuel break roads provide a reduction of vegetation (change in fuel model) adjacent to the fuel break. For the fuel break to be effective, vegetation adjacent to the road must be reduced. The reduction in fuels adjacent to the road results in a change in fire behavior as the fire burns into the area of reduced fuels. Reduction in flame length and potential reduction in rates of spread are the two fire behavior characteristics modified by fuels reduction.

The fuel break width minimum of 300 feet allows firefighters to address a fire coming from any direction. As fire moves into the fuel break, the fire behavior is modified by reduced flame length and possibly slower rates of spread depending on herbaceous fuel continuity as it comes to the road/fuel break. The 300 feet of vegetation manipulation significantly increases the area and

time the advancing fire's behavior is being reduced or modified; increasing time and space for the firefighters to respond to and anticipate the constantly changing fire environment.

Flame lengths of 8 feet or less are desired as fire comes to the fuel break. Empirical evidence coupled with decades of experience in fire suppression has established general rules of thumb used in determining suppression tactics based on flame length. In general, a flame length of 8 feet or less is what the proposed fuel break design is based on.

During extreme fire behavior, fuel breaks can be breached by spotting when fires contact fuel breaks. Spotting is when burning embers from the flaming front are picked up by winds and carried across the fuel break or control line into a receptive fuel bed. Spotting is less likely in fuel model GR1 (primary short grass fuel model) that is the desired fuel model end stage within the project area.

3.2.15.2. Environmental Effects

Effects of the No Action Alternative

The No Action alternative would not have a network of fuel breaks in the project area created through targeted grazing that would occur to create an area of low and discontinuous fuel that inhibits extreme fire behavior. Future fires would burn depending on existing fuels, weather, topography, and be unimpeded by changes in the fuel bed that would alter fire behavior and decrease resistance to control. Firefighters would not have pre-established fuel breaks on the landscape to create safe and effective anchor points from which to initiate suppression tactics. In those areas with intact shrub vegetation, high flame lengths would not be manageable using direct attack methods. Landscapes more distant from improved roads with intact sagebrush steppe would remain more vulnerable to large fires. Increases in cover of annual grasses which may result from recent large fires may increase the occurrence of fires with extreme fire behavior, including high flames lengths, rapid rates of spread and a high probability of escaping initial attack. The risk to resources within the project area, including investments made in the recovery of the area burned by past fires would not be reduced.

Effects of the Proposed Action

The Proposed Action includes the construction of fuel breaks designed to modify fire behavior and make fires easier to control and contain. Reducing fuels within fuel breaks through targeted grazing has additional benefits for fire suppression resources during burnout and holding operations as follows:

• Reduced fire line intensity – as fire moves from shrub fuel models into short grass fuel models, fire intensity is reduced. The fuel break would increase area and time fire behavior is being reduced and fire intensity is lowered. This increases the margin of success for suppression crews.

- Increase the safety margin for suppression crews through lower fire line intensity. Including, the ability to move up and down the fire line to address surges and changes in fire behavior and move away from intense fire behavior then re-engage quickly when fire behavior dies down or moderates.
- Increase ability to patrol for spots across the line it is easier to detect spot fires while small in a areas where fuels have been mowed/reduced and not hidden in tall sagebrush until well established.
- Increase ability to catch spot fires across line because the fire is spotting into an area of reduced fuel loading. Spot fires take longer to establish and build up intensity in reduced fuels.
- Spot fires are easier to control with fewer resources. In other words, less equipment, water, fire retardant would be needed because fire spotting into an area of reduced fuels.
- Fire retardant is much more effective in fuel breaks than untreated fuels. Fire retardant is able to completely coat fuels rather than getting hung-up in the sagebrush canopy and / or continuous annual grasses, which allows fire to creep through fine fuels from beneath the sagebrush.
- Changing the fuel model within the fuel break would reduce spotting distances. Grasses, owing to their fineness and short consumptive time, produce fewer embers that survive to return to the ground. Wider fuel breaks provide larger areas of reduced fuels for fire brands to be generated from and larger areas of reduced fuels for spots to land in if carried over an improved road as fire contacts fuel breaks.
- The residence time (the time the plant is flaming and firefighters need to stay to manage it) of flaming fuels is greatly reduced in the fuel breaks due to reduced fuels. The burnout time in grass fuel models is less than the burnout time in shrub fuel models. This allows suppression resources to have much more mobility in regards to moving up and down a fire line (fuel break) holding and burning out line in fine fuels versus heavier fuels. This allows the firefighters to hold and secure larger expanses of line with fewer resources.

The effectiveness of fuel breaks would be based on their width. Targeted grazing would create a zone of fuels that would not support high flame lengths or high rates of spread. Implementation is expected to aid firefighters, provide for their safety, and protect resources within the project area.

Cumulative Effects of the Alternatives

The scope of analysis for cumulative impacts includes the project area and adjacent grazing allotments for the effective life of the network of fuel breaks. This scope is appropriate as fuel breaks within the project may impact wildfires in nearby areas.

Past actions in the area have shaped the management of wildland fire. Present and foreseeable future impacts would continue to shape the way wildfire is managed.

Ongoing livestock grazing may also contribute to cumulative effects. Grazing can reduce vegetation height and biomass and could alter fuel loading within and adjacent to treatment areas, potentially reducing the rate of spread for fire or fire severity.

The effects of climate change on the analysis area are likely to be substantial; as the region becomes dryer and hotter, restoration of vegetated fuel breaks could become harder to establish and fires would likely become more prevalent. However, the proposed treatments should make the analysis area more resilient to fire, potentially mitigating the effects of climate change on vegetation in the analysis area.

Under the No Action Alternative, the effects of past, present, and foreseeable actions in the analysis area are expected to continue current trends for wildfire occurrence. This means that vegetation would continue to be converted to invasive annual grass communities and that fire would likely remove any existing or recovering shrub stands. When added to the proposed action, vegetation communities within the analysis area are expected to gradually increase in species and structural diversity due to reduced fire size, with a greater degree of increased species and structural diversity expected associated with the Proposed Action.

4. Consultation and Coordination

4.1. Public Involvement and Scoping

Public scoping letters with a 30 day response period were sent to the list of persons and/or agencies identified above regarding development of the proposed action and alternatives for the project. The BLM Tuscarora Field Office received timely comments from two entities. The comments identified/received as part of the scoping process are summarized and addressed in Table 13. A targeted grazing public outreach meeting was held on October 6, 2016.

Comment	BLM Response
Elko Land and Livestock: In its planning and analysis, we suggest that the Bureau of Land Management (BLM) Consider:	
Ensuring that monitoring methods are appropriate for long-term evaluation and management needs; similarly, ensuring that resources are available and committed for monitoring for the full duration of the Project	This project has a significant monitoring component. Monitoring includes but is not limited to: Bare Ground, Foliar and Basal Cover, Vegetation Composition, Vegetation Height, and Bulk Density. The AIM Protocol will be used as the Bureau of Land Management has adopted this protocol nationally. This will allow the data to be used as part of a national data set.
Continuing to work directly with permittees in developing the Targeted Grazing prescription for the Project	Direct coordination will continue with the permittee in developing the Targeted Grazing prescriptions.
Providing appropriate incentives to permittees participating in the Project to maintain operational aspects of the ranches and long- term durability of the Project	Comment Noted
Providing to existing permittees a preference or option for first refusal for precision Targeted Grazing implementation for the Project	Per the direction of Secretarial Order 3336 livestock permittees have had this opportunity.
Ensuring information transfer to user groups and land managers	The data collected from this project will contribute to a national dataset and be shared with agencies and user groups alike.

Table 13. Public Scoping Comments

4.2. Tribal Consultation and Information Sharing

BLM sent letters on 10-25-2016 sharing project information and offering the opportunity to initiate formal government to government consultation to the following tribes (see also Table 10 in Native American Concerns Section 3.2.10):

- The Te-Moak Tribe of the Western Shoshone Indians of Nevada
- The Battle Mountain Band Council of the Te-Moak Tribe
- The Elko Band Council of the Te-Moak Tribe
- The South Fork Band Council of the Te-Moak Tribe
- The Wells Band Council of the Te-Moak Tribe
- The Shoshone-Paiute Tribes of the Duck Valley Indian Reservation

BLM has had face-to-face consultation meetings on the Targeted Grazing EA with:

• The Battle Mountain Band of the Te-Moak Tribe, 11-10-16.

Information Sharing and Coordination has taken place with:

- Elko Band Council of the Te-Moak Tribe Environmental Coordinator, 11-1-16 and 12-9-2016.
- Te-Moak Tribe of the Western Shoshone Indians of Nevada Environmental Coordinator, 12-9-2016.
- Wells Band Council of the Te-Moak Tribe Environmental Coordinator, 12-9-2016

This project are may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, Executive Order 13007, or other statutes and executive orders. The Bureau of Land Management (BLM) will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations (e.g., State Historic Preservation Officer (SHPO) and tribal consultation) under applicable requirements of the NHPA and other authorities. The BLM may require modification to fence lines to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.

4.3. List of Preparers

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5. *References*

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Appendix A

Required Design Features Documentation

GRSG Proposed Activities Form IM Attachment 2: Required Design Features (RDF) identified in the Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (SGPA Appendix C)

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	General RDFs	Applied	If RDF not applied, select reason:
RDF Gen 1: Locate new roads outside of GRSG habitat to the extent practical	_ *	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable.	
	Locate new roads outside of GRSG habitat to the extent practical		An alternative RDF is determined to provide equal or better protection for GRSG or its habitat. Alternative RDF #
			A specific RDF will provide no additional protection to GRSG or its habitat.
		No r	road construction associated with project.
Avoid constructing roads within riparian	Yes	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable.	
RDF Gen Z:	lowwater crossings at right angles to ephemeral drainages and stream crossings foots that such construction may require	V ⁿ	An alternative RDF is determined to provide equal or better protection for GRSG or its habitat. Alternative RDF #
	permitting under Sections 4D1 and 404 of the Clean Water Act].		A specific RDF will provide no additional protection to GRSG or its habitat.
		NO r	oad construction associated with project.
Limit construction of new roads where roads are already in existence and could be used or upgraded to meet the needs of the project RDF Gen 3: or operation. Design roads to an appropriate standard, no higher than necessary, to accommodate intended purpose and level of use.	 r=	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable.	
	upgraded to meet the needs of the project or operation. Design roads to an appropriate	V •	An alternative RDF is determined to provide equal or better protection for GRSG or its habitat. Alternative RDF #
	standard, no higher than necessary, to accommodate intended purpose and level of use.		A specific RDF will provide no additional protection to GRSG or its habitat
		Rationale: No r	oad construction associated with project.
Coordinate road construction and use with RDF Gen 4: ROW holders to minknite disturbance to the		√ r≊	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site kinitations or engineering considerations) Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable.
	 *•	An alternative RDF is determined to provide equal or better protection for GRSG or Its habitat. Alternative RDF &	
	extent possible.		A specific RDF will provide no additional protection to GRSG or its habitat
of the state of the		Rationale: No r	road construction associated with project.
During project construction and operation, establish and post speed limits in GRSG RDF Gen 5: habitat to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.	During project construction and pression	Tes	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity [e.g. due to site limitations or engineering considerations]. Economic considerations, such as increased cotts, do not necessarily require that an RDF be varied or rendered inapplicable.
	estabilish and post speed limits in GRSG habitat to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.	√ ^{n₀}	An alternative RDF is determined to provide equal or better protection for GRSG or lts habitat. Alternative RDF #
			A specific RDF will provide no additional protection to GRSG or its habitat
	Rationale: NO II	ncreased traffic associated with project.	

RDF Gen 6:	Newly constructed project roads that access vaad existing rights would not be managed as public access roads. Proponents will restrict access by employing traffic control devices such as signage, gates, and fencing,	Tationale: No r	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site Invitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be vaned or rendered inapplicable. An szemative RDF is determined to provide equal or better protection for GRSG or its habitat. Atternative RDF # A specific RDF will provide no additional protection to GRSG or its habitat. A specific RDF will provide no additional protection to GRSG or its habitat.
	r=	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site limitations or engineering considerations) Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable.	
RDF Gen 7:	Require dust abatement practices when authorizing use on roads.		An alternative RDF is determined to provide equal or better protection for GRSG or its habdat. Alternative RDF #
		Patienaler	A specific RDF will provide no additional protection to GRSG or its habitat.
	•	Nor	road authorization required.
NO RDF 3 Identi	ND RDF #Iden1/Red		
Upon project completion, reclaim roads developed for project access on public lands unless, based on site-specific analyss, the route provides specific benefits for public	Upon project completion, reclaim roads	tes	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable.
	V "	An alternative RDF is determined to provide equal or better protection for GRSG or its habitat Arternative RDF #	
	access and does not contribute to resource conflicts		A specific RDF will provide no additional protection to GRSG or its habitat
		Rationale: No r	oad construction associated with project.
		re s	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable.
Design or site permanent structures that RDF Gen 10: create movement (e.g., pump jack/ windmill) to minimize impacts on GRSG habitat	V •	An alternative ADF is determined to provide equal or better protection for GRSG or its habitat. Alternative RDF #	
		A specific ROF well provide no additional protection to GRSG or its habitat	
		None associated with project.	
Equip temporary and permanent aboveground facilities with structures or devices that discourage nesting and perchin of raptors, corvids, and other predators.		V **	A speafic RDF is documented to not be applicable to the see-specific conditions of the project/activity (e.g., due to site Imitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable.
	Equip temporary and permanent aboveground facilates with structures or devices that discourage nesting and perching	•	An alternative RDF is determined to provide equal or better protection for GRSG or Its habitat. Alternative RDF #
	of raptors, corvids, and other predators.		A specific RDF will provide no additional protection to GRSG or its habitat.
	Aationale:		

RDF Gen 12:	Control the spread and effects of nonnative, invasive plant species (e.g., by washing vehicles and equipment, minimitre unnecessary surface disturbance; Evangelista et al. 2011). All projects would be required to have a nonlous weed management plan in place prior to construction and operations.	Tui	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site limitations or engineering considerations) Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable. An alternative RDF is determined to provide equal or better protection for GRSG or its habitat. Alternative RDF # A specific RDF will provide no additional protection to GRSG or its habitat.
RDF Gen 13:	Implement project site-cleaning practices to preclude the accumulation of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of GRSG.	res na Rationale:	A specific RDF is documented to not be applicable to the site-specific conditions of the project/scrivity (e.g. due to site limitations or engineering considerations) Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inspilicable. An sitemative RDF is determined to provide equal or better protection for GRSG or its habitat. Alternative RDF # A specific RDF will provide no additional protection to GRSG or its habitat.
RDF Gen 14:	Locate project related temporary housing sites outside of GRSG habitat.	Tationale: Non	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable. An alternative RDF is determined to provide equal or better protection for GRSG or its habitat. Alternative RDF # A specific RDF will provide no additional protection to GRSG or its habitat. e associated with the project.
RDF Gen 15:	When Interim reclamation is required, irrigate site to establish seedlings more quickly if the site requires it.	rea rea rea Not	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site limitations or enguneering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable. An alternative RDF is determined to provide equal or better protection for GRSG or its habitat. Alternative RDF # A specific RDF will provide no additional protection to GRSG or its habitat. required for project.
RDF Gen 16:	Utilize mulching techniques to expedite reclamation and to protect soils if the site requires it	na Rationale: No r	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity [e.g. due to site limitations or engineering considerations) Economic considerations, such as increased dotts, do not necessarily require that an RDF be varied or rendered inapplicable. An alternative RDF is determined to provide equal or better protection for GRSG or its habitat. Alternative RDF # A specific RDF will provide no additional protection to GRSG or its habitat ecclamation associated with project.

Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.		Tea	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site \$mitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered mapplecable.
	V -	An alternative RDF is determined to provide equal or better protection for GRSG or its habitat. Alternative RDF #	
		A specific RDF will provide no additional protection to GRSG or its habitat.	
		Rationale: NO r	eclamation associated with project.
			A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site limitations or engineering considerations). Economic considerations, such as bicreased costs, do not necessarily require that an RDF be varied or rendered inapplicable.
RDF Gen 18:	When authorizing ground-disturbing activities, require the use of vegetation and soil reclamation standards suitable for the	to	An alternative RDF is determined to provide equal or better protection for GRSG or its habitat. Alternative RDF #
	site type prior to construction.		A specific RDF will provide no additional protection to GRSG or its habitat.
	Rationale:		
Instruct all construction employees to avoid harassment and disturbance of wildlife, especially during the GR5G breeding (e.g., courtship and nesting) season. In addition, pets shall not be permitted on site during construction (BLM 2005b).	Instruct all construction employees to avoid	√ -	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site Emitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable
	harassment and disturbance of wildlife, especially during the GRSG breeding (e.g., courtship and nesting) season. In addition,		An alternative RDF is determined to provide equal or better protection for GRSG or tts habitat. Alternative RDF #
	pets shall not be permitted on site during construction (BLM 2005b).		A specific RDF will provide no additional protection to GRSG or its habitat.
		Aationale:	
To reduce predator perching in GRSG habitat, limit the construction of vertical RDF Gen 20: facilities and fences to the minimum numbe and amount needed and install anti-perch devices where applicable.	To reduce conduce combine in 6866	√ r≊	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site fimilations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered mapplicable.
	habitat, limit the construction of vertical facilities and fences to the minimum number	_ ~	An alternative RDF is determined to provide equal or better protection for GRSG or its habitat. Alternative RDF #
		A specific RDF will provide no additional protection to GRSG or its habitat.	
		Rationale:	
Outfit all reservoirs, pits, tanks, troughs or similar features with appropriate type and number of wildlife escape ramps (8LM 199 Taylor and Tuttle 2007).	Outfit all reservoirs, pits, tanks, troughs or similar features with appropriate type and number of wildlife escape ramps (BLM 1990; Taylor and Tuttle 2007).	1 1	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site Emitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable.
			An alternative ADF is determined to provide equal or better protection for GRSG or its habitat. Alternative RDF #
			A specific RDF will provide no additional protection to GRSG or its habitat.
	Rationale:		

Load and unload all equipment on existing ADF Gen 22: roads to minimize disturbance to vegetation	V "	A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site limitations or engineering considerations) Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable.	
		An alternative RDF is determined to provide equal or better protection for GRSG or its habitat. Alternative RDF #	
5	and son.	Artionale:	A specific RDF will provide no additional protection to GRSG or its habitat.

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