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

Environmental Assessment

Egan and Johnson Basins Restoration Project

Preliminary

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PREPARING OFFICE

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Chapter 1 Introduction

1.1 Background

The purpose of this Environmental Assessment (EA) is to identify issues, analyze alternatives, and disclose the potential environmental impacts associated with the proposed Egan and Johnson Basins Restoration Project. This EA fulfills the National Environmental Policy Act (NEPA) requirement for site-specific analysis of resource impacts. The analysis in this EA assists in making a determination of the significance of impacts to the human environment associated with the actions developed to meet the purpose and need. If a determination is made that impacts are significant, an Environmental Impact Statement (EIS) will be prepared. If impacts are not significant, a “Finding of No Significant Impact” (FONSI) will be prepared.

The Bureau of Land Management (BLM), Bristlecone Field Office is proposing a hazardous fuels reduction and habitat improvement project within Egan and Johnson Basins, including the area near Nine-mile summit, Cherry Creek Range and the North Egan Range. The project would occur over extended periods of time, as budgets allow.

1.2 Location of Project

The project area is located approximately 5 miles west of Cherry Creek, Nevada and 50 miles northwest of Ely, Nevada. The Egan and Johnson Basins Restoration Project area is comprised of approximately 84,675 acres located in the Egan and Cherry Creek Ranges near Cherry Creek, White Pine County, Nevada. Located within the project area are private lands that would be included in treatment if a cooperative agreement is arranged with the property owner. See Appendix A; Map 1 for a map of the project and treatment areas.

The proposed project is located within all or parts of the following sections Mount Diablo base and meridian:

Township (T) 21 North (N), Range (R) 62 East (E), various Sections
T 22N, R 61E, Sections 25, 35, 36
1.3 Purpose and Need for Action

1.3.1 Purpose and Need

The purpose of this project is to restore natural site conditions, reduce potential for large wildfires by reducing fuel loading, increase understory grass and forb species diversity, and increase available wildlife habitat. The need of this action is to respond to the ecological departure of plant communities from the natural range of variability within Egan and Johnson Basins relative to desired conditions. The need arises primarily due to successional changes in sagebrush and pinyon-juniper stands resulting in establishment and above normal density of single-leaf pinyon pine (Pinus monophylla) and Utah juniper (Juniperus osteosperma) trees. Important habitat for greater sage-grouse, as well as other wildlife have been identified within the project area.

A majority of the area within the treatment units identified for this project have been classified as black sagebrush (Artemisia nova), mountain big sagebrush (Artemesia tridentata ssp. vaseyana), and Wyoming sagebrush (Artemesia tridentate ssp. wyomingensis) ecological sites. The sagebrush communities within the proposed project area have undergone major changes in vegetation structure, composition, production and resiliency due to the expansion of pinyon pine and Utah juniper trees. These changes have resulted in a reduction in plant community resilience to disturbance, soil loss, degradation or loss of wildlife habitat; as well as dramatic shifts in fire frequency, size and severity (Davies et al., 2011; Pyke, 2011; Chambers et al., 2005; Miller and Tausch, 2001). Many sagebrush ecosystems are approaching, or have already crossed an ecological threshold to an alternate plant community that could be more susceptible to invasion of non-native annual grasses and other invasive species after disturbance. Returning these communities to, or near, their original state would likely not occur without human intervention. This includes controlling undesirable species and re-introducing previously dominant native species (Pyke, 2011).

Throughout many areas of eastern Nevada, sagebrush plant communities are being or have been converted to areas dominated by homogenous stands of sagebrush or to areas with dense canopy cover of pinyon-juniper trees. These areas often are characterized by declining, remnant populations of native perennial grasses and forbs. In some areas, the establishment of pinyon-
juniper trees on sagebrush/grass sites has not only resulted in the loss of the grass and forb component, but in the decadence and low vigor of important shrub species such as sagebrush, antelope bitterbrush (*Purshia tridentata*), serviceberry (*Amelanchier spp.*), and snowberry (*Symphoricarpos spp.*). Loss or decline of ecologically valuable grass, forb and shrub species can result in excessive surface runoff and soil erosion; reduced soil moisture and decreased groundwater recharge (Bedell, 1993). Effects of pinyon pine and juniper expansion into sagebrush grassland include loss of nutrients, accelerated erosion, changes in soil water storage, reduced forage, and altered habitat. Studies show that as diversity of stand structure declines, diversity and abundance of wildlife also declines (Miller et al., 2005).

A tool used to assess the ecological condition of an area across a landscape scale is Fire Regime Condition Class (FRCC). This interagency, standardized tool is based on scientific and peer reviewed literature and is used for determining the degree of departure from a reference vegetation condition within a given biophysical setting (BpS) (Barrett et al., 2010). More information regarding this tool can be found at the following website: http://www.landfire.gov. Assessing FRCC can help guide management objectives and set priorities for treatments. The classification is based on a relative measure describing the degree of departure from the historical natural disturbance regime for a given BpS. This departure is described as changes to one or more of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure and mosaic pattern); fuel composition; fire frequency, severity and pattern; and other associated disturbances (e.g. insects and disease mortality, grazing and drought). There are three FRCC classes used to describe the departure from reference BpS conditions. The three classes are based on low (0-33% departure; FRCC 1), moderate (34-66% departure; FRCC 2) and high (67-100% departure; FRCC 3) departure from the central tendency of the natural (historical) regime. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside the range of variability. The FRCC rating is accompanied by indicators of the potential risks that may result. Biophysical setting models have been developed for most major (dominant) vegetation types. These models describe the vegetation, geography, biophysical characteristics, succession stages, disturbance regimes, and assumptions for each vegetation type (Barrett et al., 2010). Reference (historical) conditions described in the BpS models are compared to actual conditions for purposes of determining the current FRCC rating. A FRCC rating is determined for an area by calculating the weighted average of all major (dominant) vegetation FRCC ratings. FRCC 1 is desired for each BpS and for the proposed treatment area. A departure from FRCC 1 (reference condition) to FRCC 2 or FRCC 3 serves as an indicator that changes need to be implemented. The current rating for the project area is FRCC 2; see Appendix A, Map 2. This indicates that fire regimes and vegetation attributes have been moderately altered from their historical range. Risk of losing key ecosystem components is moderate.
1.3.2 Goals

The project goals are to increase vegetation community resistance and resilience to natural disturbance, shift the area closer to a Fire Regime Condition Class (FRCC) 1 and reduce the risk of large wildland fire within Egan and Johnson Basins.

The goals of this proposed project are to:

- Create conditions in sagebrush communities that better meet historical fire regime variation and shift the project area closer toward FRCC 1.
- Create a mosaic of vegetation types and stand age classes that would increase shrub and herbaceous composition, enhance vegetation community resistance and resilience, slow potential fire progression and aid fire suppression.
- Increase native vegetation composition and increase the diversity of grass and forb species.
- Reduce the density of pinyon-juniper trees from within historically sagebrush dominated plant communities.
- Increase available habitat for nesting and early brood rearing/yearlong greater sage-grouse use.
- Increase and protect valuable mule deer and elk habitat within the watersheds.

Resource management objectives include the following:

1.3.3 Short Term Objectives (immediately post treatment)

- Reduce trees in Phase I, Phase II and Phase III conifer establishment on sagebrush ecological sites to increase greater sage-grouse habitat.
- Reduce tree canopy cover in sagebrush communities to 5% or less in Phase I conifer expansion sites.
- Reduce tree density to approximately 10 - 30 trees per acre or a Stand Density Index of 40-60 (10%-15% of maximum) in thinned treatment areas within woodlands sites and some sagebrush sites.
- Create mosaic of treated and untreated areas to enhance wildlife habitat.
1.3.4 Long Term Objectives (5 to 10 years post treatment)

- Enhance greater sage-grouse habitat by maintaining or increasing sagebrush canopy cover to 15 – 25%, increasing herbaceous foliar cover to a minimum of 10%, and reducing standing tree cover in priority, and general habitat. These objectives would be matched up with Table 2–2, Appendix E.

- Reduce tree cover and increase sagebrush and understory species density in Phase II and III pinyon-juniper expansion areas (Miller et al., 2008) within sagebrush ecological sites.

- Keep annual grass cover (*Bromus tectorum*, cheatgrass) at less than 5% in previously unestablished areas.

1.4 Relationship to Planning

The Proposed Action and alternatives being considered in this EA are in conformance with the Ely District Record of Decision and Approved Resource Management Plan (August 2008), as amended, as required by regulation (43 CFR 1610.5–3(a)). The Proposed Action is in conformance with the following specific goals, objectives and decisions of the Ely Resource Management Plan:

**Fish and Wildlife**

**Goal**

Ely RMP (2008): Provide habitat for wildlife (i.e., forage, water, cover, and space) and fisheries that is of sufficient quality and quantity to support productive and diverse wildlife and fish populations, in a manner consistent with the principles of multi-use management, and to sustain the ecological, economic, and social values necessary for all species.

**Objectives**

Ely RMP (2008): To manage suitable habitat for aquatic species, priority wildlife species, and migratory birds in a manner that will benefit wildlife species directly or indirectly and minimize conflicts among species and wildlife or habitat losses from permitted activities. Priority species for terrestrial wildlife habitat management related to this project are greater sage-grouse, mule deer, pronghorn antelope, and migratory birds. Priority habitats include calving/fawning/kidding/lambing grounds, crucial summer range, crucial winter range, and occupied habitat. To use wildlife water developments, both natural and artificial, to enhance the condition of wildlife habitat, and to use artificial wildlife water developments to mitigate impacts to wildlife species from loss of natural water sources or loss of habitat.
Management Actions

General Wildlife Habitat Management (Aquatic and Terrestrial)


Parameter- Elk, Mule Deer, Pronghorn Antelope, and Rocky Mountain Bighorn Sheep Habitats

Ely RMP (2008) WL-8: Focus restoration projects initially in priority habitats (i.e., calving/fawning/kidding/ lambing grounds, crucial summer range, and crucial winter range), and then in other seasonal habitats within a watershed.

Ely RMP (2008) WL-9: Manage elk habitat by implementing the action and strategies identified in the Central Nevada, Lincoln County and White Pine County Elk Management Plans that the Ely District Office has the authority to implement, and that are consistent with watershed restoration strategies.

Special Status Species RMP Goal- SSS and Greater Sage-grouse (GRSG) Goal

Goals

Ely RMP (2008): Manage public lands to conserve, maintain, and restore special status species populations and their habitats; support the recovery of federally listed threatened and endangered species; and preclude the need to list additional species.

Ely GRSG RMP Amendment (2015): SSS 1: Conserve, enhance, and restore the sagebrush ecosystem upon which greater sage-grouse populations depend in an effort to maintain and/or increase their abundance and distribution, in cooperation with other conservation partners.

Objectives

Ely RMP (2008): SSS: To manage suitable habitat for special status species in a manner that will benefit these species directly or indirectly and minimize loss of individuals or habitat from permitted activities.

Ely GRSG RMP Amendment (2015) SSS 1: Manage land resource uses to meet greater sage-grouse habitat objectives, as described in Table 2–2. The habitat objectives will be used to evaluate management actions that are proposed in greater sage-grouse 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 objectives.

Ely GRSG RMP Amendment (2015) 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 greater sage-grouse population persistence and expansion.

Ely GRSG RMP Amendment (2015) SSS 3: Identify and implement greater sage-grouse 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.

Management Actions

Ely RMP (2008) SS-1: Prioritize conservation, maintenance, and restoration actions for special status species based on the following order of importance: 1) federally listed endangered species; 2) federally listed threatened species; 3) federal proposed species; 4) federal candidate species; and 5) BLM sensitive species.

Parameter- Great Basin Sagebrush Habitat

Ely RMP (2008) SS-37: Manage greater sage-grouse habitat by implementing those actions and strategies identified in the BLM National Sage-Grouse Habitat Conservation Strategy, Greater Sage-Grouse Conservation Plan for Nevada and Eastern California, and local greater sage-grouse conservation plans that the Ely District Office has the authority to implement.

Ely RMP (2008) SS-38: Maintain intact and quality sagebrush habitat. Prioritize habitat maintenance actions from the BLM National Sage Grouse Conservation Strategy to: 1) maintain large areas of high quality sagebrush currently occupied by greater sage-grouse; 2) maintain habitats which connect seasonal sagebrush habitats in occupied source habitats; and 3) maintain habitats that connect seasonal sagebrush habitats in occupied isolated habitats.

Ely RMP (2008) SS-39: Implement proactive and large scale management actions to restore lost, degraded, or fragmented sagebrush habitats and increase greater sage-grouse populations. Prioritize habitat restoration actions from the BLM National Sage Grouse Conservation Strategy to: 1) reconnect large patches of high quality seasonal habitats, which greater sage-grouse currently occupy; 2) enlarge sagebrush habitat in areas greater sage-grouse currently occupy; 3) reconnect stronghold/source habitats currently occupied by greater sage-grouse with isolated habitats currently occupied by greater sage-grouse; 4) reconnect currently occupied and isolated habitats; 5) restore potential sagebrush habitats that currently are not occupied by greater sage-grouse. Develop allowable use restrictions in greater sage-grouse habitats undergoing restoration, on a case-by-case basis, as dictated by monitoring.
**Vegetation**

**Goal**

Ely RMP (2008): Manage vegetation resources to achieve or maintain resistant and resilient ecological conditions while providing for sustainable multiple uses and options for the future across the landscape.

**Objective**

Ely RMP (2008): To manage for resistant and resilient ecological conditions including healthy, productive, and diverse populations of native or desirable nonnative plant species appropriate to the site characteristics.

**Management Actions**

**General Vegetation Management**

Ely RMP (2008) VEG-1: Emphasize treatment areas that have the best potential to maintain desired conditions or respond and return to the desired range of conditions and mosaic upon the landscape, using all available current or future tools and techniques.

Ely RMP (2008) VEG-5: Focus restoration of undesirable conditions initially on those sites that have not crossed vegetation transitional thresholds.


Ely RMP (2008) VEG-7: Determine seed mixes on a site-specific basis dependent on the probability of successful establishment. Use native and adapted species that compete with annual invasive species or meet other objectives.

Parameter— Sagebrush (basin big sagebrush, Wyoming big sagebrush, mountain big sagebrush, and black sagebrush)

Ely RMP (2008) VEG-16: Implement actions to attain the desired vegetation states shown in Table 1.
Table 1.1. Desired Range of Conditions of Sagebrush (Distribution of Phases and States)

<table>
<thead>
<tr>
<th>State/Phase Name</th>
<th>Total Herbaceous State (Early, Mid, and Late Phases)¹</th>
<th>Total Shrub State</th>
<th>Total Tree State</th>
<th>Altered State Annual/Perennial Invasive</th>
<th>Altered State Nonnative Perennial Seeded</th>
</tr>
</thead>
<tbody>
<tr>
<td>LANDFIRE A, B, and C</td>
<td>D</td>
<td>E</td>
<td>Uncharacteristic</td>
<td>Uncharacteristic</td>
<td></td>
</tr>
<tr>
<td>RMP²</td>
<td>85% (4,776,500 acres)</td>
<td>5% (281,000 acres)</td>
<td>5% (281,000 acres)</td>
<td>0% (0 acres)</td>
<td>5% (281,000 acres)</td>
</tr>
</tbody>
</table>

¹Sagebrush in the mid-late phase of the herbaceous state is desired for wildlife habitat.

²The Proposed RMP approximates and incorporates the LANDFIRE Biophysical Setting Models for Great Basin xeric mixed sagebrush and Inter-Mountain Basin big sagebrush. Altered states (annual/perennial invasive and nonnative perennial seeded) are an uncharacteristic condition not recognized by LANDFIRE Biophysical Setting Models but are part of current conditions.

Ely RMP (2008) VEG-17: Integrate treatments to:

1. Establish and maintain the desired herbaceous state or early shrub state where sagebrush is present along with a robust understory of perennial species.

2. Prioritize treatments toward restoration of sagebrush communities on areas with deeper soils and higher precipitation.

Ely GRSG RMP Amendment (2015) Greater Sage-grouse Sagebrush-steppe MD VEG 2: Incorporate Greater Sage-grouse Habitat Objectives (Table 2–2, Appendix E) in the design of habitat restoration.

Ely RMP (2008) VEG-18: Manage native range to meet the requirements of wildlife species. Management will focus on maintaining or establishing diversity, mosaics, and connectivity of sagebrush between geographic areas at the mid and fine scales.

Ely GRSG RMP Amendment (2015) Greater Sage-grouse Sagebrush-steppe MD VEG 3: Use BLM greater sage-grouse habitat maps, habitat objectives (See Table 2–2, Appendix E for greater sage-grouse habitat objectives), ecological site potential, state and transition models, and concepts of resistance and resilience to prioritize habitat restoration projects, including those following wildfire, to address the most limiting greater sage-grouse habitat vegetation components and connect seasonal ranges. Habitat restoration includes the following:

- Restoring sagebrush canopy in PHMAs and GHMAs to meet greater sage-grouse habitat objectives (Table 2–2, Appendix E)
- Reestablishing perennial grasses and native forbs in PHMAs and GHMAs
• Reducing or removing pinyon or juniper in PHMAs and GMHAs to enhance seasonal range connectivity and to maintain sagebrush canopy and understory integrity

• Restore areas affected by wildfire and the continuing invasive annual fire cycle to meet greater sage-grouse habitat objectives (Table 2–2, Appendix E)

• Prioritize restoration in areas that have not crossed ecological threshold

Ely GRSG RMP Amendment (2015) Greater Sage-grouse Conifer encroachment MD VEG 13: Remove conifers encroaching into sagebrush habitats, in a manner that considers tribal cultural values. Prioritize treatments closest to occupied greater sage-grouse habitats and near occupied leks and where juniper encroachment is phase 1 and phase 2. Use of site-specific analysis and tools like Vegetation Dynamics Development Tool (VDDT) and Fire and Invasive Assessment Tool (FIAT) will help refine the location for specific areas to be treated.

Visual Resources

Goals


Objectives

Ely RMP (2008): To implement multiple use activities within the planning area with mitigation measures consistent with the visual resource management classes.

Management Action


Fire Management

Goals

Ely RMP (2008): Provide an appropriate management response to all wildland fires, with emphasis on firefighter and public safety, consistent with overall management objectives. Return fire to its natural role in the ecological system and implement fuels treatments, where applicable, to aid in returning fire to the ecological system. Establish a community education program that includes fuels reduction with the wildland urban interface to create fire-safe communities.
Objectives

Ely RMP (2008): To manage wildland and prescribed fires as one of the tools in the treatment of vegetation communities and watersheds to achieve the desired range of condition for vegetation, watersheds, and other resource programs (e.g., livestock, wild horses, soils, etc.).

Management Action

Ely RMP (2008) FM-4: Incorporate and utilize Fire Regime Condition Class as a major component in fire and fuels management activities. Use Fire Regime Condition Class ratings in conjunction with vegetation objectives (see the discussion on Vegetation Resources) and other resource objectives to determine appropriate response to wildland fires and to help determine where to utilize prescribed fire, wildland fire use, or other non-fire (e.g., mechanical) fuels treatments.

Ely RMP (2008) FM-5: In addition to fire, implement mechanical, biological, and chemical treatments along with other tools and techniques to achieve vegetation, fuels, and other resource objectives.

The action would also assist with meeting the Standards and Guidelines for Nevada's Northeastern Great Basin, which states in part (page 13), "Create and maintain a diversity of sagebrush age and cover classes on the landscape through the use of prescribed fire, prescribed natural fire, mechanical, biological and/or chemical means to provide a variety of habitats and productivity conditions" and "Where pinyon pine and/or juniper trees have encroached into sagebrush communities, use best management practices to remove trees and re-establish understory species".

1.5 Relationship to Statutes, Regulations or other Plans

The proposal is also consistent with other Federal, State and local plans or decisions including, but not limited to, the following:

- Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds (2001)

The Proposed Action is consistent with the following local plans:

- White Pine County Public Lands Policy Plan (2007)
- White Pine County Elk Management Plan (2007 revision)

Archaeological

- State Protocol Agreement between the Bureau of Land Management (BLM), Nevada and the Nevada State Historic Preservation Office (2014)
- Section 106 and Section 110 of the National Historic Preservation Act (1966)

Pony Express Trail

- National Trails System Act (1968)

The Proposed Action would facilitate the following National goals:


1.6 Tiering

This EA is tiered to the analysis and effects disclosed in:

1.7 Scoping, Public Involvement and Issues

The Egan and Johnson Basins Restoration Project was scoped internally by the BLM Egan Field Office (now known as The Bristlecone Field Office) Interdisciplinary Team on January 14, 2013. A coordination letter was sent to the Nevada Department of Wildlife (NDOW) on January 25, 2013 to initiate greater sage-grouse and other wildlife consultation and coordination. NDOW and BLM met several other times to coordinate and designate possible treatment areas and methods that would be beneficial to wildlife.

A scoping letter was sent to interested publics on February 5, 2013 for a scoping period ending March 1, 2013. One letter of support was received from the Nevada Wilderness Project on February 21, 2013. The project was presented and discussed at the White Pine County Public Lands User Advisory Council (PLUAC) meeting on February 12, 2013. The PLUAC suggested that the wood be made available to the public for fuelwood. A letter was received from the Duckwater Shoshone Tribe on February 15, 2013 in which the Duckwater Shoshone Tribe requested a site visit. The site visit was conducted on April 11, 2013.

The project was posted on the National NEPA Registrar (https://www.blm.gov/epl-front-office/eplanning/nepa/nepa_register.do) on February 14, 2013.

The proposed project was briefly delayed, but the BLM continued planning efforts in November 2015. In 2015 the project lead, BLM wildlife biologist and NDOW re-visited the project proposal and additional treatment areas were recommended due to the location of greater sage-grouse habitat. On November 11, 2015, Ely District BLM sent individual tribes a letter inviting them to participate in formal Government to Government consultation. An additional scoping letter was sent to interested public on February 17, 2016 with project updates due to the addition of 22,000 proposed project acres. The letter provided a 15-day scoping period, and included updates to the project proposal and included a project map. Identification of issues for this EA
was accomplished through consideration of internal and external scoping comments and the resources which could potentially be affected by the Proposed Action and alternatives.

Key issues or potential impacts identified during the scoping process included the following resources:

- Cultural and Historic Resource Values;
- Wildlife;
- Forest Resources;
- Rangeland Resources;
- Livestock Grazing;
- Special Status Species;
- Soil;
- Vegetation;
- Lands with Wilderness Characteristics; and
- Riparian Zones
Chapter 2  Proposed Action and Alternatives

2.0 Introduction

This chapter describes the Proposed Action, the No Action Alternative, and Alternatives Considered but Eliminated from Detailed Analysis. Alternatives were considered if presented during scoping if they met the purpose and need for the project. The No Action Alternative is considered current management, and is presented as comparison of impacts from the Proposed Action.

2.1 Adaptive Management

Adaptive management is proposed for this project due to the extended proposed project timeline and need for flexibility in treatments. Adaptive management as described by the National Research Council and adopted by the Department of Interior is a decision making process that supports flexibility in decision making and allows for adjustments due to uncertainties of outcomes. Adaptive management allows the use of primary or other appropriate treatment methods to achieve objectives for each treatment unit. Adaptive management recognizes the importance of natural variability in contributing to ecological resilience and productivity.

Treatment methods available for consideration include those listed in Section 2.2. Treatments would be altered or adjusted if not meeting or making progress towards objectives described in the following Section 2.2 and Table 2–2 Habitat Objectives for Greater Sage-grouse, described in Appendix E of this document.

2.2 Description of the Proposed Action

The Proposed Action project boundary is approximately 84,675 acres and encompasses the 21 treatment units identified within that boundary. The 21 treatment units are approximately 37,455 acres of public lands administered by the BLM and 1,045 acres of private lands in the Egan and Johnson Basins. Treatment of private land would only occur if a cooperative agreement is executed with the private land owners. Up to 65% of the treatment unit acres may be treated within the identified units. A combination of vegetation treatment methods would be used to achieve resource objectives. The proposed treatment methods would include: tree thinning (mechanical and manual methods), prescribed fire, seeding, and invasive species control. Areas targeted for treatment are sagebrush communities where pinyon-juniper trees have become established. Within that project boundary and between treatment units, hand thinning of Phase I
Treatment Methods

The tree removal treatment methods being considered for this project include hand thinning, chaining, mastication, whole tree thinning, mulching/chipping, prescribed fire and fuelwood harvest. Additionally, select areas of the project would be seeded and treated for noxious and invasive weeds. All trees would be cut within 200 feet of identified springs and associated riparian areas. Treatments may require maintenance in the future in order to maintain achieved or desired vegetation conditions. Any maintenance treatments would be held to the same design features as initial treatment design. Following treatments, fuelwood may be available for harvest.

Tree thinning would consist of removing pinyon-juniper trees from the sagebrush and woodland sites. Methods for thinning trees would consist of both hand felling (e.g., chainsaw) and mechanical methods (e.g., chainsaw, mastication, feller buncher). The mechanical methods would occur in the areas that exhibit higher tree density (e.g., Phase II and III areas). A large portion of the trees would be thinned from the project area. Single trees, small patches, larger islands and stringers of trees would be left so that the treatment appears as a natural as possible and to provide for wildlife habitat. In order to reduce the visual impact on the landscape, the mechanical treatment edges would follow natural contours to avoid straight lines and to better mimic natural patterns across the landscape. Mechanical tree thinning would consist of selective and group tree thinning as well as creating larger clearings and openings through mastication or chaining. Both methods would require the use of heavy equipment such as a masticator, bull hog, feller-buncher, or similar piece of equipment that would selectively remove and shred the trees, or using an Ely chain (ship anchor chain with railroad iron welded perpendicular to the links) pulled by two bulldozers to thin/remove trees. Biomass resulting from the thinning of the pinyon-juniper would be available to the public for fuelwood and the remaining slash may be left onsite or piled and burned to remove excess fuel from the sites.

Chaining

Chaining would be the primary treatment method in areas identified as Phase II and Phase III woodland succession (Miller et al., 2008) and areas of higher pinyon-juniper densities. The chaining would consist of two bull dozers pulling a large ship anchor chain between them to remove larger areas of trees. The chain would be pulled in one direction and would then be pulled in the opposite direction to increase tree mortality. Chaining would be conducted in such a way to create irregular edges that blend the treatment areas into the landscape and replicate natural disturbance patterns. Island and stringers would be left to provide cover for wildlife. Timing of the chaining would follow design feature restrictions. Chaining would avoid areas of high density and established stands of mahogany.
Mastication

The mastication method would consist of grinding trees to mulch using a cutting head attached to a piece of machinery. Mastication would thin/remove trees while still maintaining a natural mosaic appearance. Studies show that mastication is most effective when desirable perennials are still present and abundant enough to out-compete invasive annuals for released nutrients (Young et al., 2014). Mastication is designed to be implemented in areas where perennials and desired vegetation would likely be more abundant or areas of Phase II and Phase III woodland succession that require more selective thinning. Seeding areas prior to or immediately after mastication would also be considered. Mastication would be used in conjunction with other methods like hand felling, seeding, prescribed fire, chaining, and feller buncher. Biomass from the mastication process would be left on-site to degrade naturally and the resulting wood chips would be spread out no more than 5 inches thick across the area.

Mechanical Whole Tree Thinning

Whole tree thinning would use a piece of machinery with an attachment that cuts the trees at the base, like a feller buncher. Trees thinned with this method would be either left on-site or removed from the site. Biomass utilization would occur in areas that are easily accessible by vehicles for fuelwood harvest. Similar to mastication, this method would be used in areas of Phase II and Phase III woodland succession that require more selective thinning treatments. Whole tree thinning would be used in conjunction with other methods like mastication, seeding, hand felling, prescribed fire and chaining. This method would be primarily used where access is conducive to biomass utilization.

Hand Felling and Piling

Hand felling would consist of cutting trees using chainsaws to selectively thin the treatment area. Hand felling would occur in the areas that exhibit lower tree density, Phase I or Phase II woodland succession, around spring sources and other sensitive areas or in areas where slope prevents access by heavy machinery. Hand felling would be used in areas where trees are establishing into sagebrush habitat. Larger pieces of biomass would be made available to the public for removal as biomass (fuelwood). Leftover slash may be lopped and scattered, chipped, removed from the site, or piled and burned. A prescribed fire burn plan would be completed and approved separately for burning piles associated with this project. Hand felling would be used in conduction with all other methods and may be used before and after other methods. In high density areas (e.g., Phase II areas) thinned trees would be piled and later burned, scattered within the treatment unit or be made available for biomass as fuelwood and removed from the site. In areas of low tree density (e.g., Phase I), the cut material would be limbed and scattered or left next to the stump. Cut trees would be limbed to a height that allows greater sage-grouse movement through the area.
**Prescribed Fire**

Broadcast prescribed fire is a technique used to burn vegetation in place. Isolated north and east facing drainages and slopes identified within several project units may be treated by prescribed fire to create natural mosaic opening where there is continuous tree cover. These areas mainly consist of pinyon-juniper woodlands and sagebrush sites dominated by single leaf pinyon pine and/or Utah juniper trees. Prescribed fire operations would target approximately 3,557 acres of public land. An estimated 50% to 70% of the total prescribed fire allowable burn area would be targeted for burning operations. Ignition would be strategically timed to best reduce fuel hazards to acceptable levels and benefit ecological system health. A combination of ground and/or aerial ignition resources would be used to implement the prescribed burn. Ground firing resources would include drip torches and terra torch where applicable. Clean up and control would also be conducted with the use of drip torches and/or terra torch. Aerial application would be through the use of a helicopter equipped with a Plastic Sphere Dispenser (PSD) machine or helitorch. Safety, property, current and expected weather, topography (ingress/egress), and holding capabilities would determine the proper fire application. Control lines for prescribed fire would utilize natural barriers as much possible. In the event natural barriers cannot be utilized, tree and shrubs would be cut and removed along prescribed fire boundaries. Vegetation removed along the control line would be piled inside the prescribed fire boundary and burned during firing operations. In some cases control lines would include scraping, blading, and/or digging to expose mineral soil. Prescribed burning would be conducted during times of year that would prevent hydrophobic soil formation to the greatest extent possible. An approved burn plan would be prepared prior to any ignition operations. The extent of the prescribed fire would be determined by management decisions according to burn plans. Plans would be designed and approved by qualified resource specialists on a project-by-project basis. Prior to implementing any broadcast prescribed burn in the project area, BLM would coordinate with NDOW so they could conduct a site visit during the appropriate time of year. No prescribed broadcast burning is proposed in areas where there is a high potential for cheatgrass, areas below 5,500 feet on north and east facing slopes or below 6,000 feet on west and south facing slopes.

Pile burning is a technique used to remove slash created from hand felling or other whole tree thinning. Piles would be burned when the ground is frozen and there is sufficient snow on the ground to prevent burning surrounding vegetation. Pile burning would require an approved prescribed fire burn plan before being implemented at the project site. Piles would either be created by hand piling slash in area of hand felling or by mechanized equipment dragging slash to piles in areas of whole tree thinning. Number and height of piles would depend on density and size of trees being removed in area.
Seeding

Seeding would primarily occur in late Phase II and Phase III pinyon-juniper expansion areas and would be applied in treated areas that do not have an appropriate amount of grasses, forbs and shrubs present prior to or post treatment. This would mostly occur in areas where very dense tree cover has prevented adequate understory vegetation to grow or in areas where herbicide is applied to cheatgrass. Native seed would be the priority however, non-native seed would be used depending on availability of native seed and site characteristics. Seed could be applied by a number of methods or a combination of the following methods: hand broadcast seeding, aerial seeding, drill seeding or broadcast seeding with all-terrain vehicles (ATVs). Hand broadcast seeding would consist of people walking through the treatment area with portable seed spreaders. Aerial seeding would be completed with a helicopter using a large aerial broadcast seeder. Drill seeding would be completed by a tractor pulling a rangeland drill to apply and bury the seed directly into the soil. ATV seeding would consist of driving ATVs through the treatment area with broadcast seeders mounted to the ATV. In areas that would be chained or in some mastication areas, the seed would be aerially applied after the first pass of the chaining to help incorporate the seed into the soil. Seed dribblers may also be used on the bulldozers to press smaller seed onto the soil. Sagebrush and antelope bitterbrush seedlings may also be planted manually by hand.

Invasive Species and Weed Control

Management of weeds would include best management practices for early detection and to prevent spread; and treatments to control current populations and any new weed populations discovered during the life of the project. Treatments could include biological controls, targeted grazing, mechanical controls and herbicide. For biological controls only the release of U.S. Department of Agriculture (USDA) - Animal and Plant Health Inspection Service approved insects or pathogens would be used and would be accompanied by a BLM Biological Control Agent Release Proposal. Targeted grazing would only be used to suppress large patches of cheatgrass that are hindering successful recovery of desired plant species. Sheep, cattle, or goats may be used as long as the animals are intensely managed and removed when the targeted species is reduced to a height of two to three inches. Timing restrictions would apply when using targeted grazing to reduce impacts to desired plant species.

Treatments for weed control may include hand pulling, mowing, cutting using hand or chainsaw, and prescribed fire. Chemical treatments could be used to target cheatgrass or newly discovered noxious and invasive weeds within the vegetative treatments areas. Any herbicide treatments would require a Pesticide Application Record (PAR) submitted to the BLM Nevada State Office following implementation. Herbicide treatments for weeds would include the potential use of all BLM approved herbicides and surfactants, in the BLM Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (EIS) and Record of Decision (BLM 2007), the Vegetation Treatments Using
Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States Programmatic EIS and Record of Decision (BLM 2016), and any herbicides approved in the future using the protocol for identifying, evaluating, and using new herbicides as described in that EIS. Depending on chemical, size of the area and acceptable amount of drift, applications of treatments could include backpack application, pack animal tank application, ATV/UTV tank application, truck or tractor tank application, and aerial application. All activities would follow the Standard Operating Procedures outlined in the Weeds Risk Assessment (Appendix B). Riparian resources along the border of the proposed treatment area would be buffered to avoid introduction of herbicide into water sources. Herbicide would be used according to label instructions. In addition, all Standard Operating Procedures (SOPs) listed in the BLM Programmatic EIS for Vegetation Treatments Using Herbicide (BLM 2007) and the Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States Programmatic EIS and Record of Decision (BLM 2016) would be followed.

**Treatment Unit Descriptions**

Specific units within the project area have been identified as areas targeted for treatment. The type of treatment within each unit varies depending on the successional phase of the existing vegetation and the desired range of conditions. Table 2.1 describes specific treatments for the project units. Primary vegetation communities is based on Biophysical Settings (BpS) from LANDFIRE (NIFTT 2009). All units described below would potentially be seeded and treated for non-native invasive species. Biomass in treated areas would be available for public purchase for fuelwood or other forestry products if such use would meet vegetation objectives. Treatment types selected for each unit are dependent on ecological state and succession. Woodland expansion into sagebrush sites in the project area is characterized using the model described by Miller et al., 2008. Phase I is an early stage with pinyon pine and juniper trees in an early establishment stage with shrubs still being a dominant component. Phase II is mid-succession with shrubs and trees co-dominating the landscape. Phase III is a late succession stage with trees dominating the landscape and shrubs are reduced or non-existent. Phase III generally lacks a healthy understory of shrubs, forbs and grasses. Photos 1 and 2 show examples of these characteristics from the Egan and Johnson Basins proposed project area.
Photo 1: Example of Phase I pinyon-juniper early successional stage, Unit 9.

Photo 2: Example of Phase III pinyon-juniper late successional stage, Unit 10. This plot has 32% pinyon-juniper cover and 509 trees/acre.
<table>
<thead>
<tr>
<th>Unit Name, Number and Acres</th>
<th>BLM Acres</th>
<th>Private Acres</th>
<th>Primary Vegetation Communities</th>
<th>Specific Treatment Area Objectives/Comments*</th>
<th>Preferred Treatment Methods**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Treatment Areas</td>
<td>37,455</td>
<td>1,045</td>
<td></td>
<td></td>
<td>Double chaining with Ely chain and/or mastication and seeding of shrubs, forbs and grasses within Phase II and III. Treat ~1990 acres of difficult to access North facing slopes with prescribed fire if Phase II. Hand cutting in Phase I areas and along edges of chaining.</td>
</tr>
<tr>
<td>Unit 1 3,068</td>
<td></td>
<td></td>
<td>Black Sagebrush</td>
<td>Create mosaic openings, reduce fuel loading and enhance shrub, forb and grass composition within Phase II and III areas. Reduce tree cover in Phase I areas and along boundary with other treatments.</td>
<td>Double chaining with Ely chain and/or mastication and seeding of shrubs, forbs and grasses within Phase II and III. Hand cutting in Phase I areas and along edges of chaining. Treat ~727 acres of difficult to access North facing slopes with prescribed fire if Phase II.</td>
</tr>
<tr>
<td>Unit 2 2,166</td>
<td></td>
<td></td>
<td>Wyoming Big Sagebrush</td>
<td>Create mosaic openings, reduce fuel loading and enhance shrub, forb and grass composition within Phase II and III areas. Reduce tree cover in Phase I areas and along boundary with other treatments.</td>
<td>Double chaining with Ely chain and/or mastication and seeding of shrubs, forbs and grasses within Phase II and III. Hand cutting in Phase I areas and along edges of chaining. Treat ~840 acres of difficult to access north facing slopes with prescribed fire if Phase II.</td>
</tr>
<tr>
<td>Unit 3 2,413</td>
<td></td>
<td></td>
<td>Wyoming Big Sagebrush</td>
<td>Create mosaic openings, reduce fuel loading and enhance shrub, forb and grass composition within Phase II and III areas. Reduce tree cover in Phase I areas and along boundary with other treatments.</td>
<td>Double chaining with Ely chain and/or mastication and seeding of shrubs, forbs and grasses within Phase II and III. Hand cutting in Phase I areas and along edges of chaining. Treat ~840 acres of difficult to access north facing slopes with prescribed fire if Phase II.</td>
</tr>
<tr>
<td>Unit 4 1,108</td>
<td></td>
<td></td>
<td>Black Sagebrush</td>
<td>Increase shrub, forb and grass composition. Reduce tree cover and create mosaic openings.</td>
<td>Masticate and/or mechanical treatment in Phase II areas. Hand thin in Phase I and along edges of treatment area.</td>
</tr>
<tr>
<td>Unit Name, Number and Acres</td>
<td>BLM Acres</td>
<td>Private Acres</td>
<td>Primary Vegetation Communities</td>
<td>Specific Treatment Area Objectives/Comments*</td>
<td>Preferred Treatment Methods**</td>
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</tr>
<tr>
<td>Unit 5 3,110</td>
<td>Black Sagebrush, Wyoming Big Sagebrush, Mtn Sagebrush, Pinyon/Juniper</td>
<td>Create mosaic openings in pinyon-juniper. Remove trees from open sites and sagebrush dominated areas.</td>
<td>Masticate/mechanical and hand thin lower elevation areas of Phase I and II pinyon-juniper. Ely double chain Phase II and III areas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 6 1,531</td>
<td>Wyoming Big Sagebrush, Mtn Sagebrush, Pinyon/Juniper</td>
<td>Create mosaic in upper elevation sites and create habitat corridor for Greater sage-grouse. Steepness of terrain within Telegraph Canyon may limit treatment options.</td>
<td>Hand thin- lop/scatter.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 7 958</td>
<td>Mtn Sagebrush, Wyoming Big Sagebrush, Black Sagebrush, Pinyon/Juniper</td>
<td>Create mosaic openings in pinyon-juniper. Remove trees from open sites and sagebrush dominated areas.</td>
<td>Masticate and/or mechanical removal and hand thin in Phase I and Phase II areas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 8 1,184</td>
<td>Black Sagebrush, Mtn Sagebrush, Wyoming Big Sagebrush, Pinyon/Juniper</td>
<td>Create mosaic openings in pinyon-Juniper sites. Clear trees from open sites in drainage bottoms and open slopes.</td>
<td>Hand thin and masticate/mechanical in Phase I and Phase II areas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 9 1572</td>
<td>Black Sagebrush, Mtn Sagebrush, Wyoming Big Sagebrush, Pinyon/Juniper</td>
<td>Remove establishing pinyon-juniper from open sites and sagebrush dominated areas. Increase shrub, forb and grass competition by removing trees.</td>
<td>Hand thin in less dense and open areas. Masticate and/or remove biomass by mechanical means in Phase II and area with denser pinyon-juniper.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 10 2,801</td>
<td>Black Sagebrush, Mtn Sagebrush, Wyoming Big Sagebrush</td>
<td>Remove establishing pinyon-juniper from open sites and sagebrush dominated areas. Increase shrub, forb and grass competition by removing trees from Phase I and Phase II areas. Create mosaics openings in Phase 3 areas.</td>
<td>Changing Phase II and Phase III areas and upper slopes of boundary. Hand thin and mechanical thin lower areas and Phase I and II areas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Name, Number and Acres</td>
<td>BLM Acres</td>
<td>Private Acres</td>
<td>Primary Vegetation Communities</td>
<td>Specific Treatment Area Objectives/Comments*</td>
<td>Preferred Treatment Methods**</td>
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<tr>
<td>Unit 11 12,458 ---</td>
<td></td>
<td></td>
<td>Black Sagebrush</td>
<td>Create openings for SG migration corridors in</td>
<td>Hand Thin or mechanical thin southern and lower elevation areas. Lop and</td>
</tr>
<tr>
<td></td>
<td>12,458</td>
<td></td>
<td>Wyoming Big Sagebrush</td>
<td>deeper drainages from Telegraph and north end</td>
<td>scatter and/or remove biomass from drainages to create open corridors.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mtn Sagebrush</td>
<td>of unit. Remove pinyon-juniper from lower</td>
<td>Masticate Phase I and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pinyon/Juniper</td>
<td>elevations and increase shrub, forb and grass</td>
<td>Phase II areas at mid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>White Fir</td>
<td>competition by removing pinyon-juniper from</td>
<td>elevation to create</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Phase I and Phase II areas.</td>
<td>openings.</td>
</tr>
<tr>
<td>Unit 12 1,618 ---</td>
<td></td>
<td></td>
<td>Mtn Sagebrush</td>
<td>Increase shrub, forb and grass composition in</td>
<td>Chain and/or masticate</td>
</tr>
<tr>
<td></td>
<td>1,618</td>
<td></td>
<td>Wyoming Big Sagebrush</td>
<td>all Phase areas. Reduce tree cover in Phase I</td>
<td>higher elevation areas.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mtn Sagebrush</td>
<td>areas and along unit boundaries. Leave</td>
<td>Hand thin or mechanical</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pinyon/Juniper</td>
<td>stringers and islands of pinyon-juniper.</td>
<td>thin lower areas of the</td>
</tr>
<tr>
<td>Unit 13 255 ---</td>
<td></td>
<td></td>
<td>Wyoming Big Sagebrush</td>
<td>Remove younger age class pinyon-juniper,</td>
<td>Hand thin trees within the</td>
</tr>
<tr>
<td></td>
<td>255</td>
<td></td>
<td>Mtn Sagebrush</td>
<td>leaving only larger mature trees.</td>
<td>unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mtn Sagebrush</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Pinyon/Juniper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 14 278 ---</td>
<td></td>
<td></td>
<td>Black Sagebrush</td>
<td>Remove younger age class pinyon-juniper trees,</td>
<td>Hand thin pinyon-juniper</td>
</tr>
<tr>
<td></td>
<td>278</td>
<td></td>
<td>Mtn Sagebrush</td>
<td>leaving only larger mature trees.</td>
<td>within the unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mtn Mahogany</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Pinyon/Juniper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 15 353 ---</td>
<td></td>
<td></td>
<td>Black Sagebrush</td>
<td>Remove pinyon-juniper from Phase I and II</td>
<td>Hand Thinning in Phase I,</td>
</tr>
<tr>
<td></td>
<td>353</td>
<td></td>
<td>Wyoming Big Sagebrush</td>
<td>areas and establishment in sagebrush</td>
<td>possible mastication and/or</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>dominated areas in northern part of unit.</td>
<td>mechanical removal in Phase II areas.</td>
</tr>
<tr>
<td>Unit 16 1,195 ---</td>
<td></td>
<td></td>
<td>Black Sagebrush</td>
<td>Remove younger age class pinyon-juniper,</td>
<td>Hand thin and mechanical</td>
</tr>
<tr>
<td></td>
<td>1,195</td>
<td></td>
<td>Mtn Sagebrush</td>
<td>leaving older mature trees.</td>
<td>removal in Phase I and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mtn Mahogany</td>
<td></td>
<td>Phase II areas.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pinyon/Juniper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 17 --- 959</td>
<td></td>
<td>959</td>
<td>Mtn Sagebrush</td>
<td>Reduce pinyon-juniper tree cover and open</td>
<td>Lop/Scatter, hand thinning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wyoming Big Sagebrush</td>
<td>drainages, creating corridors for wildlife</td>
<td>with chain saws.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mtn Sagebrush</td>
<td>movement.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pinyon/Juniper</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Unit Name, Number and Acres

<table>
<thead>
<tr>
<th>Unit Name, Number and Acres</th>
<th>BLM Acres</th>
<th>Private Acres</th>
<th>Primary Vegetation Communities</th>
<th>Specific Treatment Area Objectives/Comments*</th>
<th>Preferred Treatment Methods**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 18, 19</td>
<td>---</td>
<td>86</td>
<td>Black Sagebrush Mtn Sagebrush Wyoming Big Sagebrush</td>
<td>Create mosaic openings in pinyon-juniper. Remove trees from open sites and sagebrush dominated areas.</td>
<td>Masticate and hand thin lower elevation areas of Phase I and II pinyon-juniper.</td>
</tr>
<tr>
<td></td>
<td>252</td>
<td>---</td>
<td>Mtn Sagebrush Wyoming Big Sagebrush Pinyon/Juniper</td>
<td>Reduce tree cover in Phase I areas. Improve sage-grouse habitat and create wider corridor to allow for sage grouse movement between quality habitats.</td>
<td>Lop/Scatter. Steep terrain could limit ability to treat certain areas within this polygon as well as type of equipment used.</td>
</tr>
</tbody>
</table>

* All areas would potentially be seeded and treated for non-native species. Biomass in treated areas would be available for public purchase for fuelwood. All units would be maintained with treatments identified in the Proposed Action dependent on need and funds available. In some areas biomass would be piled and burned.

** All treatment methods would be available in all units and is not limited to preferred treatment methods described above.

### 2.3 Design Features (General Measures)

#### Cultural Resources

Prior to implementation, a Cultural Needs Assessment would be completed for each proposed habitat restoration unit, with a detailed description of the specific location and proposed activities. A cultural resource specialist would determine the appropriate inventory and actions needed to protect cultural properties and areas of traditional religious or cultural importance in accordance with the most recent Nevada State Protocol Agreement between BLM and the Nevada State Historic Preservation Office, and Nevada BLM’s most recent Cultural Resources Inventory General Guidelines. For areas that include the Pony Express Trail Corridor, consultation would also include the BLM National Historic Trails (NHT) Lead for Nevada, and the NPS National Trails Intermountain Region.
Depending on level of surface disturbance, some treatment areas would be inventoried prior to treatment. Avoidance and buffer areas (or non-treated areas) would be irregularly shaped and blended with the landscape. Within the two mile wide Pony Express (PX) Trail corridor, and viewshed of the corridor, tree-thinning activities would be designed and monitored in consultation with a qualified cultural resource specialist to create a natural mosaic. To protect the visual integrity of the trail system and preserve the existing character of the landscape (i.e., VRM Class II), treatments within the PX Trail Corridor and viewshed would leave vegetation mosaics, including remnant areas of old growth woodland where they still exist. Treatments along the PX Corridor would be integrated into surrounding treatments and the natural environment, and restored to a condition similar to the historic environment of the PX Trail in 1860-1861. Treatments would follow the BLM National Scenic and Historic Trails Instruction Memorandum (IM NV-2004–006) and through protocols from the National Trails Management Plan.

Mineral Claims

A survey for mining claim markers in documented active claim sites would be conducted prior to implementing treatments that could potentially damage claim markers. All active mining claim marker locations and tag information would be recorded. Active mining claim markers or stakes would be avoided to the extent practical. Active mining claim markers that are destroyed by prescribed burning, thinning, or chaining operations would be re-staked using a legal mining claim marker. The re-staking of mining claim markers would occur in coordination with the existing mining claimants to ensure accurate, legal staking procedures that would minimize damage to claims. If any mining sites or dumps are discovered within the project area, operations would avoid these sites in order to minimize risk from potentially hazardous materials or mine features. Sites would also be reported to the Ely District Hazardous Materials Coordinator.

Overland Travel

No new roads would be constructed or maintained during project implementation. Overland travel with heavy equipment and vehicles would occur during implementation. Loading and unloading any equipment would occur on existing roads, when available, to minimize overland disturbance and impacts. If determined necessary, signs would be posted along roads within or adjacent to treatment units in regards to travel restrictions to assist in mitigating impacts from future cross country travel. Temporary roads or overland travel may be allowed for harvesting fuelwood by the public as part of implementation. Any temporary roads or discernable cross country travel routes would be rehabilitated by scattering vegetation or slash over the road and seeding after they are no longer needed.

Grazing Management

Coordination with the affected livestock permittees within the allotments being treated would be conducted prior to treatment occurring. Any livestock grazing closure for the purpose of the vegetation treatment would be done through a grazing decision or agreement process and would
occur prior to the treatment. Livestock grazing would not be authorized within the treatment areas during implementation. Livestock grazing would resume immediately within treatment areas that exhibit at least 10 percent foliar cover of well-established key forage species. Seeded areas would be closed to livestock grazing for at least two growing seasons, and may be closed longer, until the following vegetation objectives have been met.

A minimum of three plants that are forage species per square meter would be firmly rooted in the treated area. Key forage species are those plants that are perennial, native or introduced and have the ability to maintain ecosystem processes and provide forage for livestock and wildlife.

Monitoring

Progress towards meeting vegetation objectives would be measured from selected monitoring sites using the standard Assessment, Inventory, and Monitoring (AIM) protocols. AIM is a standard set of methods for monitoring project design and data collection. Supplemental methods would be added in order to monitor the Habitat Assessment Framework (HAF) indicators required for activities in greater sage-grouse habitat and to capture tree density data. Monitoring sites would be established prior to project implementation. Additional sites may be established following treatment completion. The project area would be inspected prior to the mechanical treatments to solidify those areas targeted for each specific treatment in order to achieve desired management objectives. The treatment areas would be monitored following project implementation to determine success toward meeting objectives. All monitoring methods would follow objectives consistent with those in the ARMPA for site scale habitat objectives outlined in Table 2–2 (Appendix E). The treatment areas would be inventoried for weeds and monitored to ensure noxious weed infestations are controlled. Noxious weed infestations would be reported to the Ely District Office Weed Coordinator in order to be evaluated and to determine treatment needed.

When an area is closed to livestock grazing, an interdisciplinary team would conduct a review of the resource monitoring data and objectives to recommend when livestock grazing should be allowed to occur within the project area. If environmental factors prevent attainment of resource management objectives following the mandatory rest period, an interdisciplinary team would review resource monitoring data and recommend an appropriate grazing regime with the permittee. Monitoring locations would be measured the second year, and as needed thereafter during the livestock grazing closure period. The livestock closure period may be extended until vegetation objectives have been met, after which livestock grazing would resume as permitted.

Cadastral Markers

In accordance with IM-NV-2007-003, surveys would be conducted for cadastral monuments and markers prior to any surface disturbing activities and, if they are disturbed, they would be restored after treatment where possible.
**Non-Native and Invasive Species**

Stipulations identified in the Weed Risk Assessment (Appendix B), and the Ely District Integrated Weed Management Plan and Environmental Assessment (DOI-BLM-NV-L000-2009-0010-EA) would be carried out at the time of implementation within each treatment unit. Subsequent treatments or changes in treatment methods would require an additional weed risk assessment and those stipulations would also be implemented.

**Greater sage-grouse**

In accordance with Ely District RMP, as amended by the ARMPA, September 2015; Required Design Features (RDF) that apply to the project scope would be included or recommended in project implementation.

RDFs establish the minimum specifications for certain activities to help mitigate adverse impacts. Not all RDF’s listed in the ARMPA apply to the proposed project. Greater sage-grouse seasonal habitat data for the proposed project area was requested through Nevada Department of Wildlife (NDOW) and would be applied to proposed project design during implementation. Seasonal greater sage-grouse use restrictions are described in Table 2.2 below. Seasonal restrictions are from current guidelines identified in the ARMPA and are to be applied during specified periods. This proposed project is a habitat improvement project designed to increase and improve greater sage-grouse habitat within Egan and Johnson Basins. Seasonal restrictions would be requested to be modified to allow treatment activities to occur during periods of late brood-rearing (between August 1 and September 15) and winter seasonal habitat dates (between November 1 and December 31).

**Table 2.2. Greater Sage-grouse Habitat Type and Seasonal Use**

<table>
<thead>
<tr>
<th>Seasonal Habitat Type</th>
<th>Seasonal Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lek</td>
<td>March 1- May 15</td>
</tr>
<tr>
<td>Nesting and Brood Rearing</td>
<td>May 15- September 15</td>
</tr>
<tr>
<td>Winter</td>
<td>November 1- February 29</td>
</tr>
</tbody>
</table>

**Migratory Birds**

In general, treatments other than prescribed fire would be completed in the summer, fall and winter, outside migratory bird and raptor nesting season (generally April 1 to July 31). If areas are to be treated during nesting season, areas would be surveyed for nest locations and nest sites will be avoided with an appropriate buffer. Active raptor nests would be avoided with the appropriate buffer during treatment. Through coordination with NDOW inactive, older raptor nests would be identified and potentially left for future raptor use. If a raptor nest site is within
greater sage-grouse habitat, the tree housing the nest may be removed, after consultation with NDOE.

*Pygmy Rabbit*

Ground disturbing activities and prescribed fire would occur outside of the pygmy rabbit breeding season, January 15 through June 30, in areas that are deemed as pygmy rabbit habitat by the corresponding land management agency biologist. Pre-treatment surveys would be conducted by a qualified biologist in potential pygmy rabbit habitat to determine presence and location of any pygmy rabbit burrows or colonies. The colonies would be flagged and avoided.

### 2.4 Description of Alternatives Analyzed in Detail

**No Action Alternative**

The No Action Alternative is the current management situation. Under the No Action Alternative no treatments to change the current vegetation would be conducted in the Egan or Johnson Basin project area and the current vegetation communities would remain in a departed state of condition class and would not be within a historic range of variability.

### 2.5 Alternatives Considered but Eliminated from Detailed Analysis

**Native Seed Only Alternative**

Under this Native Seed Only Alternative all action would remain the same except only native seed would be used in treatment seed mixes. The alternative was dropped from further analysis due to the potential lack of available native seed and the costs associated with only native seed mixes. The Proposed Action refers to a preference for native seed but allows for non-native when it would meet objectives.
Chapter 3  Affected Environment and Environmental Effects

3.1  Introduction

The proposed project area occurs within White Pine County, and is located approximately 5 miles west and southwest of Cherry Creek, Nevada and approximately 50 miles northwest of Ely, Nevada. The area is described as including Egan Basin, Johnson Springs Basin, Cherry Creek Range and North Egan Range. More specific topographic features in the area are Flint Canyon, Carson Canyon, Ninemile Summit and Basin, Clonch Canyon, Black Canyon, Egan Canyon, Telegraph Canyon, Cocomongo Mountain and sections of Butte Valley. The proposed project area is located within the Butte, Egan Basin and Steptoe B Watersheds. The proposed project area is mostly located on the mid to upper benches with some locations in the open sagebrush flats where pinyon-juniper establishment is early, Phase I. Elevations of the project site range from approximately 6,200 feet to 8,300 feet and slopes range from 5 to 30 percent. Annual average precipitation in the project area ranges from 8 to 14 inches.

The portion identified within Egan Basin encompasses approximately 15,800 acres of public (14,755 acres) and private land (1,045 acres). The Johnson Basin, Flint Canyon, Carson Canyon and Cherry Creek Summit portion encompasses approximately 6,868 acres of public land. The south Nine Mile Summit area encompasses approximately 11,880 acres of public land. There are two small units identified on the west side of the Cherry Creek Range which encompass approximately 533 acres. The total project area encompasses approximately 38,500 acres.

3.2  Resources/Concerns Considered for Analysis

The following items have been evaluated for the potential for significant impacts to occur, either directly, indirectly, or cumulatively, due to implementation of the Proposed Action and No Action Alternative. Consideration of some of these items is to ensure compliance with laws, statutes or Executive Orders that impose certain requirements upon all Federal actions. Other items are relevant to the management of public lands in general and to the Ely BLM in particular, or were identified as issues during scoping.

A detailed analysis is presented below for resources which have been labeled “yes” in Table 3.1 as requiring further analysis. These resources were identified as issues during scoping, during the BLM resource specialist internal review period, or require detailed analysis according to law, statute, Executive Orders, or BLM policy. These resources are, Fish and Wildlife, Forest Health and Resources, Rangeland Resources, Health and Livestock Grazing, Special Status Species, Soil Resources, Vegetative Resources, Visual Resources, Lands with Wilderness Characteristics, and Wetlands/Riparian Zones.
<table>
<thead>
<tr>
<th>Resource/Concern Considered</th>
<th>Issue(s) Analyzed</th>
<th>Rationale for Dismissal from Analysis or Issue(s) Requiring Detailed Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality</td>
<td>No</td>
<td>White Pine County, Nevada is designated as attaining Air Quality standards for lead and attainment/unclassifiable for the other six criteria pollutants monitored in Nevada (sulphur dioxide, carbon monoxide, ozone, particulate matter &lt;2.5 micrometers, particulate matter &lt;10 micrometers, and nitrogen dioxide). The Proposed Action and No Action Alternative would not affect the designation of air quality standards in White Pine County. Detailed analysis is not necessary.</td>
</tr>
<tr>
<td>Areas of Critical Environmental Concern (ACEC)</td>
<td>No</td>
<td>No ACEC's occur within or adjacent to proposed project area.</td>
</tr>
<tr>
<td>Cultural and Historic Resource Values</td>
<td>No</td>
<td>Inventory needs, buffers and avoidance areas associated with each specific proposed treatment would be determined by following the Protocol Agreement between BLM and the State Historic Preservation Office. All Historic Properties that could potentially be affected through implementation of the project would be avoided. Cultural resources would be avoided through design features and avoidance using appropriate buffer areas. Impacts to the Pony Express Trail Corridor are analyzed under Visual Resources.</td>
</tr>
<tr>
<td>Environmental Justice</td>
<td>No</td>
<td>The community of Cherry Creek, Nevada is located approximately 5 miles northeast of project site. Impacts to the community would be negligible.</td>
</tr>
<tr>
<td>Fish and Wildlife</td>
<td>Yes</td>
<td>Elk (<em>Cervus canadensis</em>) and mule deer (<em>Odocoileus hemionus</em>) crucial summer habitat is present. Impacts to wildlife habitat are expected. Impacts analyzed in EA.</td>
</tr>
<tr>
<td>Floodplains</td>
<td>No</td>
<td>Resource not present.</td>
</tr>
<tr>
<td>Resource/Concern Considered</td>
<td>Issue(s) Analyzed</td>
<td>Rationale for Dismissal from Analysis or Issue(s) Requiring Detailed Analysis</td>
</tr>
<tr>
<td>----------------------------</td>
<td>------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Forest Health and Resources</td>
<td>Yes</td>
<td>Direct or indirect impacts to Forest Resources and Health would be expected. The impacts to Forest Health are consistent with the need for the action. Impacts analyzed in EA.</td>
</tr>
<tr>
<td>Lands and Realty</td>
<td>No</td>
<td>There are no conflicting Right-of-Ways within proposed project area.</td>
</tr>
<tr>
<td>Migratory Birds</td>
<td>No</td>
<td>Implementation is not anticipated during the migratory bird nesting period, from April 1 to July 31. If any of the proposed activities are necessary during that period, a survey of the areas to be disturbed would be completed prior to construction by a wildlife biologist in order to identify active nests so that they may be avoided. A list of bird species that may be present in the area is included in Appendix C.</td>
</tr>
<tr>
<td>Mineral Resources</td>
<td>No</td>
<td>Some of the areas are within the Limo-Butte exploration boundary. Currently there are no mineral operations occurring within the proposed project area. Active mine claims would be avoided or re-staked if impacted.</td>
</tr>
<tr>
<td>Native American Religious Concerns and other concerns</td>
<td>No</td>
<td>No properties of traditional religious or cultural importance have been identified by Tribes within or adjacent to the proposed project area. BLM would continue ongoing consultation with Native American Tribes to identify and avoid properties of traditional religious or cultural importance.</td>
</tr>
<tr>
<td>Noxious and Invasive Weed Management</td>
<td>No</td>
<td>A Weed Risk Assessment (Appendix B) has been completed for this project. The Design Features of the Proposed Action and weed stipulations would help minimize the spread of weeds. No further analysis is necessary.</td>
</tr>
<tr>
<td>Paleontological Resources</td>
<td>No</td>
<td>No paleontological resources have been identified resources within this Area of Potential Effects (APE).</td>
</tr>
<tr>
<td>Prime and Unique Farmlands</td>
<td>No</td>
<td>No Prime or Unique Farmland occurs within or adjacent to the proposed project area. No detailed analysis is necessary.</td>
</tr>
<tr>
<td>Resource/Concern Considered</td>
<td>Issue(s) Analyzed</td>
<td>Rationale for Dismissal from Analysis or Issue(s) Requiring Detailed Analysis</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Rangeland Resources, Health and Livestock Grazing</td>
<td>Yes</td>
<td>The Proposed Action may have direct or indirect impacts to rangeland health due to the change in livestock use as well as change in vegetation composition. There would be no changes in livestock use due to the direct effects of the Proposed Action. The proposed project area to be treated would be rested from livestock grazing until vegetation objectives are met. Impacts analyzed in EA.</td>
</tr>
<tr>
<td>Recreation Uses</td>
<td>No</td>
<td>The Proposed Action would not lead to a measurable impact to recreation resources.</td>
</tr>
<tr>
<td>Special Status Animal Species, other than those listed or proposed by the FWS as Threatened or Endangered</td>
<td>Yes</td>
<td>General and Priority greater sage-grouse habitat is present. Special status bird species such as the golden eagle (<em>Aquila chrysaetos</em>), ferruginous hawk (<em>Buteo regalis</em>), and loggerhead shrike (<em>Lanius ludovicianus</em>) may be present within or near the project area. Adherence to the minimization measure in the Migratory Bird section of the Proposed Action, would avoid impacts to most Special Status avian species. Impacts analyzed in EA.</td>
</tr>
<tr>
<td>Special Status Plant Species, other than those listed or proposed by the FWS as Threatened or Endangered</td>
<td>No</td>
<td>Resource not known to be present.</td>
</tr>
<tr>
<td>Soil Resources</td>
<td>Yes</td>
<td>Direct impacts to soils during implementation are expected. Analyzed in EA.</td>
</tr>
<tr>
<td>Threatened or Endangered Species or critical habitat.</td>
<td>No</td>
<td>There are no Threatened or Endangered species listed or proposed for listing known to occur within the proposed project area.</td>
</tr>
<tr>
<td>Resource/Concern Considered</td>
<td>Issue(s) Analyzed</td>
<td>Rationale for Dismissal from Analysis or Issue(s) Requiring Detailed Analysis</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Vegetative Resources</td>
<td>Yes</td>
<td>Direct impacts to vegetation are expected. Impacts analyzed in EA.</td>
</tr>
<tr>
<td>Visual Resources</td>
<td>Yes</td>
<td>The project area falls within all VRM Classes, including the Pony Express Corridor. The Pony Express Corridor is being evaluated for visual resource management (VRM). Impacts analyzed in the EA. The Pony Express Trail is also being evaluated for visual resource management as directed by BLM National Scenic and Historic Trails Instruction Memorandum (NV-2004–006) and through protocols from the National Trails Management Plan. Impacts analyzed in EA.</td>
</tr>
<tr>
<td>Wastes, Hazardous or Solid</td>
<td>No</td>
<td>The Proposed Action or alternatives would not produce hazardous or solid waste.</td>
</tr>
<tr>
<td>Water Resources</td>
<td>No</td>
<td>The Proposed Action is not expected to lead to a measurable change in the surface and subsurface water sources, water rights, quantity, and quality of water that occurs in the analysis area.</td>
</tr>
<tr>
<td>Wilderness</td>
<td>No</td>
<td>No Wilderness occurs within or adjacent to the proposed project area. Goshute Canyon is the closest BLM Wilderness Area. It is one mile northeast of the project area. No further analysis is necessary.</td>
</tr>
<tr>
<td>Lands with Wilderness Characteristics</td>
<td>Yes</td>
<td>The 1979/1980 Initial Wilderness Inventory for the proposed project area found the unit to be lacking wilderness character. In 2011, the Ely District began updating the land with wilderness characteristics. The project area overlaps a portion of one unit found to possess LWC (Appendix D). Impacts analyzed in EA.</td>
</tr>
<tr>
<td>Wetlands/Riparian Zones</td>
<td>Yes</td>
<td>Direct or indirect impacts to riparian areas are expected. Impacts analyzed in EA.</td>
</tr>
<tr>
<td>Resource/Concern Considered</td>
<td>Issue(s) Analyzed</td>
<td>Rationale for Dismissal from Analysis or Issue(s) Requiring Detailed Analysis</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Wild Horses</td>
<td>No</td>
<td>Egan Basin project area is within the Triple B Herd Management Area (HMA). Wild horses would be temporarily disturbed during vegetation treatment activities that occur within this area. No direct or indirect effects would occur to wild horses.</td>
</tr>
<tr>
<td>Wild and Scenic Rivers</td>
<td>No</td>
<td>No Wild and Scenic Rivers occur within or adjacent to the proposed project area.</td>
</tr>
</tbody>
</table>
3.3 Fish and Wildlife

3.3.1 Affected Environment

The project area is within year-round, summer and crucial summer habitat for Rocky Mountain elk and mule deer as well as potential bighorn sheep habitat. A small portion of the most southern treatment unit (Unit 11) is identified as pronghorn winter range. The area also provides habitat for coyotes, rabbits, badgers, bobcats, fox, chukar, sagebrush obligate birds, and other small mammals and reptiles.

3.3.2 Direct and Indirect Effects of Proposed Action

The Proposed Action would temporarily displace wildlife while treatment is occurring and mortality of less mobile animals may occur by heavy equipment; however there is adjacent suitable habitat. After project completion, big game and other wildlife would likely return to the area. In the long term, the removal of pinyon and juniper trees would create suitable conditions for most wildlife species by increasing forage and browse species as well as maintaining cover (Davies et al., 2011; Bates et al., 2005; Monsen et al., 2004). Islands and stringers of trees left after treatment would provide security and thermal cover for wildlife adjacent to open forage areas, which most wildlife need for appropriate habitat structure.

3.3.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, wildlife habitat would remain in its current condition; however, the available forage may be reduced through the continued departure from FRCC 1 (Davies et al., 2011; Pyke, 2011; Miller and Tausch, 2001). Wildlife forage habitat would continue to decline and become reduced over time.

3.4 Forest Health and Resources

3.4.1 Affected Environment

Forest and woodlands in the Egan and Johnson Basins area begins at the transition from rangelands in the valley bottoms and bench areas. Single leaf pinyon pine, Utah juniper and curlleaf mountain mahogany are present in the lower elevations. Densities of pinyon-juniper woodlands are higher than would be expected with a more natural disturbance regime. The high densities of trees increase the departure from reference conditions. Proposed project treatments are generally in the rangeland and transition areas. At higher elevations the pinyon-juniper woodland transitions into forest stands consisting of limber pine, white fir and quaking aspen. Historically fire has played a role in providing natural disturbance within the ecosystem. Fire exclusion and suppression has occurred throughout the area since Europeans arrived. The exclusion of fire has affected the volume and composition of vegetation and woodlands in the
proposed project area (Miller et al., 2008). A majority of the landscape can be characterized as mature and decadent sagebrush shrubs and dense stands of pinyon-juniper trees. Native herbaceous understory of grasses and forbs has decreased in abundance and in some places is almost non-existent.

Stand density, Stand Density Index (SDI) and canopy cover are methods of evaluating stand health and competition, both amongst the tree species present as well as understory species. Stand density is the number of trees per unit area and can give a visual perspective of the amount of trees and competition occurring within a stand. Stand Density Index is an index of competitive interaction. The maximum SDI varies for each tree species and is measured at a given reference diameter, for a pinyon-juniper woodland the maximum is 415. At 25% of maximum SDI, trees begin competing with each other and begin to out-compete understory species. At 35% of maximum SDI, trees fully occupy the site. At higher densities, competition between trees either results in reduced growth and vigor on individual trees or may result in competitive stress and tree mortality, perhaps due in part to secondary agents such as insects that are attracted to stressed trees (Page, 2008). Canopy cover is the proportion of ground that is covered by vegetative canopies. This is useful in determining the amount of light and precipitation that may be reaching the ground. It also can be an indicator of overstory and understory competition as well as potential soil erosion issues. Increasing tree canopy cover has been shown to reduce shrub and herbaceous understory (Davies et al., 2011; Personal field observations). Currently, the project units exhibit an average density of 1,406 trees per acre, a SDI of 383 (92% of maximum), an average volume of 888 cubic feet per acre and a canopy cover of 58%. The understory species within the stands are almost non-existent.

3.4.2 Direct and Indirect Effects of Proposed Action

The Proposed Action would remove large areas of trees within the sagebrush and other shrub sites as well as thin tree density within the selected woodland sites while leaving small patches, stringers and large “islands” of untreated areas within the treated areas. Currently, there are approximately 26,000 acres that are within the project units which have trees established on them. This action could remove approximately 50% of the trees within the treatment units or approximately 13,000 acres of trees, which equates to approximately 11.5 million cubic feet or approximately 90,000 cords of volume and approximately 153,000 dry tons of biomass. The action would allow remaining trees within the thinned areas appropriate space to reduce competitive interactions and increase tree health and vigor. Thinning and removing trees would also reduce fire behavior and the spread of fire and bring the area closer to FRCC 1. The action would also allow important understory species to establish, creating overall ecological resiliency and health. Another possible effect from thinning trees would be an increase in pinyon pine nut production. Other effects would likely include those described in the Rangeland Resources and Health and Vegetative Resources sections.
3.4.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative no trees would be removed from the project area. The stand density would likely continue to increase and forest health would likely continue to decrease (Davies et al. 2011; Pyke, 2011; Miller and Tausch, 2001). Fire behavior during wildfire would be conducive to large scale wildfires, which could burn large portions of the forest and woodland areas, and could be difficult to rehabilitate to a resilient community.

3.5 Rangeland Resources, Health and Livestock Grazing

3.5.1 Affected Environment

The majority of the proposed project area is meeting the Upland Sites and the Wildlife Habitat rangeland health standard but is lacking in native herbaceous forb cover (BLM 2008, BLM 2010). The soils are stable with no signs of excessive erosion. The proposed project is within the Cherry Creek and Medicine Butte grazing allotments. Currently, there are four grazing permits which authorize cattle grazing within the native portions of the Cherry Creek allotment. One permit authorizes sheep and cattle grazing within the Medicine Butte allotment. The project units within Egan Basin receive very little to no grazing use due to the lack of water, high density of trees and lack of forage. The project unit on Cherry Creek Summit receives occasional grazing use by cattle and can be described as slight to light use. This area also lacks a reliable water source. The western edge of the Flint and Carson Canyon unit receives some use by cattle and can be described as light use and the reminder of this unit receives no use due to the high density of trees.

3.5.2 Direct and Indirect Effects of Proposed Action

The short-term effects of the Proposed Action would temporarily close livestock grazing within the treated area until the desired species are established and vegetation objectives have been met. Based on current research and field observations of similar treatments within the local area, the long term effects of the Proposed Action would be expected to shift the current plant community from a state with little understory to a more desired ecological condition, with more native perennial grasses and forbs as well as a healthy perennial shrub component. This would also assist in achieving the rangeland health standards by providing a more diverse vegetative community of perennial plants that provide for soil stability, hydrologic function, wildlife habitat and ecological resiliency (Davies et al., 2011; Bates et al., 2005; Monsen et al., 2004). This would also likely increase areas with available forage that could be used by livestock and wildlife. This would also reduce competition among wildlife and livestock as more foraging areas would be available for use.
3.5.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative grazing would continue as authorized within the area. Species composition would remain the same as they are currently and could continue to be reduced through the continued departure from the reference condition. The available amount of forage would also remain the same or slowly decrease in the long-term as trees continue to expand into the shrub/grass sites (Davies et al., 2011; Pyke, 2011; Miller and Tausch, 2001). Competition with wildlife and livestock may increase as forage declines.

3.6 Special Status Animal Species

3.6.1 Affected Environment

Greater Sage-grouse

The project area occurs adjacent to nesting, brood rearing and winter greater sage-grouse habitat and has been identified as general and priority habitat for greater sage-grouse. The seasonal habitat was mapped by NDOW (March 2016) and it was determined that there are nine active leks and three pending lek within a four mile buffer of the proposed project area. Telemetry data, as well as field observations, indicated that greater sage-grouse use the area year round. Greater sage-grouse habitat classification and seasonal greater sage-grouse habitat maps can be found in Appendix A, (Maps 10-13) of this document. According to the seasonal habitat mapping, within a four mile buffer area there are 161,143 acres of nesting habitat; 155,788 acres of winter habitat; 158,145 acres of brood rearing habitat and 1,483 acres of riparian habitat. The following table details the number of acres of each habitat type within the four mile buffer and within the proposed project boundaries.

Table 3.2 Greater sage-grouse habitat type and targeted acres

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Total Acres in 4 Mile Buffer of Proposed Project Area</th>
<th>Number of Acres Targeted for Treatment in Proposed Project Boundaries*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nesting</td>
<td>161,143</td>
<td>23,800</td>
</tr>
<tr>
<td>Winter</td>
<td>155,788</td>
<td>25,697</td>
</tr>
<tr>
<td>Brood Rearing</td>
<td>158,145</td>
<td>26,698</td>
</tr>
<tr>
<td>Riparian</td>
<td>1,483</td>
<td>138</td>
</tr>
</tbody>
</table>

*Habitat type within targeted treatment areas overlap.

Pygmy Rabbit

The pygmy rabbit (*Brachylagus idahoensis*) is a sagebrush obligate species. The pygmy rabbit is currently designated as a federal species of concern but has not been warranted for listing. Pygmy rabbits prefer areas of tall, dense sagebrush growing in deep soils which are friable and
suitable for digging burrows and is often found along washes or drainages (Larrucea and Brussard, 2008). Isolated portions of the project area do exhibit the preferred habitat for the pygmy rabbit. Larrucea and Brussard (2008) found current populations of pygmy rabbits throughout all of the species’ historic range in Nevada and that the current distribution of active sites in Nevada is similar to the historical distribution. One individual or population was observed in 2005 at a location outside the proposed project treatment area.

**Raptors**

Numerous BLM sensitive raptors are known to utilize the project area including ferruginous hawks, golden eagle, and northern goshawk. The most common of these to occur in the area is the ferruginous hawk, which in Nevada prefers open, rolling sagebrush near the pinyon-juniper interface. Their favored prey is rabbits, but they also are known to take other small rodents and occasionally birds and reptiles. The golden eagle typically constructs more than one nest in its territory that it will return to over numerous years. The golden eagle is a year-round resident of Nevada. The northern goshawk forages in open sagebrush adjacent to riparian aspen stands. Nests are generally constructed in the largest tress of dense, large tracts of mature or old growth aspen stands.

### 3.6.2 Direct and Indirect Effects of Proposed Action

The Proposed Action may temporarily displace special status species while treatment is occurring. The vegetation treatments are designed to improve sagebrush vegetative community conditions and habitat, particularly for the shrub and herbaceous understory. These changes should benefit greater sage-grouse populations within the project area. Based on the targeted treatment areas, most pygmy rabbit habitat would be avoided, since most treatments would occur on benches. No direct impacts would occur to nesting raptors because active nests would be avoided during treatments. Inactive ferruginous hawk nests will be evaluated to determine if they should remain for potential nesting opportunities. In the long term, the removal of pinyon pine and juniper trees would increase and improve sagebrush habitat by increasing grass, forb and shrub cover (Davies et al., 2011; Bates et al., 2005; Monsen et al., 2004), benefiting numerous sagebrush obligate species such as greater sage-grouse, pygmy rabbits, Brewer’s sparrow, sage thrasher, and ferruginous hawk.

### 3.6.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, special status species would remain unaffected in the short term. The continued departure from FRCC 1 would reduce the available habitat for the greater sage-grouse and other special status species (Davies et al., 2011; Pyke, 2011; Miller and Tausch, 2001). Species that rely on shrub communities would reduce as tree densities increase while tree dependent wildlife species would increase with increasing tree densities.
3.7 Soil Resources

3.7.1 Affected Environment

The soils within the proposed project units are generally soil types found on mountain and fan remnants. Characteristics of these soils include very gravelly loam, gravelly loam, extremely gravelly sandy loam, and very gravelly silt loam. In all these soil types the depth to the water table is more than 80 inches and soils are characterized as well drained. These characteristics provide a stabilizing effect on surface erosion conditions and help resist compaction. Permeability is moderate, the soils are generally well-drained, and available water holding capacity ranges from very low to moderate. The current soil conditions appear to be stable with no signs of excessive erosion or compaction.

Soil was surveyed using the web soil survey online mapping tool (Soil Survey Staff, 2016). The most predominant soils found in the proposed project treatment area include:

- Urmafot-Bobs-Palinar association
- Pookaloo-Cavehill-Rock outcrop association
- Bobs very gravelly loam, 2 to 8 percent slopes
- Palinar very gravelly loam, 2 to 15 percent slopes
- Pookaloo-Cavehill-Hyzen association
- Pookaloo-Hyzen-Mijoysee association
- Cassiro association
- Pioche-McIvey-Birchcreek association
- Pyrat-Tulase association
- Yody-Fax association

3.7.2 Direct and Indirect Effects

The mechanical equipment would disturb soils by directly compacting and displacing surface horizons, which could lead to an increased risk of wind and water erosion. Soil textures throughout the treatment areas are generally not prone to compaction given their coarse, gravelly to rocky characteristics. Soil compaction is not expected to be measurably altered as a result of the Proposed Action and would be expected to recover over the course of 1-2 years.

Fire could leave areas of hydrophobic soil if burned severely. Large slash piles may exhibit small areas of hydrophobic soil underneath and adjacent to the piles due to high temperatures generated while burning. The potential for such effects is minor and any that occur would be very limited spatially and temporally.

Use of chemicals to affect vegetation would not directly affect soils. Loss of ground cover vegetation may affect soil retention or soil stability in the short term or at least until perennial understory grasses, forbs and shrubs establish, which is expected to be 1-2 years.
The treatments would leave woody material on the surface of the soil which would help protect and stabilize the surface soils and would also provide nutrients from decomposition within the soil. The chained areas would still provide cover with downed trees, and mulch would provide soil protection in mastication areas. It is expected that the efficacy of chemical treatments across landscape settings would not lead to increased potential for soil erosion or soil loss. Chemical treatment of target species would leave sufficient ground cover of non-target vegetation to retain soil resources. The removal of the trees may also improve soil retention and hydrological function over the long term on the site by allowing the herbaceous and shrub layers to re-establish (Pierson et al., 2007; Bates et al., 2005).

### 3.7.3 Direct and Indirect Effects of No Action Alternative

The No Action Alternative would result in no action-related effects to soil resources. There could be a long-term effect to soil productivity as shrub-grassland dominated systems change to large tree dominated systems. In other words, there could be a change in the timing and processes involved in the way nutrients and organic matter enter the soils; finer vegetation potentially changing to coarser vegetation or shorter nutrient cycling times versus potentially longer times. Interspaces among trees would be bare, compared to a shrub-grassland community that would be filled with grasses and forbs. Erosion potential may increase across the area if understory plant resources continue to decline.

### 3.8 Vegetative Resources

#### 3.8.1 Affected Environment

There are several vegetation communities within the proposed project area. These include Great Basin Pinyon-Juniper Woodland, Great Basin Xeric Mixed Sagebrush Shrubland, Intermountain Basins Big Sagebrush Shrubland, Intermountain Basins Curleaf Mountain Mahogany Woodland and Shrubland, and Inter-mountain Basins Montane Sagebrush Steppe. Undesirable non-native annual species such as cheatgrass occur within the project area. Pinyon-juniper woodland has become established in sagebrush sites within the proposed project area. Historically these areas were composed of native shrubs, bunchgrasses and forbs but a lack of disturbance has resulted in grass and forbs that occur at levels below ecological site potential. The expansion of pinyon-juniper woodland and drought related impacts have reduced the overall health, vigor recruitment and production of grass and shrub species and disrupted the desired plant succession. There are varying proportions of woodland succession phases within the proposed project area.

Dominate vegetation type within the proposed project area was described using the Biophysical Setting (BpS) and succession class layers from LANDFIRE (LANDFIRE, 2013). BpS is vegetation that would have been dominate on the landscape prior to Euro-American settlement and is based on current biophysical environment and an estimation of the historical disturbance...
regime. BpS functions as a potential baseline to compare reference or historical conditions to current conditions (Barrett et al., 2010). Succession class is a characterization of the current vegetation conditions for successional stages within each BpS. Successional class also describes uncharacteristic stages, like exotic species, that would not occur within the variability of a BpS. Successional stage descriptions can be found in the FRCC handbook (Barrett et al., 2010) and are described in Table 3.3, Successional Class Descriptions. Described in Table 3.4 below are the BpS and succession classes within the proposed project treatment area. The five major BpS vegetation types found within the proposed project area are described below. Further information about BpS community type descriptions can be found on the LANDFIRE website (http://www.landfire.gov/index.php).

**Table 3.3 Successional Class Descriptions**

<table>
<thead>
<tr>
<th>Succession Class Code</th>
<th>Succession Class Description</th>
<th>Forests and Woodlands</th>
<th>Shrublands and Grasslands</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Early-seral, post replacement</td>
<td>Single layer; fire response shrub, graminoids, and forbs; typically less than 10 percent tree canopy cover; standing dead and down</td>
<td>Fire response forbs; resprouting shrubs; resprouting graminoids</td>
</tr>
<tr>
<td>B</td>
<td>Mid-seral, closed canopy</td>
<td>One to two upper layer size classes; greater than 35 percent canopy cover (crown closure estimate); standing dead &amp; down; litter/duff</td>
<td>Upper layer shrubs or grasses; less than 15 percent canopy cover (line intercept)</td>
</tr>
<tr>
<td>C</td>
<td>Mid-seral, open canopy</td>
<td>One size class in upper layer; less than 35 percent canopy cover; fire-adapted understory; scattered standing dead and down</td>
<td>Upper layer shrubs or grasses; greater than 15 percent canopy cover shrubs</td>
</tr>
<tr>
<td>D</td>
<td>Late-seral, closed canopy</td>
<td>Single upper canopy tree layer; one to three size classes in upper layer; less than 35 percent canopy cover; fire-adapted understory; scattered standing dead and down</td>
<td>Upper layer shrubs or grasses; less than 15 percent canopy cover</td>
</tr>
<tr>
<td>E</td>
<td>Characteristic; late-seral, closed canopy</td>
<td>Multiple upper canopy tree layers; multiple size classes; greater than 35 percent canopy cover; shade-tolerant understory; litter/duff; standing dead and down</td>
<td>Upper layer shrubs or grasses; greater than 15 percent canopy cover shrubs</td>
</tr>
<tr>
<td>UN</td>
<td>Uncharacteristic native vegetation cover or structure or composition</td>
<td>Example: conifer established shrubland</td>
<td></td>
</tr>
<tr>
<td>UE</td>
<td>Uncharacteristic exotic vegetation</td>
<td>Example: cheatgrass dominated community</td>
<td></td>
</tr>
</tbody>
</table>
Table 3.4 Biophysical Settings and Succession Classes in the Proposed Project Area

<table>
<thead>
<tr>
<th>Biophysical Setting</th>
<th>Succession Class (Acres)</th>
<th>Total Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Great Basin Pinyon-Juniper Woodland</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>Great Basin Xeric Mixed Sagebrush Shrubland</td>
<td>0</td>
<td>1991</td>
</tr>
<tr>
<td>Inter-Mountain Basins Big Sagebrush Shrubland</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Inter-Mountain Basins Curl-leaf Mountain Mahogany Woodland and Shrubland</td>
<td>245</td>
<td>18</td>
</tr>
<tr>
<td>Inter-Mountain Basins Montane Sagebrush Steppe</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Description of Biophysical Settings Vegetation Models

Great Basin Pinyon-Juniper Woodland

The Great Basin Pinyon-Juniper vegetation type occurs on dry slopes and ridges between 5,250 and 8,530 feet in elevation. This woodland type is dominated by single leaf pinyon pine and Utah juniper, with these species either co-dominating the woodland or occurring as a pure or nearly pure stand. Species commonly associated with this vegetation system includes curl-leaf mountain mahogany, sagebrush, and various grasses and forbs.

Great Basin Xeric Mixed Sagebrush Shrubland

This system can be found on a variety of landforms including mountain slopes, alluvial fans, piedmont, plains, basin floors and rolling hills and typically occurs between 3,280 and 8,530 feet in elevation. Soils associated with this type are shallow and rocky. Vegetation is described as mostly black sage and low sagebrush and can occur with Wyoming sagebrush and basin big sagebrush. There is a potential for pinyon-juniper establishment in this type. Other associated species include rabbitbrush (*Chrysothamnus sp.*), shadscale (*Atriplex confertifolia*), horsebrush (*Tetradymia sp.*) and spiny hopsage (*Grayia spinosa*). Common associated grasses include Indian ricegrass (*Achnatherum hymenoides*), desert needlegrass (*Achnatherum speciosum*), Thurber’s needlegrass (*Achnatherum thurberianum*), and Sandberg bluegrass (*Poa secunda*).

Inter-Mountain Basins Big Sagebrush Shrubland

Elevation for this type ranges from 3,000-7,000ft. It typically occurs on well-drained soils on foothills, terraces, slopes, and plateaus. Vegetation is dominated by Wyoming big sagebrush and basin big sagebrush. Other vegetation found in this type include rabbitbrush, and snowberry (*Symphoricarpos oreophilus*), Needle and thread grass (*Hesperostipa comata*), Indian ricegrass, and bottlebrush squirreltail (*Elymus elymoides*).
Inter-Mountain Basins Curl-leaf Mountain Mahogany Woodland and Shrubland

Curl-leaf mountain mahogany vegetation type is typically found on upper slopes and ridges between 5,000 and 8,000ft in elevation. Stands commonly occur on rocky shallow soils and outcrops. Associated species include mountain big sagebrush, snowberry, serviceberry (*Amelanchier sp.*), and prickly phlox (*Linanthus pungens*); as well as tree species like pinyon pine, juniper, white fir (*Abies concolor*) and limber pine (*Pinus flexilis*). Although curl-leaf mountain mahogany can rapidly colonize after disturbance if bare mineral soil is present or created, it is easily killed by fire and does not re-sprout. Curl-leaf mountain mahogany is described as a slow growing drought tolerant species.

Inter-Mountain Basins Montane Sagebrush Steppe

This system occurs at mid to high elevations, 3,200-10,000ft. Soils are generally moderately deep to deep but at higher elevations can occur on shallow or rocky soils. Dominate vegetation is mainly mountain big sagebrush and silver sagebrush. Other shrub vegetation commonly associated with this type include snowberry, serviceberry, rabbitbrush, and current (*Ribes sp.*). Grasses and forbs can be abundant and includes species like bottlebrush squirreltail, needle and thread, Idaho fescue (*Festuca idahoensis*), muttongrass (*Poa fendleriana*), Sandberg bluegrass, bluebunch wheatgrass, slender wheatgrass (*Elymus trachycaulus*), California brome (*Bromus carinatus*), needlegrass, spike fescue (*Leucopoa kingii*), and tufted hairgrass (*Deschampsia cespitosa*).

Current Vegetation Monitoring within Egan and Johnson Basins

There are four previously installed standard Assessment, Inventory and Monitoring (AIM) plots located within the proposed project treatment area. The plot locations were generated according to the AIM protocol and have been incorporated into the national database called TerrADat. See Appendix A, Map 8 for a description of the plot locations. Plots were selected based on ecological site descriptions (ESDs) and Ely District monitoring needs. ESDs are a framework for classifying and describing rangeland and forestland soils and vegetation. Detailed information about ecological site descriptions can be found on the Natural Resource Conservation Service website (https://esis.sc.egov.usda.gov/Default.aspx). The data from these plots provides a snapshot of the conditions at particular locations. Data summaries for the four plots plus an additional two AIM plots installed in 2016 can be found in Appendix G.

3.8.2 Direct and Indirect Effects of Proposed Action

The mechanically treated areas would remove a large portion of the trees and crush, remove or break a portion of the larger shrubs where the heavy equipment and/or chain travels through the project area. The hand cut areas would remove a large portion of the trees and have very minimal impacts to the remaining vegetation, and because little disturbance would occur from foot travel.
Small strips and areas of vegetation may be crushed due to off-road travel by ATV or pick-up trucks in and out of the project area from existing roads.

Residual woody vegetation, which would consist of slash/biomass created from the various methods of vegetation treatments, would provide protection to regenerating grasses and other herbaceous plants, and well as sagebrush. The decomposition of woody plant material would also provide nutrients that would decompose within the soil, and become available for understory and existing shrub species. This nutrient availability would assist with the recruitment, establishment and long-term viability of the grass and shrub community, as well as provide protection to the soil resource. Additionally, soil water retention would be greater with the slash/biomass on the soil surface limiting evaporation, benefiting desirable plants. Organic matter would minimize the opening of mineral cycles (particularly nitrogen) which promote the establishment and perpetuation of introduced annuals.

The Proposed Action would increase the health, vigor, recruitment, and production of native perennial grasses, forbs, and shrubs due to the increased availability of light, water, and nutrients created by reducing resource competition from the tree species as well as seeding native grass, forb and shrub species (Davies et al., 2011; Bates et al., 2005; Monsen et al., 2004). The use of agency approved herbicides would target invasive species and reduce the density of these species (Davies et al., 2011; Pyke, 2011). The proposed treatment should shift vegetation composition towards FRCC 1, reducing the fuel loading and continuity of fuels and create a more resilient vegetation community (Miller and Tausch, 2001).

3.8.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, as canopy cover of trees continues to increase, the amount of light and water available to the understory becomes limited. Understory species eventually become stressed and die out. This may also indicate that an ecological threshold has been or is close to being crossed, and the sites are likely to become very vulnerable to catastrophic disturbance events such as fire, insects, or disease; and the resistance and resilience of the sites becomes drastically reduced (Tausch, 1999). Without the presence of a perennial herbaceous and shrub vegetation component, the site becomes open to other invasive species which may dominate. This results in a possible vegetation community change to invasive annual plants or weeds, like cheatgrass, and subsequently perennial invasive species may establish. Species diversity and composition would remain the same at the current conditions in the short term and may be reduced through canopy closure and reduced nutrient and water availability. Biomass loading would continue to increase in the long-term, increasing the likelihood of catastrophic wildfires. The Fire Regime Condition Class would continue trending away from FRCC 2 and moving towards FRCC 3. In the event of a future disturbance like wildfire, the project area would be more susceptible to a plant community-conversion, where the widespread colonization of cheatgrass is more likely (Davies et al., 2011; Pyke, 2011; Miller and Tausch, 2001).
3.9  Visual Resource Management

3.9.1  Affected Environment

BLM administered lands are placed into four visual resource management (VRM) classes; VRM Class I, II, III, and IV. The proposed project areas occur within all four VRM classes.

**Table 3.5 VRM Class Percentage within Proposed Project Area**

<table>
<thead>
<tr>
<th>VRM Class</th>
<th>Acres</th>
<th>Percentage of proposed treatment area</th>
<th>Treatment Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>363</td>
<td>&lt;1%</td>
<td>Unit 10</td>
</tr>
<tr>
<td>Class II</td>
<td>10,687</td>
<td>28%</td>
<td>Units 1, 5-8, 11, 12, 17, 20</td>
</tr>
<tr>
<td>Class III</td>
<td>24,331</td>
<td>65%</td>
<td>Units 1-7, 9-16, 21</td>
</tr>
<tr>
<td>Class IV</td>
<td>1,882</td>
<td>5%</td>
<td>Units 9, 10, 15</td>
</tr>
</tbody>
</table>

Objectives for each VRM class are described below and can be found in (BLM Manual H-8410-1).

Class I Objectives: 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.

Class II Objective: 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.

Class III Objective: The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer.

Class IV Objective: The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These 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.

The BLM VRM system relies on measuring or quantifying the degree of visual contrast that a project would have with the existing landscape to determine whether the project conforms to the applicable VRM class objectives. The degree of contrast is measured by comparing the major features of the project with the major features of the landscape. The basic design elements of form, line, color, and texture are used for the comparison of features and to describe the visual
contrast created by a project. The contrast analysis is conducted from one or more Key Observation Points (KOPs), which are locations with critical views of a project or locations providing typical views encountered in the landscape (BLM, 1986). Typically, KOPs are selected along well-used roadways and trails, recreation sites, and near communities, as these are areas where the greatest number of people would see a project for the longest period of time.

Five KOP locations along and within the viewshed of the Pony Express Trail were selected. The trail location is displayed in Appendix A, Map 6. The VRM for the proposed project area is displayed in Appendix A Map 9. In general the landscape visible from most locations with the proposed project area can be described as typical eastern Nevada. Many views from within the proposed project areas have evidence of human and natural disturbance, like wildland fire scars, mine exploration, and roads and trails.

3.9.2 Direct and Indirect Effects of Proposed Action

The proposed project area falls within all four VRM classes. The Pony Express Corridor crosses approximately eight miles of the proposed project area and is classified as VRM Class II. The Pony Express Trail is being evaluated for visual resource management as directed by BLM. All activities along the Pony Express will follow the Pony Express National Historic National Trail Comprehensive Management and Use Plan Final Environmental Impact Statement (National Park Service 1999). Presently Historic Properties known to exist within the project area include generalization linear routes of Pony Express, Overland Trail, and the First Transcontinental Telegraph line. All historic properties would be avoided during any surface disturbing activities, which typically would be incorporated with planned vegetative mosaic patterns with a minimum 50 meter buffer. Potential impacts would be adequately mitigated by incorporating design features into the Proposed Action. Changes to the characteristic landscape would be weak to moderate and would create more natural patterns across the landscape. Less than 1% of the proposed project area occurs within VRM Class I. The proposed project is expected to better mimic the characteristic landscape as it was prior to the tree canopy establishment. The treatment process would create more natural patterns across the landscape and that would create a more natural visual appearance overall.

3.9.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, there would be no immediate impacts to visual resources. However, in the long term, the susceptibility for impacts with possible disastrous results to the characteristic landscape is possible. The potential for a large high severity wildfire continues to increase over time due to the continued increase in dense vegetation within the proposed project area.
3.10 Lands with Wilderness Characteristics

3.10.1 Affected Environment

The Nevada BLM completed the original wilderness review in 1979, and issued an initial wilderness inventory decision in 1980. At that time, no units were found to possess wilderness characteristics.

In 2011, the Ely District Office BLM began updating the lands with wilderness characteristics (LWC) inventory on a project-by-project basis until there is a land use plan revision. The project area overlaps a portion of one unit found to possess LWC. There has not been a land use plan amendment to determine if or how these LWC units would be preserved to protect the wilderness characteristics.

Table 3.6 Inventory Information Regarding Lands with Wilderness Characteristics in Proposed Project Area

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Updated Inventory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NV-040-015A-2a-2012</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Out of the 17 LWC units that the project encompasses only one unit (NV-040-015A-2a-2012) possesses LWC. In the original 1979/1980 inventory, a portion of the project area was identified as the Goshute Canyon WSA. This portion was not included in the 2006 designation of Goshute Canyon Wilderness. It was found to be largely natural, and contiguous to designated wilderness, and therefore it was found to possess wilderness characteristics in the updated inventory (NV-040-015A-2a). The remainder of the project area was found, in both the 1979/1980 and updated inventories to lack wilderness characteristics. A map of LWC units can be found in Appendix D.
3.10.2 Direct and Indirect Effects of Proposed Action

The one unit (NV-040-015A-2a) of LWC found in the inventory update is on the northern portion of the project area. One of the proposed treatment areas overlaps 21% of the LWC unit and totals 1,726 acres. None of the proposed treatments would impact the size of the unit, as no new roads would be established. Furthermore, these treatments would not measurably affect the outstanding opportunities for primitive and unconfined recreation. Solitude may be impacted negatively due to loss of vegetative screening as well as noise created during implementation but in the long term some may find solitude in the open space that is no longer crowded with pinyon pine and juniper. Naturalness may be impacted depending on which treatment method is used.

Prescribed fire would not impact naturalness, when or if it is determined to be protected for its wilderness characteristics in the future. The appearance of this treatment upon completion would not be distinguishable as a prescribed fire when compared with a naturally-ignited fire. A large area of the adjacent hillside was previously burned over in 2000.

In the near-term, mechanical treatments would be apparent to the casual observer as unnatural but through secondary plant succession the treatment would naturalize and eventually blend in with the surrounding natural landscape. There would be a short-term impact to solitude while the treatment is being implemented, with people machinery working in the area.

3.10.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, there would be no impact to the LWC unit.

3.11 Wetland/Riparian Zones

3.11.1 Affected Environment

There are seven spring sites or seep water sources in the project area that occur on both public and private land. Johnson Spring, Westside Spring and an unnamed spring are on public land and the Nine Mile Spring, Mustang Spring, and two unnamed springs are on private land. The springs are one quarter acre or less in size. The vegetation around the springs varies, with some springs covered by a dense canopy of trees.

The riparian potential for the spring systems are subsurface water with sedge/rush and grass communities. Johnson Spring is functional but includes risk factors such as bare ground, lack of vegetation cover and dense tree cover. Water quality in the project area is protected under Section 303 of the Clean Water Act and 40 CFR Part 131 where applicable, and state water standards.
3.11.2 Direct and Indirect Effects of Proposed Action

No direct impacts to riparian areas are expected since the Proposed Action would remove pinyon-juniper trees using chain saws near the spring sources and be hauled away. The possibility exists by removing trees around the spring systems that two things may occur that would allow these small systems to expand; more light would reach the plants and more water may be made available for riparian area development. The risk of sedimentation to spring riparian systems due to tree removal should be minimal due to the design features built into the Proposed Action and the filtering ability of existing riparian vegetation.

3.11.3 Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative no trees would be removed. The current conditions would likely continue. Dense vegetation would make the area more susceptible to a large, high severity fire which would impact the riparian resource and would cause erosion and sedimentation. Existing trees would continue to block the sunlight to plants and utilize water resource, impacting the amount of water available at the spring source. Limited water affects wildlife species in the area that need this resource.
Chapter 4  Cumulative Effects

4.1  Introduction

Cumulative Effects are defined in 40 CFR 1508.7 as the “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions (RFFA) regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” This section addresses the cumulative impact of the Proposed Action and the No Action Alternative, when added to the impacts of past, present and reasonably foreseeable future actions with the Cumulative Effects Study Area (CESA).

Cumulative impacts are additive and have compounding effects when past and present impacts are combined. Significant impacts require consideration of both context and intensity (40 CFR 1508.27 (b) (7)). The Proposed Action would be implemented over a five year period and the majority of the impacts would dissipate within several years after implementation. Given this, a temporal extent of ten years would be used for the cumulative analysis.

Information used in the cumulative effects was collected from BLM Land and Mineral Legacy Rehost 2000 System (LR2000) and Geographic Information Systems (GIS) shapefiles provided by the BLM and NDOW.

Table 4.1 Cumulative Effects Study Areas, lists the analyzed resources and the name and size of each CESA. Both the Proposed Action and the No Action Alternative would have negligible effects on Cultural Resources, Visual Resources and Lands with Wilderness Characteristics, therefore those resources have not been discussed in this section. The CESA for analyzing effects of past, present and RFFA combined with implementation of the Proposed Action and with the No Action Alternative are defined as the Egan Basin Watershed and a large portion of the Butte Valley Watershed. The CESA varies depending on the resource analyzed due to the migratory nature of wildlife in this area, the location of active and pending greater sage-grouse leks, and previous fuels treatments. CESA boundaries are shown in Appendix A, Map 3.
Table 4.1 Cumulative Effects Study Areas

<table>
<thead>
<tr>
<th>Resource</th>
<th>Cumulative Effects Study Area</th>
<th>Acres</th>
<th>Description</th>
<th>Explanation of Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big Game</td>
<td></td>
<td>621,750</td>
<td>NDOW Hunt Unit 121 north to the White Pine County line.</td>
<td>This CESA was chosen because it encompasses the proposed project area and accounts for the migratory nature of big game and other wildlife species.</td>
</tr>
<tr>
<td>General Wildlife; including Migratory Birds</td>
<td></td>
<td>254,010</td>
<td>4 mile buffer around the proposed project area.</td>
<td>This CESA incorporates habitat surrounding and within the proposed project area, where most of the impacts to general wildlife would occur.</td>
</tr>
<tr>
<td>Rangeland, Vegetation and Forest Resources</td>
<td></td>
<td>272,448</td>
<td>Proposed project area and buffered area including surrounding project units. Includes portions of Medicine Butte Allotment, Cherry Creek Allotment, South Butte Allotment and Thirty Mile Spring Allotment.</td>
<td>This CESA was chosen because it encompasses the proposed project unit boundaries, portions of impacted allotments, and previous fuels treatments within the watersheds.</td>
</tr>
<tr>
<td>Greater sage-grouse</td>
<td></td>
<td>254,010</td>
<td>The greater sage-grouse CESA includes Butte, Buck and White Pine Population Management Unit (PMU).</td>
<td>This CESA includes the 4-mile buffer around the proposed project area that encompasses greater sage-grouse populations and seasonal habitat use.</td>
</tr>
<tr>
<td>Wetlands/Riparian and Soil Resources</td>
<td></td>
<td>614,975</td>
<td>Red Butte, Johnson Spring Basin, Butte Valley, Egan Basin- Egan Creek, Telegraph Creek, Westside Spring, Hunter Flat and Lower Duck Creek watersheds Hydrologic Unit Code (HUC) 12.</td>
<td>This CESA was used because this is the area where water and soil resources have the potential to be affected by the proposed project.</td>
</tr>
<tr>
<td>Visual Resource Management</td>
<td></td>
<td>84,675</td>
<td>Proposed project treatment units and surrounding project area including hand thinning area.</td>
<td>This CESA includes the treatment units and surrounding proposed project area. VRM objectives will be incorporated into these treatment designs.</td>
</tr>
</tbody>
</table>
4.1.1 Past and Present Actions

According to Council of Environmental Quality (CEQ) regulations, consideration of the individual effects of all past actions is not required to determine the present effects of past actions. In compliance with CEQ regulations only past actions that result in present impacts are considered in the analysis (CEQ, 2005). Past actions in the CESA include grazing, mining, recreation, wild horse gathers, vegetation treatments, range improvement projects and wildfire.

4.1.1.1 Vegetation Treatment Projects and Wildland Fires

The Cherry Creek Wildland and Urban Interface (WUI) Project, which included mowing, drill seeding, herbicide, and prescribed fire as treatment types, was implemented beginning in 2005. The project is located west and south of the town of Cherry Creek, Nevada. The Cherry Creek WUI Project area is on the eastern side of the CESA and is included in the proposed project area. The Cherry Creek Project objectives were to conduct a prescribed burn on approximately 1,800 acres and to create fire-resistant green strips by mowing and seeding approximately 515 acres south of Cherry Creek. Herbicide (tebuthiuron) was applied in 2006 to reduce pinyon-juniper densities on 3,725 acres west of Cherry Creek in the Johnson Basin area. In 2010 approximately 1,117 acres within the prescribed burn area were treated with a herbicide, imazapic. The project area was also seeded post treatment with a mix of native and non-native species. The project goals were to reduce tree density in sagebrush sites, reduce invasive species like cheatgrass, and increase shrub density within the project area. Pretreatment and post treatment data for the prescribed burn and mowing treatments of this project can be found in Appendix F of this document.

The Combs Creek Habitat Improvement and Fuels Reduction Project is an ongoing project located in the Butte Watershed. The purpose of the project is to improve habitat by creating conditions in sagebrush communities that better reflect the reference conditions as described in associated BpS models. Short term project objectives are to reduce tree canopy cover, create a mosaic of treated and untreated areas, and thin trees in and around riparian areas. Long term objectives are to create sagebrush communities with a perennial grass and forb understory.

Table 4.2 below shows range improvement projects, fuels treatments and wildfires by size, type of disturbance and year that are located within the Rangeland, Vegetation and Forest Resources CESA. Appendix A, Map 4 shows the location of these wildfires and Map 5 shows the location of these fuel and range treatments.
Table 4.2 Past and Present Range Treatments, Fuels Treatments and Wildfires within Rangeland, Vegetation and Forest Resources CESA

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Total Size of Treatment (Approximate Acres)</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snow Creek Seeding</td>
<td>Seeding</td>
<td>3,780</td>
<td>Unknown</td>
</tr>
<tr>
<td>North and South Egan Basin Seeding</td>
<td>Seeding</td>
<td>2,367</td>
<td>1960</td>
</tr>
<tr>
<td>South Egan Basin Seeding</td>
<td>Prescribed Fire</td>
<td>1,083</td>
<td>1996</td>
</tr>
<tr>
<td>Nine-Mile Chaining</td>
<td>Chain/Seed</td>
<td>1,135</td>
<td>2001</td>
</tr>
<tr>
<td>Cherry Fire Rehab</td>
<td>Herbicide/Seeding</td>
<td>5,612</td>
<td>2001</td>
</tr>
<tr>
<td>Cherry Creek WUI Prescribed Burn</td>
<td>Prescribed Fire and seeding</td>
<td>1,800</td>
<td>2005</td>
</tr>
<tr>
<td>Cherry Creek WUI</td>
<td>Mowing/Drill Seeding</td>
<td>515</td>
<td>2005</td>
</tr>
<tr>
<td>Cherry Creek WUI</td>
<td>Chemical- tebuthiuron</td>
<td>3,727</td>
<td>2006</td>
</tr>
<tr>
<td>Cherry Creek WUI</td>
<td>Chemical- impazapic</td>
<td>1,117</td>
<td>2010</td>
</tr>
<tr>
<td>Combs Creek Habitat Improvement and Fuels Reduction Project</td>
<td>Mastication/Seeding/Hand Thinning</td>
<td>4,362</td>
<td>2014-2016 On-going project</td>
</tr>
<tr>
<td>Butte Fire</td>
<td>Wildfire</td>
<td>225</td>
<td>1990</td>
</tr>
<tr>
<td>Cherry Fire</td>
<td>Wildfire</td>
<td>8,492</td>
<td>2000</td>
</tr>
<tr>
<td>Name</td>
<td>Type</td>
<td>Total Size of Treatment (Approximate Acres)</td>
<td>Year</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>----------</td>
<td>---------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Unnamed Fire (Lower Butte Valley)</td>
<td>Wildfire</td>
<td>621</td>
<td>2001</td>
</tr>
<tr>
<td>Telegraph Fire</td>
<td>Wildfire</td>
<td>74</td>
<td>2004</td>
</tr>
</tbody>
</table>

### 4.1.1.2 Wild Horses

Wild horse use has occurred throughout the CESA since the 1800s. Wild horse gathers have occurred in the project area, with the most recent being August 2016. Wild horses continue to utilize the area.

### 4.1.1.3 Livestock Grazing

Moderate grazing has occurred in the area for a number of years and intense to extreme grazing occurred in the late 1800’s early 1900’s. A crested wheatgrass seeding was implemented in the 1970’s in the middle of Egan Basin. The CESA areas are currently in use by livestock, however, the project treatment units are not generally used by livestock due to the high density of trees and the lack of forage and water. There are fencing and other range improvements for livestock management within the CESA.

### 4.1.1.4 Mineral Development

Historical mineral mining has occurred throughout the project area. Located five miles south of the town of Cherry Creek is Egan Canyon, an area known historically for gold mining. Mining exploration has recently occurred in the Flint Spring area which is in the north part of the proposed project area, in Unit 10. There is active mining exploration occurring in the vicinity of Unit 1, Unit 7, Unit 8 and Unit 9.

### 4.1.1.5 Utilities

Utilities within the overall proposed project CESAs include the transmission line that crosses the north end of the project area, in Unit 10. The overhead power line, operated by Mount Wheeler Power, Inc., crosses approximately 2.5 miles within the proposed project treatment area and includes a 25 foot width. There are approximately 5 miles of White Pine Country Road Department Right of Way (ROW) maintained roads within the proposed project treatment area and they include a 60 foot width.
4.1.1.6 Recreation

Camping, hunting, off-highway vehicle use (OHV), and other recreational use including heritage tourism occasionally occurs. Roads through the area are a combination of maintained county roads and primitive two-track roads; and overall traffic in the area can be rated as low use.

4.1.1.7 Fuelwood and Forest Product Use

Personal-use fuelwood harvest and both personal and commercial Christmas tree harvest occurs on BLM administered land throughout the CESA, there is no surface disturbance associated with these activities.

4.1.2 Reasonably Foreseeable Future Actions

4.1.2.1 Vegetation Treatment Projects and Wildfires

Vegetation treatments in the CESA are expected to continue. Maintenance treatments on previous vegetation treatments projects can be expected within the CESA, for projects like Combs Creek Habitat Improvement Project and Cherry Creek WUI Project. Wildfires are a naturally occurring event on the landscape.

4.1.2.2 Wild Horse Use

Wild horse management is expected to continue similar as past actions.

4.1.2.3 Livestock Grazing

Grazing and range improvements are expected to continue within the CESA, but no proposed projects are currently identified.

4.1.2.4 Mineral Development

It can be assumed that mining activities would likely continue or increase based on current exploration results and future mineral markets. However, there are no known proposed developments expected at this time. There are permitted and proposed drill sites within the project area. Specifically in the vicinity of Unit 1, Unit 7, Unit 8, and Unit 9.

4.1.2.5 Utilities, Infrastructure and Public Purpose Activities

The Southwest Intertie Project (SWIP) transmission line corridor has been identified to cross through the southern portion of the CESA. Maintenance of existing ROWs is expected to continue. Infrastructure to support various developments is expected to continue.
4.1.2.6 Recreation

Recreation (hunting, hiking, camping, OHV use, tourism) is expected to continue in the CESA.

4.1.2.7 Fuelwood and Forest Product Use

Fuelwood harvesting within the proposed project area is expected to increase following treatments. A significant amount of biomass from pinyon-juniper tree removal would be left on site and available to harvest through the BLM administered permit system.

4.2 Cumulative Effects Analysis

4.2.2 Fish and Wildlife

The CESA boundaries for wildlife are grouped into two categories, big game and general wildlife (including migratory birds). Past and present actions within general and big game species CESAs has resulted in general loss of habitat. Noise and travel on existing roads and trails have caused habitat avoidance. Roads and utilities have also fragmented habitat. Past wildfires and vegetation treatments would have removed habitat for some species but would create more available habitat for others. Livestock grazing and wild horse use would reduce certain forage plant species that wildlife competes for.

Reasonably foreseeable future actions within the CESAs include any activities that remove or alter vegetation composition. Removal of vegetation would create more fragmentation and fewer areas would be available for wildlife. Activities or actions that remove pinyon-juniper woodlands would reduce habitat for species dependent on those vegetation communities. However, if the pinyon-juniper woodland was replaced with a more natural vegetation community for that site, the number of sagebrush obligate species would increase.

Proposed Action

Past, present and future actions within the wildlife CESAs have typically resulted in habitat degradation, loss, and fragmentation. The Proposed Action would facilitate a mosaic landscape and a healthy, resilient plant community conducive to the viability of several species. Removing trees and facilitating grass and forb cover would improve big game and other wildlife species’ habitat. Past treatments, similar to the Cherry Creek Prescribed Burn project where invasive species became a problem would not be implemented in the same manner for this project. Any prescribed burning would be implemented at elevation ranges that would minimize establishment of invasive species. Mechanical treatments proposed in this project, in combination of seeding have shown better success, and would create habitat conducive for most wildlife. The Proposed
Action in combination with past, present, and reasonably foreseeable actions would create habitat conducive for wildlife, and could offset any negative effects from past and future projects that could fragment habitat. The Proposed Action, when combined with past and future actions would move habitat toward the needs of most wildlife species by increasing understory components in treated areas while maintaining adjacent cover.

**No Action**

Implementation of the No Action Alternative, combined with the past, present, and future actions, would result in the current conditions continuing. This would likely result in tree density, cover and area increasing and shrub and herbaceous cover and area decreasing (Davies et al., 2011; Pyke, 2011; Miller and Tausch, 2001). This would result in a continued reduction in forage for wildlife, as well as an increase in hiding/thermal cover.

**4.2.3 Forest and Vegetation Resources**

Within the CESA, native vegetation has been removed by roads and trails and smaller mining activities. Past and present activities in the CESA has changed the range of species abundance, composition, and diversity. A lack of natural disturbance by wildfire has caused substantial changes to the condition and composition of vegetation communities. Past and present grazing has affected species composition due to livestock selection of plant species. Pinyon-juniper woodland has become established in areas that would historically be a sagebrush community. Past vegetation treatments have reintroduced disturbance and in some cases improved the vegetation composition and species diversity, while in other areas have caused more invasive species (e.g., cheatgrass).

Reasonably foreseeable future actions that cause surface disturbance and removal of vegetation would impact vegetation cover with the CESA. Future action include possible mining exploration, wildfires, and vegetation treatments.

**Proposed Action**

The implementation of the Proposed Action, combined with the past, present, and future actions, is expected to establish vegetative communities with high vigor that are resilient and resistant to disturbances, and reduce the threat of insect and disease outbreaks within woodland sites where treatment occurs. It would also increase the shrub and herbaceous understory within woodland sites where treatments occur.

The implementation of the Proposed Action combined with the past, present, and future actions would diversify vegetation composition by providing a mosaic disturbance across the landscape which is necessary to restore the natural vegetative community structure. Implementation of the project would also increase water and other resources to be available for native grasses, forbs and
shrubs to recolonize and establish. The vegetation community within the project area would be more resilient to future disturbance by moving toward a more historical (natural) regime.

**No Action**

Implementation of the No Action Alternative, combined with the past, present, and future actions, would likely result in the current vegetation conditions to continue to decline. This would likely result in tree density, cover, SDI and basal area increasing and shrub and herbaceous cover and area to decrease (Davies et al., 2011; Pyke, 2011; Miller and Tausch, 2001). Increasing density of trees would result in vegetation communities that would be more susceptible to reasonably foreseeable future large, high severity wildfires that convert to undesirable vegetation such as cheatgrass.

4.2.4 Rangeland Resources, Health and Livestock Grazing

Past and present surface disturbances within the CESA have altered and in some cases removed vegetation that would otherwise be available forage for livestock. Disturbance for roads and trails would have improved access to grazing locations within the CESA. Previous fuels treatments and rangeland treatment projects have altered vegetation cover for livestock grazing by promoting forage species. Surface disturbance from past and present actions likely has contributed to the increase of noxious and invasive species distribution within the CESA.

RFFA within the project area and CESA that would affect livestock grazing include mining operations, future vegetation treatments, and continued use and maintenance of roads and trails. Future vegetation treatments would require postponement of livestock grazing for two years until the site has recovered from the disturbance. This postponement would temporarily reduce the area available but over time, the available grazing area with forage availability would most likely increase.

**Proposed Action**

The implementation of the Proposed Action combined with the past, present, and future actions should shift the area toward FRCC 1, which would facilitate and establish conditions that would promote healthier, more productive and resilient rangeland conditions; and could assist in progressing towards or meeting the rangeland health standards in the area.

**No Action**

Implementation of the No Action Alternative, combined with the past, present, and future actions, would result in the current declining conditions to continue. This would likely result in tree density and cover in the area to increase; and shrub and herbaceous cover in the area to decrease (Davies et al., 2011; Pyke, 2011; Miller and Tausch, 2001). This could potentially reduce the amount of areas available for livestock grazing.
4.3.5 Special Status Animal Species

Greater sage-grouse

Surface disturbance from past and present activities within the greater sage-grouse CESA include activities such as recreation, road travel and maintenance, mining exploration and activities, and utility corridors. Past vegetation treatments and range improvements have generally moved the area toward meeting habitat objectives for greater sage-grouse habitat by removing pinyon-juniper woodland and creating a mosaic of vegetation with more species diversity. Roads and trails have caused an increase in human activity which increase noise and visual and impacts greater sage-grouse habitat use. Roads and utility lines fragment habitat and create predator perches which impact greater sage-grouse.

Reasonably foreseeable future activities include vegetation treatment projects, wildland fires, mining activities and exploration and road maintenance. Future vegetation treatment projects would focus on meeting the needs or increasing the size of greater sage-grouse habitat that would be available for species use.

Proposed Action

Past, present and future actions within the greater sage-grouse CESA have typically resulted in habitat degradation, loss, and fragmentation. The Proposed Action would facilitate a mosaic landscape and a health, resilient plant community conducive to the viability of several species. Removing trees and facilitating grass and forb cover would move the area toward greater sage-grouse habitat needs, as well as habitat for other special status species. The Proposed Action in combination with past, present, and reasonably foreseeable actions would not result in long term detrimental cumulative impacts to greater sage-grouse.

No Action

No action would likely result in continued decline in available greater sage-grouse habitat, and areas used by greater sage-grouse.

4.3.6 Visual Resource Management

The cumulative effects of the project on VRM is directly associated with the VRM Class objective and whether or not past, present and future projects have met, or will meet the VRM Class objectives. Natural and man-made features are visible in most of the project area. Visibly present are roads, power-lines, fence-lines, range improvements, gravel pits, mining activities, vegetation treatments, wildland fire and private properties that may or may not meet the VRM Class objectives.
Proposed Action

The proposed vegetation treatments have incorporated design features that would meet VRM objectives for each VRM Class. The cumulative effects of the proposed action to VRM would create a visual landscape of diverse color, texture, line that represent a natural setting along the VRM Class I and II areas. Design features would of treatments would create a mosaic visual setting of low distraction from the existing setting as observed from key observation points by a casual observer. The VRM objectives for each class would be met while incorporating design features to mimic the natural landscape for all projects. This project could assist with camouflaging or reducing visual effects from past or future projects by incorporating design features that mimic natural landscape character, and potentially shifting an observer’s attention away from man-made objects or features on the landscape.

No Action

Implementation of the No Action would not have an immediate cumulative effect on VRM. Future planned projects would be subject to design features that meet VRM Class objectives. Long-term cumulative effects of the No Action could cause a monotypic visual landscape (e.g., same color, line form,) if pinyon and juniper continue increasing in density. Natural, uncontrollable disturbances such as wildfire could occur causing an abrupt change in the visual landscape that may not meet VRM objectives, especially in the VRM Class I and II areas.

4.3.7 Wetland/Riparian and Soil Resources

Past and present actions that create surface disturbances would have impacts on soil and water resources within the CESA. Soil and riparian areas continue to be impacted by activities such as utilities, mining exploration, roads, wildfires, and livestock grazing. Actions that remove vegetation cover or compact and disturb soils may have resulted in additional erosion or sedimentation in riparian areas.

Proposed Action

The implementation of the Proposed Action combined with past, present, and future actions would have limited effects to soil resources as the vegetation left on the site would provide cover to prevent erosion. Based on similar projects, soils could be expected to recover within 1-2 years of implementation.

The implementation of the Proposed Action, combined with the past, present, and future actions, is expected to maintain or improve riparian area health of Johnson Spring. Reducing tree cover may increase water availability to the spring, but opening these areas may also attract more livestock use. The current livestock management plans provide protection from livestock use on riparian areas. Two of the springs are on private lands, in which BLM does not have any authority to what occurs on these springs and riparian areas and therefore it is unrealistic to
speculate the future effects to these springs after treatment has occurred. It can be assumed that
the availability of water would increase to these springs.

**No Action**

Implementation of the No Action Alternative, combined with the past, present, and future
actions, would likely result in the current soil conditions to continue. There is a possibility of
soils becoming more susceptible to water erosion within wooded areas due to the decrease and
lack of shrub and herbaceous understory (Pierson et al., 2013).

Implementation of the No Action Alternative, combined with the past, present, and future
actions, would result in the current conditions to continue in the short-term for riparian resources,
with likelihood they could decline in the long term.
## Chapter 5  Tribes, Individuals, Organizations or Agencies Consulted

### Table 5.1 List of Persons, Agencies and Organizations Consulted

<table>
<thead>
<tr>
<th>Name</th>
<th>Purpose and Authorities for Consultation or Coordination</th>
<th>Finding and Conclusion</th>
</tr>
</thead>
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<tr>
<td>Nevada Department of Wildlife (NDOW) Moira Kolada, Kody Menghini, Curt Baughman, Steve Foree, and Scott Roberts</td>
<td>Greater sage-grouse Consultation, Potential Project Treatment Areas</td>
<td>NDOW supports the project and the efforts to improve Greater sage-grouse and mule deer habitat. NDOW was also involved in identifying additional project treatment areas to improve wildlife habitat.</td>
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<tr>
<td>Jessica Axsom, State Historic Preservation Office</td>
<td>Cultural Resource Inventory Needs Assessment</td>
<td>No additional concerns.</td>
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<tr>
<td>BLM Ely District Interested Public Mailing List</td>
<td>Public Scoping, Comments, and Input on Project</td>
<td>Comments varied from support of the project to concerns of impacts to resources. Comments incorporated during the development of the EA.</td>
</tr>
<tr>
<td>Confederated Tribes of the Goshute Reservation</td>
<td>Consultation and Coordination with Indian Tribal Governments, Potential Project Treatment Areas.</td>
<td>Request for consultation.</td>
</tr>
<tr>
<td>Duckwater Shoshone Tribe</td>
<td>Consultation and Coordination with Indian Tribal Governments, Potential Project Treatment Areas.</td>
<td>Request field visit.</td>
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## Chapter 6  List of Preparers

### Table 6.1  List of Preparers

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Responsible for the Following Section(s) of this Document</th>
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</thead>
<tbody>
<tr>
<td>Katie Walsh</td>
<td>Natural Resource Specialist</td>
<td>Project Lead, Forest Resources, Fuels</td>
</tr>
<tr>
<td>Nancy Herms</td>
<td>Wildlife Biologist</td>
<td>Fish &amp; Wildlife, Special Status Animal Species, Migratory Birds</td>
</tr>
<tr>
<td>Ruth Thompson</td>
<td>Wild Horse and Burro Specialist</td>
<td>Wild Horses</td>
</tr>
<tr>
<td>Kurt Braun</td>
<td>Archaeologist, Cultural Resource Specialist</td>
<td>Cultural Resources, Paleontological Resources</td>
</tr>
<tr>
<td>Andy Gault</td>
<td>Hydrologist</td>
<td>Soil, Air, Water</td>
</tr>
<tr>
<td>Ian Collier</td>
<td>Rangeland Management Specialist</td>
<td>Rangeland Resources, Vegetation Resources</td>
</tr>
<tr>
<td>Maria Ryan</td>
<td>Natural Resource Specialist</td>
<td>Vegetative Resources, Environmental Justice</td>
</tr>
<tr>
<td>Alicia Hankins</td>
<td>Land Law Examiner</td>
<td>Lands</td>
</tr>
<tr>
<td>Elizabeth Seymour</td>
<td>Native American Coordinator</td>
<td>Native American Religious Concerns and other concerns Tribal Coordinator</td>
</tr>
<tr>
<td>John Miller</td>
<td>Park Ranger (Wilderness)</td>
<td>Lands with Wilderness Characteristics, Visual Resources</td>
</tr>
<tr>
<td>Chris McVicars</td>
<td>Natural Resource Specialist</td>
<td>Noxious and Invasive Weed Management</td>
</tr>
<tr>
<td>Concetta Brown</td>
<td>Natural Resource Specialist</td>
<td>NEPA Compliance</td>
</tr>
</tbody>
</table>
Chapter 7 References


Appendix A. Maps
Map 1. Proposed Project Location and Layout
Map 2. Fire Regime Condition Class for the Egan and Johnson Basins Project Area
Map 3. CESA Boundaries
Map 4. Proposed Project Area and Recent Wildfires within the Vegetation CESA
Map 5. Past and Present Range and Fuel Treatments within the Vegetation CESA
Map 6. Proposed Project Area and Pony Express Route
Map 7. Proposed Project Area and Greater Sage-grouse Habitat Classification
Map 8. AIM Plot Locations within the Proposed Project Area
Map 10. Greater Sage-grouse Nesting Habitat and Proposed Project Area
Map 11. Greater Sage-grouse Upland Brood Rearing Habitat and Proposed Project Area
Map 12. Greater Sage-grouse Riparian Habitat and Proposed Project Area
Map 13. Greater Sage-grouse Winter Habitat and Proposed Project Area
Appendix B. Weed Risk Assessment

RISK ASSESSMENT FOR NOXIOUS & INVASIVE WEEDS
Egan and Johnson Basin Restoration Project White Pine County, Nevada

SECTION 1 – PROPOSED ACTION

Description of the Proposed Action

The Proposed Action treatment units identifies approximately 38,500 acres of public lands administered by the BLM and private lands in the Egan and Johnson Basins. The treatment would be intended to shift vegetation species composition from FRCC 2 and 3 to FRCC 1 by reducing tree canopy coverage of pinyon-juniper, and restore sagebrush communities. Up to 65% of project acreage may be treated within the identified units. Biomass resulting from the removal of the pinyon-juniper would be available to the public for fuelwood, and the remaining slash may be piled and burned to remove excess fuels from the sites. The proposed treatments may include: tree thinning, prescribed fire, seeding and invasive species control. Chapter 2 of this EA includes a description of the Proposed Action and treatment methods.

SECTION 2– CURRENT CONDITIONS

On March 6, 2014 field weed surveys were completed for this project. In addition, the Ely District weed inventory data were consulted. Table 1 shows the documented noxious weed infestations by unit:

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>LATIN NAME</th>
<th>INFESTATIONS WITHIN OR ADJACENT TO UNITS</th>
<th>NEVADA NOXIOUS WEED CATEGORY</th>
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<tr>
<td>* Spotted knapweed</td>
<td>Centaurea biebersteinii</td>
<td>1, 2, 3, 7, 8, 9, 10, 12, 16, 17, 20</td>
<td>CATEGORY A¹</td>
</tr>
<tr>
<td>* Yellow starthistle</td>
<td>Centaurea solstitialis</td>
<td>2, 3, 4, 5, 6, 11, 12, 16, 17, 20</td>
<td></td>
</tr>
<tr>
<td>Musk thistle</td>
<td>Carduus nutans</td>
<td>1, 3, 4, 5, 6, 7, 8, 9, 11, 12, 14, 16, 17, 20</td>
<td></td>
</tr>
<tr>
<td>Russian knapweed</td>
<td>Acroptilon repens</td>
<td>7, 9, 10, 12, 16</td>
<td>CATEGORY B²</td>
</tr>
<tr>
<td>Scotch thistle</td>
<td>Onopordum acanthium</td>
<td>7, 9, 10</td>
<td></td>
</tr>
<tr>
<td>Canada thistle</td>
<td>Cirsium arvense</td>
<td>5, 6, 7, 9, 10, 12, 15, 16, 17, 20</td>
<td>CATEGORY C³</td>
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<tr>
<td>Hoary cress</td>
<td>Cardaria draba</td>
<td>Present within or adjacent to all units</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>---------------</td>
<td>--------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Water hemlock</td>
<td>Cicuta maculata</td>
<td>10</td>
<td></td>
</tr>
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1. Category A noxious weeds are weeds that are generally not found or that are limited in distribution throughout the state.
2. Category B noxious weeds are weeds that are generally established in scattered populations in some counties of the state.
3. Category C noxious weeds are weeds that are generally established and generally widespread in many counties of the state.

*Two Category A1 species are present adjacent to the project area. Yellow starthistle (*Centaurea solstitialis*) was discovered east of the project area in Telegraph Canyon in 2015. This is the only known occurrence of yellow starthistle within the Ely District BLM, and as such, is the highest priority species for treatment, inventory and control. Spotted knapweed (*Centaurea biebersteinii*) is known to be present east of the project area in two locations; near the town of Cherry Creek and at the mouth of Egan Canyon. Telegraph Canyon, Egan Canyon and Cherry Creek are all located along major roads which access the project area. Noxious weeds are most likely to spread along area reads.*
The general area was last inventoried for noxious weeds in 2006. Table 2 shows a list of invasive (not noxious) species found within and/or adjacent to the project area.

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>LATIN NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheatgrass</td>
<td>Bromus tectorum</td>
</tr>
<tr>
<td>Bur buttercup</td>
<td>Ceratocephala testiculata</td>
</tr>
<tr>
<td>Bull thistle</td>
<td>Cirsium vulgar</td>
</tr>
<tr>
<td>Field bindweed</td>
<td>Convolvulus arvensis</td>
</tr>
<tr>
<td>Russian olive</td>
<td>Elaeagnus angustifolia</td>
</tr>
<tr>
<td>Filaree</td>
<td>Erodium circuitarium</td>
</tr>
<tr>
<td>Kochia</td>
<td>Kochia scoparia</td>
</tr>
<tr>
<td>Halogeton</td>
<td>Halogeton glomeratus</td>
</tr>
<tr>
<td>Horehound</td>
<td>Marrubium vulgar</td>
</tr>
<tr>
<td>Russian thistle</td>
<td>Salsola kali</td>
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<tr>
<td>Tumble mustard</td>
<td>Sysimbrium altissimum</td>
</tr>
<tr>
<td>Common mullein</td>
<td>Verbascum thapsus</td>
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SECTION 3 - RISK RATING

<table>
<thead>
<tr>
<th>TABLE 3 - FACTOR 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1 assesses the likelihood of noxious/invasive weed species spreading to the project area.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>None (0)</th>
<th>Noxious/invasive weed species are not located within or adjacent to the project area. Project activity is not likely to result in the establishment of noxious/invasive weed species in the project area.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (1-3)</td>
<td>Noxious/invasive weed species are present in the areas adjacent to but not within the project area. Project activities can be implemented and prevent the spread of noxious/invasive weeds into the project area.</td>
</tr>
<tr>
<td>Moderate (4-7)</td>
<td>Noxious/invasive weed species located immediately adjacent to or within the project area. Project activities are likely to result in some areas becoming infested with noxious/invasive weed species even when preventative management actions are followed. Control measures are essential to prevent the spread of noxious/invasive weeds within the project area.</td>
</tr>
</tbody>
</table>
Heavy infestations of noxious/invasive weeds are located within or immediately adjacent to the project area. Project activities, even with preventative management actions, are likely to result in the establishment and spread of noxious/invasive weeds on disturbed sites throughout much of the project area.

The rating for Factor 1 is Moderate (6). The project entails a high level of off-road vehicle traffic and other disturbances. All of the known noxious weed infestations are relatively small and sparse, but it is likely that the treatments listed above will result in some weed dispersal.

### TABLE 4 - FACTOR 2

Factor 2 assesses the consequences of noxious/invasive weed establishment in the project area.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low to Nonexistent (1-3)</td>
<td>None. No cumulative effects expected.</td>
</tr>
<tr>
<td>Moderate (4-7)</td>
<td>Possible adverse effects on site and possible expansion of infestation within the project area. Cumulative effects on native plant communities are likely but limited.</td>
</tr>
<tr>
<td>High (8-10)</td>
<td>Obvious adverse effects within the project area and probable expansion of noxious/invasive weed infestations to areas outside the project area. Adverse cumulative effects on native plant communities are probable.</td>
</tr>
</tbody>
</table>

The rating for Factor 2 is High (8). Due to the high level of disturbance, newly established noxious weeds would likely spread and disperse at higher rates than normal, increasing competition with native vegetation in the process. If yellow starthistle becomes established in the area, serious adverse effects would likely be seen in years to come. Yellow starthistle is incredibly pervasive, and very difficult to control, and can be toxic to livestock and wildlife.

### TABLE 5 - RISK RATING

The Risk Rating is obtained by multiplying Factor 1 by Factor 2.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>None (0)</td>
<td>Proceed as planned.</td>
</tr>
<tr>
<td>Low (1-10)</td>
<td>Proceed as planned. Initiate control treatment on noxious/invasive weed populations that get established in the area.</td>
</tr>
<tr>
<td>Moderate (11-49)</td>
<td>Develop preventative management measures for the proposed project to reduce the risk of introduction of spread of noxious/invasive weeds into the area. Preventative management measures should include modifying the project to include seeding the area to occupy disturbed sites with desirable species. Monitor the area for at least 3 consecutive years and provide for control of newly established populations of noxious/invasive weeds and follow-up treatment for previously treated infestations.</td>
</tr>
</tbody>
</table>
Project must be modified to reduce risk level through preventative management measures, including seeding with desirable species to occupy disturbed site and controlling existing infestations of noxious/invasive weeds prior to project activity. Project must provide at least 5 consecutive years of monitoring. Projects must also provide for control of newly established populations of noxious/invasive weeds and follow-up treatment for previously treated infestations.

The Risk Rating is Moderate (48). This indicates that the project can proceed as planned as long as the following measures are followed:

- Any discovery of newly established populations of noxious/invasive weeds will be communicated to the Ely District Noxious and Invasive Weeds Coordinator.

- Where appropriate, vehicles and heavy equipment used for the completion, maintenance, inspection, or monitoring of ground disturbing activities, or for authorized off-road driving will be free of soil and debris capable of transporting weed propagules. Vehicles and equipment will be cleaned with power or high pressure equipment prior to entering or leaving the work site or project area. Cleaning efforts will concentrate on tracks, feet and tires, and on the undercarriage. Special emphasis will be applied to axels, frames, cross members, motor mounts, on and underneath steps, running boards, and front bumper/brush guard assemblies. Vehicle cabs will be swept out and refuse will be disposed of in waste receptacles.

To minimize the transport of soil-borne noxious weed seeds, roots, or rhizomes, infested soils or materials would not be moved and redistributed on weed-free or relatively weed-free areas. In areas where infestations are identified or noted and infested soils, rock, or overburden must be moved, these materials will be salvaged and stockpiled adjacent to the area from which they were stripped. Appropriate measures will be taken to minimize wind and water erosion of these stockpiles. During reclamation, the materials will be returned to the area from which they were stripped.

- Before implementing any treatments near yellow starthistle infestations, map out current occurrences and avoid the areas by at least 50 meters, or treat the infestation at least a year prior to the treatment to reduce the occurrence and likelihood of spreading.

Attached map shows the known noxious species within and adjacent to the project area.

<table>
<thead>
<tr>
<th>Reviewed by:</th>
<th>Chris McVicars</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ely District Noxious &amp; Invasive Weeds Coordinator</td>
<td>5/12/2016</td>
</tr>
</tbody>
</table>
Appendix C. Migratory Bird List

The following data reflect survey blocks and/or incidental sighting of bird species within or near the project boundaries from the *Atlas of the Breeding Birds of Nevada* (Floyd et al. 2007). These data represent birds that were confirmed, probably, or possibly breeding within or near the boundaries. These data are not comprehensive, and additional species not listed here may be present within the project boundary.

**Table C.1. Migratory Bird List**

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>American kestrel</td>
<td><em>(Falco sparverius)</em></td>
</tr>
<tr>
<td>American robin</td>
<td><em>(Turdus migratorius)</em></td>
</tr>
<tr>
<td>black-billed magpie</td>
<td><em>(Pica hudsonia)</em></td>
</tr>
<tr>
<td>brown-headed cowbird</td>
<td><em>(Molothrus ater)</em></td>
</tr>
<tr>
<td>black-headed grosbeak</td>
<td><em>(Pheucticus melanocephalus)</em></td>
</tr>
<tr>
<td>Brewer’s blackbird</td>
<td><em>(Euphagus cyanoccephalus)</em></td>
</tr>
<tr>
<td>Brewer’s sparrow</td>
<td><em>(Spizella breweri)</em></td>
</tr>
<tr>
<td>bushtit</td>
<td><em>(Psaltriparus minimus)</em></td>
</tr>
<tr>
<td>Cassin’s finch</td>
<td><em>(Carpodacus cassini)</em></td>
</tr>
<tr>
<td>chukar</td>
<td><em>(Alectoris chukar)</em></td>
</tr>
<tr>
<td>common nighthawk</td>
<td><em>(Chordeiles minor)</em></td>
</tr>
<tr>
<td>common poorwill</td>
<td><em>(Phalaenoptilus nuttallii)</em></td>
</tr>
<tr>
<td>common raven</td>
<td><em>(Corvus corax)</em></td>
</tr>
<tr>
<td>dusky flycatcher</td>
<td><em>(Empidonax oberholseri)</em></td>
</tr>
<tr>
<td>European starling</td>
<td><em>(Sturnus vulgaris)</em></td>
</tr>
<tr>
<td>*greater sage-grouse</td>
<td><em>(Centrocercus urophasianus)</em></td>
</tr>
<tr>
<td>green-tailed towhee</td>
<td><em>(Pipilo chlorurus)</em></td>
</tr>
<tr>
<td>house wren</td>
<td><em>(Troglodytes aedon)</em></td>
</tr>
<tr>
<td>mourning dove</td>
<td><em>(Zenaida macroura)</em></td>
</tr>
<tr>
<td>northern flicker</td>
<td><em>(Colaptes auratus)</em></td>
</tr>
<tr>
<td>rock wren</td>
<td><em>(Salpinctes obsoletus)</em></td>
</tr>
<tr>
<td>sage thrasher</td>
<td><em>(Oreoscoptes montanus)</em></td>
</tr>
<tr>
<td>Savannah sparrow</td>
<td><em>(Passerculus sandwichensis)</em></td>
</tr>
<tr>
<td>spotted towhee</td>
<td><em>(Pipilo maculatus)</em></td>
</tr>
<tr>
<td>Virginia's warbler</td>
<td><em>(Vermivora virginiae)</em></td>
</tr>
<tr>
<td>warbling vireo</td>
<td><em>(Vireo gilvus)</em></td>
</tr>
<tr>
<td>white-crowned sparrow</td>
<td><em>(Zonotrichia leuconotus)</em></td>
</tr>
<tr>
<td>western scrub jay</td>
<td><em>(Aphelocoma californica)</em></td>
</tr>
</tbody>
</table>

* sensitive or species of concern
### Appendix E. Greater Sage-grouse Table 2–2

**Proposed Habitat Objectives for GRSG**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Indicators</th>
<th>Desired Condition (Habitat Objectives)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GENERAL/LANDSCAPE-LEVEL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All life stages</td>
<td>Rangeland health assessments</td>
<td>Meeting all standards&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Aldridge and Boyce 2007</td>
</tr>
<tr>
<td>Cover (nesting)</td>
<td>Seasonal habitat needed</td>
<td>&gt;65% of the landscape in sagebrush cover</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual grasses</td>
<td>(&lt;%5)</td>
<td>Blomberg et al. 2012</td>
</tr>
<tr>
<td>Security (nesting)</td>
<td>Conifer encroachment</td>
<td>&lt;3% phase I (&lt;0 to &lt;25% cover)</td>
<td>Casazza et al. 2011 USGS (in prep A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No phase II (25 to 50% cover)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No phase III (&gt;50% cover)</td>
<td></td>
</tr>
<tr>
<td>Cover and food (winter)</td>
<td>Conifer encroachment</td>
<td>&lt;5% phase I (&lt;0 to &lt;25% cover)</td>
<td>USGS (in prep A) USGS (in prep B)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No phase II (25 to 50% cover)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No phase III (&gt;50%)</td>
<td></td>
</tr>
<tr>
<td>Sagebrush extent</td>
<td></td>
<td>&gt;85% sagebrush land cover</td>
<td>USGS (in prep A) Doherty et al. 2008</td>
</tr>
<tr>
<td><strong>LEK (Seasonal Use Period: March 1 to May 15)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cover</td>
<td>Availability of sagebrush cover</td>
<td>Has adjacent sagebrush cover</td>
<td>Blomberg et al. 2012 Connelly et al. 2000 Stiver et al. 2015 (in press) HAF</td>
</tr>
<tr>
<td>Security&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Pinyon or juniper cover</td>
<td>(&lt;3%) landscape cover within .6 mile of leks</td>
<td>Connelly et al. 2000 (modified)</td>
</tr>
<tr>
<td><strong>NESTING (Seasonal Use Period: April 1 to June 30)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cover</td>
<td>Sagebrush cover</td>
<td>(\geq 20%)</td>
<td>Kolada et al. 2009a, 2009b</td>
</tr>
<tr>
<td></td>
<td>Residual and live perennial grass cover</td>
<td>(\geq 10%) if shrub cover (\leq 25%)&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Coates et al. 2013 Coates and Delehanty 2010 Kolada et al. 2009a, 2009b</td>
</tr>
<tr>
<td></td>
<td>Annual grass cover</td>
<td>(&lt;5%)</td>
<td>Lockyer et al. (in press)</td>
</tr>
<tr>
<td></td>
<td>Total shrub cover</td>
<td>(\geq 30%)</td>
<td>Coates and Delehanty 2010 Kolada et al. 2009a Lockyer et al. (in press)</td>
</tr>
<tr>
<td>Perennial grass height</td>
<td>Provide overhead and lateral concealment from predators&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td>Connelly et al. 2000, 2003 Hagen et al. 2007; Stiver et. al. 2015 (in press) HAF</td>
</tr>
</tbody>
</table>
## Proposed Habitat Objectives for GRSG*

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Indicators</th>
<th>Desired Condition (Habitat Objectives)</th>
<th>Reference</th>
</tr>
</thead>
</table>

### BROOD-REARING/SUMMER (Seasonal Use Period: May 15 to September 15; Early: May 15 to June 15; Late: June 15 to September 15)

#### UPLAND HABITATS

<table>
<thead>
<tr>
<th>Cover</th>
<th>Sagebrush cover</th>
<th>10 to 25%</th>
<th>Connelly et al. 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Perennial grass Cover and forbs</td>
<td>&gt;15% combined perennial grass and forb cover</td>
<td>Connelly et al. 2000 Hagen et al. 2007</td>
</tr>
<tr>
<td></td>
<td>Deep rooted perennial bunchgrass</td>
<td>7 inches⁵⁶</td>
<td>Hagen et al. 2007</td>
</tr>
<tr>
<td>Cover and food</td>
<td>Perennial forb cover</td>
<td>≥5% arid</td>
<td>Casazza et al. 2011 Lockyer et al. (in press)</td>
</tr>
<tr>
<td></td>
<td>≥15% mesic</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### RIPARIAN/MEADOW HABITATS

<table>
<thead>
<tr>
<th>Cover and food</th>
<th>Riparian areas/meadows</th>
<th>PFC</th>
<th>Dickard et al. 2014 Prichard et al. 1998, 1999 Stiver et al. 2015 (in press) HAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>Upland and riparian perennial forb availability and understory species richness</td>
<td>• Preferred forbs are common with several species present⁶ • High species richness (all plants)</td>
<td>Stiver et al. 2015 (in press) HAF</td>
</tr>
<tr>
<td>Riparian area/meadow interspersion with adjacent sagebrush</td>
<td>Has adjacent sagebrush cover</td>
<td>Casazza et al. 2011 Stiver et al. 2015 (in press) HAF</td>
<td></td>
</tr>
</tbody>
</table>

### WINTER (Seasonal Use Period: November 1 to February 28)

<table>
<thead>
<tr>
<th>Cover and Food</th>
<th>Sagebrush cover</th>
<th>≥10% above snow depth</th>
<th>Connelly et al. 2000 USGS (in prep C)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sagebrush height</td>
<td>&gt;9.8 inches above snow depth</td>
<td>Connelly et al. 2000 USGS (in prep C)</td>
</tr>
</tbody>
</table>

¹Upland standards are based on indicators for cover, including litter, live vegetation, and rock, appropriate to the ecological potential of the site.
²Applicable to Phase I and Phase II pinyon and/or juniper.
³Does not include fences.
⁴In addition, if upland rangeland health standards are being met.
⁵Relative to ecological site potential.
⁶In drought years, 4-inch perennial bunchgrass height with greater than 20 percent measurements exceeding 5 inches in dry years.
⁷Specific height requirements needed to meet the objective will be set at the time of HAF assessments.

*This table is referenced from the Nevada and Northeastern California Greater Sage-Grouse Proposed Land Use Plan Amendment (ARMPA) and Final Environmental Impact Statement (2015)
Appendix F. Cherry Creek Mowing and Prescribed Burn Project Post Monitoring

The Cherry Creek Project failed to meet important species composition objectives such as improving perennial grass cover and protecting the site from invasive species. The treatment included mechanical and prescribed fire aspects; however it is difficult to determine what effects, if any, the mechanical component may have had. The ecological sites included R028BY086NV, R028BY010NV, R028BY087NV, F028BY062NV, and F028BY060NV, which were either sagebrush and pinyon-juniper sites and typically included desired perennial species bluebunch wheatgrass and Indian ricegrass.

The basic site characteristics such as canopy cover and bare ground generally did not improve over the monitoring period, as indicated by data from Plots 1-3, 8, 9, and 11; see Figure 1 below. These sample plots were the only available monitoring data following treatment.

Tree and shrub cover was greatly reduced by the treatment and 2012 monitoring data indicated little tree and shrub species with no pinyon or juniper present. The 2012 monitoring data indicates tree cover was reduced well below the maximum objective, possibly beyond what would be advised; see Figure 2 below.

The 2012 monitoring data indicates partial success regarding perennial grass percent cover; Figure 2. The global average is only 8% cover with a minimum objective of 10% which were not statistically different; therefore, perennial grass cover could be meeting the objective minimum. However, this treatment type should be reconsidered prior to use on similar sites under similar conditions as success was minimal 7 years following treatment.

Regression analysis emphasized the importance of adequate perennial grass cover prior to this type of treatment; Figure 3 below. Perennial grass cover less than 7-10% prior to the burn resulted in poor recovery of perennial grass cover following the burn. Individually analyzing sample plots over all monitoring years reveals the ability of sites to rebound based on perennial grass cover prior to treatment; Figure 4 below. These results were further correlated to invasive species by comparing the relative invasive species cover as a percent of canopy cover. When invasive cover was divided by canopy cover, the confounding effect of site quality on results was reduced (i.e. high quality sites had greater canopy cover and greater levels of both invasive and perennial grass cover). Percent invasive canopy cover averaged over all post-treatment monitoring years ranged from 46-78% for sample plots. Linear regression indicated 10% pre-treatment perennial grass cover reduced percent invasive canopy cover from 80% to 48% as compared to having no perennial species cover prior to treatment. The advantage of perennial grass cover for reducing cheatgrass invasion following fire has been previously documented (Condon, 2011). Post-treatment photos of the baselines for Plots 1, 8, and 11 are displayed in Figures 5–7 below.

In summary, post-treatment monitoring indicates extreme mortality of tree and shrub species with little desired perennial species occupying the site. Species composition was negatively impacted by the treatment. The prescribed fire appears to have exceeded desired characteristics and has resulted in multiple invasive species exceeding the maximum objective for invasive
species percent cover. Plot level data was generally not statistically significant due to only two transects being implemented at each plot. Three transects are recommended for future monitoring protocol. Fewer sample points (e.g. 50 or 66 instead of 100) along the transect could offset the additional expense of including three transects without compromising data quality. The site does not appear to be in the Reference State as invasive species presence is abundant. In some cases these sites may be in the Annual State, as shrub and tree cover has been reduced and there was limited perennial grass species.

Literature Cited

Figure 1. Cherry Creek site characteristics response to treatment. Only data from plots which were monitored pre- and post-treatment were included.

Figure 2. Cherry Creek species response to treatment. Only data from plots which were monitored pre- and post-treatment were included. Overall, the project failed to meet important objectives, with the exception of reducing target tree species. The absence of invasive species prior to treatment is surprising considering the extreme post-treatment levels.
Figure 3. Effect of species composition prior to treatment on post-treatment results at Cherry Creek. Regression analysis indicates perennial grass cover after burning is highly dependent (75-80% explained variation) on pre-treatment perennial grass cover. The exponential relationship indicates much greater post-treatment cover with only slightly greater pre-treatment cover. Management should consider improving perennial grasses by other methods when existing perennial grasses are low.

Figure 4. Perennial grass species cover by monitoring year for 6 Cherry Creek sample plots. This figure illustrates the ability of perennial grasses to recover and increase following fire when pre-treatment cover is adequate.
Figure 5. Plot 1 baseline during 2012 monitoring.

Figure 6. Plot 8 baseline during 2012 monitoring.
Figure 7. Plot 11 baseline during 2012 monitoring.
Appendix G. Assessment, Inventory, and Monitoring Plot Vegetation Summary

Within the proposed project treatment area there are four plots from 2011 data collection efforts and two plots from 2016 data collection efforts. From 2011, two plots are within ecological site R028BY006NV- Shallow Calcareous Loam 10-12“Precipitation Zone (P.Z.), one is within R028BY010NV- Loamy 8-10” P.Z., and one is within R028BY011NV- Shallow Calcareous Loam 8-10” P.Z. From 2016 data collection efforts, both plots are within ecological site R028BY094NV- Calcareous Loam 10-14” P.Z. Information on ecological site descriptions (ESDs) can be found at the Natural Resource Conservation Service (NRCS) website (https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/ecoscience/desc/).

Protocols for data collection and monitoring methods are found in the Monitoring Manual for Grasslands, Shrublands and Savanna Ecosystems (Herrick, 2016). These methods are standard and provide quantitative and qualitative measurements for assessing land management decisions.

Protocols followed will be AIM Core and Supplemental Methods.

- Line Point Intercept (with plot-level species inventory)
  - LPI on spoke system with three 25m transects 120° apart
  - Transect 1, will be magnetic north
  - Transects 2 & 3 will be 120° and 240° respectively
  - Collect points every .5m
- Vegetation Heights (AIM method)
  - Every 2.5m on all 3 LPI lines
- Canopy Gap (includes annual and perennial vegetation)
  - Supplemental Canopy Gap can include only perennial vegetation
- Soil stability. Collected from 18 points along the 3 LPI lines.
- Soil pit profile. Collected at plot center
- Photos. 1 taken of soil pit and 3 from center looking down each LPI line.
- HAF methods (for GRSG habitat): Sagebrush Shape & Forb Frequency
- Tree Density (AIM supplemental method modified to .1 acre subplots)
- Density sub-plots (supplemental fuels treatment information)
  - Meter squared sub-plots along North LPI transect- 5 total, every 5 meters (5, 10, 15, 20, 25).
Table 1.1 Summary of Plots, Ecological Site, Biophysical Setting (BpS) and Succession Class

<table>
<thead>
<tr>
<th>Plot ID</th>
<th>Ecological Site Code</th>
<th>Ecological Site Name</th>
<th>BpS</th>
<th>Succession Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butte Valley 04</td>
<td>R028BY010NV</td>
<td>Loamy 8-10&quot; P.Z.</td>
<td>Great Basin Xeric Mixed Sagebrush Shrubland (1079)</td>
<td>B</td>
</tr>
<tr>
<td>Butte Valley 07</td>
<td>R028BY006NV</td>
<td>Shallow Calcareous Loam 10-12&quot; P.Z.</td>
<td>Inter-Mountain Basins Big Sagebrush Shrubland (1080)</td>
<td>UN</td>
</tr>
<tr>
<td>Butte Valley 08</td>
<td>R028BY006NV</td>
<td>Shallow Calcareous Loam 10-12&quot; P.Z.</td>
<td>Inter-Mountain Basins Big Sagebrush Shrubland (1080)</td>
<td>E</td>
</tr>
<tr>
<td>Butte Valley 23</td>
<td>R028BY011NV</td>
<td>Shallow Calcareous Loam 8-10&quot; P.Z.</td>
<td>Great Basin Xeric Mixed Sagebrush Shrubland (1079)</td>
<td>UN</td>
</tr>
<tr>
<td>EJB 02</td>
<td>R028BY094NV</td>
<td>Calcareous Loam 10-14&quot; P.Z.</td>
<td>Great Basin Xeric Mixed Sagebrush Shrubland (1079)</td>
<td>D</td>
</tr>
<tr>
<td>EJB 07</td>
<td>R028BY094NV</td>
<td>Calcareous Loam 10-14&quot; P.Z.</td>
<td>Inter-Mountain Basins Big Sagebrush Shrubland (1080)</td>
<td>UN</td>
</tr>
</tbody>
</table>

**Biophysical Setting and Succession Class Description**

Dominant vegetation type within the proposed project area are described using the Biophysical Setting (BpS) and succession class layers from LANDFIRE v.1.3.0 (LANDFIRE, 2013). BpS is vegetation that would have been dominant on the landscape prior to Euro-American settlement and is based on current biophysical environment and an estimation of the historical disturbance regime. BpS functions as a potential baseline to compare reference or historical conditions to current conditions (Barrett et al., 2010). Succession class is a characterization of the current vegetation conditions for successional stages within each BpS. Succession class also describes uncharacteristic stages, like exotic species, that would not occur within the variability of a BpS. Successional stage descriptions can be found in the FRCC handbook (Barrett et al., 2010). Further information about BpS community type descriptions can be found on the LANDFIRE website (http://www.landfire.gov/index.php). A description of the BpS and succession classes can be found in the Vegetation Resources section of Chapter 3 in this EA.
Soil Stability

The soil stability test provides information about soil structure and erosion resistance. Each sample is tested using a soil stability kit and given a rating from 1 to 6 based on their cohesion when dipped in water. A rating of “6” indicates the highest level of soil stability, and a rating of “1” indicates the lowest level of soil stability. Samples are collected under perennial plant coverage and no cover (this includes non-perennial plant cover). Higher stability has been directly correlated with reductions in erosion. It is more difficult for individual soil particles to become detached as the soil stability value increases. More stable soils are less likely to form physical crusts, which soak up water more slowly. Thus, hydrologic function tends to be better on soils with high stability values. However, there are some cases in which soil surfaces stabilized by microbiotic crusts (high stability values) actually have lower infiltration rates than similar soils without crusts (Herrick, 2009).

Table 2.2 Summary of Soil Stability Test Results

<table>
<thead>
<tr>
<th>Plot Name</th>
<th>Ecological Site Code</th>
<th>Soil Stability -All Samples Average</th>
<th>Soil Stability -No Cover</th>
<th>Soil Stability -Under Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butte Valley 04</td>
<td>R028BY010NV Loamy 8-10” P.Z.</td>
<td>4.5</td>
<td>4.7</td>
<td>4.4</td>
</tr>
<tr>
<td>Butte Valley 07</td>
<td>R028BY006NV Shallow Calcareous Loam 10-12” P.Z.</td>
<td>4.2</td>
<td>3.0</td>
<td>4.8</td>
</tr>
<tr>
<td>Butte Valley 08</td>
<td>R028BY006NV Shallow Calcareous Loam 10-12” P.Z.</td>
<td>4.4</td>
<td>4.1</td>
<td>4.5</td>
</tr>
<tr>
<td>Butte Valley 23</td>
<td>R028BY011NV Shallow Calcareous Loam 8-10” P.Z.</td>
<td>3.4</td>
<td>2</td>
<td>4.3</td>
</tr>
<tr>
<td>EJB 02</td>
<td>R028BY094NV Calcareous Loam 10-14” P.Z.</td>
<td>3.4</td>
<td>2.4</td>
<td>4.2</td>
</tr>
<tr>
<td>EJB 07</td>
<td>R028BY094NV Calcareous Loam 10-14” P.Z.</td>
<td>4.2</td>
<td>5.0</td>
<td>4.1</td>
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### Species Richness

<table>
<thead>
<tr>
<th>Plot Name</th>
<th>Ecological Site Code</th>
<th>Number of Species Recorded</th>
</tr>
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<tbody>
<tr>
<td>Butte Valley 04</td>
<td>R028BY010NV Loamy 8-10&quot; P.Z.</td>
<td>23</td>
</tr>
<tr>
<td>Butte Valley 07</td>
<td>R028BY006NV Shallow Calcareous Loam 10-12&quot; P.Z.</td>
<td>42</td>
</tr>
<tr>
<td>Butte Valley 08</td>
<td>R028BY006NV Shallow Calcareous Loam 10-12&quot; P.Z.</td>
<td>37</td>
</tr>
<tr>
<td>Butte Valley 23</td>
<td>R028BY011NV Shallow Calcareous Loam 8-10&quot; P.Z.</td>
<td>44</td>
</tr>
<tr>
<td>EJB 02</td>
<td>R028BY094NV Calcareous Loam 10-14&quot; P.Z.</td>
<td>20</td>
</tr>
<tr>
<td>EJB 07</td>
<td>R028BY094NV Calcareous Loam 10-14&quot; P.Z.</td>
<td>24</td>
</tr>
</tbody>
</table>

Species found within plots that are greater sage-grouse preferred:

- Indian Ricegrass- *Achnatherum hymenoides*
- Douglas’ dustymaiden- *Chaenactis douglasii*
- Squirreltail- *Elymus elymoidies*
- Fleabane- *Erigeron spp.*
- Spiny hopsage- *Grayia spinosa*
- Granite pickly phlox- *Linanthus pungens*
- Cryptantha- *Cryptantha pterocarya*
- Buckwheat- *Eriogonum microthecum, Eriogonum ovalifolium*
- Blazingstar- *Mentzelia albicaulis*
- Beardtongue- *Penstemon spp.*
- Phlox- *Phlox hoodia, Phlox longifolia*
- Milkvetch- *Astragalus spp.*
- Sego Lily- *Calochortus nuttallii*
Species found within plots that are identified as noxious or invasive annuals:

- Cheatgrass- *Bromus tectorum*
- Russian Thistle- *Salsola*

Figure 1. Plot Photo EJB 07

Figure 2. Plot Photo EJB 02
References


Appendix H. Visual Resource and KOP Observations

KOP 1- looking into VRM Class III to the west

<table>
<thead>
<tr>
<th>SECTION A. PROJECT INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Project Name</td>
</tr>
<tr>
<td>2. Key Observation Point</td>
</tr>
<tr>
<td>3. VRM Class</td>
</tr>
<tr>
<td>4. Location</td>
</tr>
<tr>
<td>5. Location Sketch</td>
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<table>
<thead>
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<tr>
<td>1. LAND/WATER</td>
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<tr>
<td>2. VEGETATION</td>
</tr>
<tr>
<td>3. STRUCTURES</td>
</tr>
<tr>
<td>FORM</td>
</tr>
<tr>
<td>L</td>
</tr>
<tr>
<td>Light to dark tans and browns</td>
</tr>
<tr>
<td>TERC- TURE</td>
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</table>

<table>
<thead>
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<th>SECTION C. PROPOSED ACTIVITY DESCRIPTION</th>
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<td>Light to dark tans and browns</td>
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<tr>
<td>1. DEGREE OF CONTRAST</td>
</tr>
<tr>
<td>LAND/WATER BODY</td>
</tr>
<tr>
<td>(1)</td>
</tr>
<tr>
<td>STRONG</td>
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<tr>
<td>FORM</td>
</tr>
<tr>
<td>LINE</td>
</tr>
<tr>
<td>COLOR</td>
</tr>
</tbody>
</table>

2. Does project design meet visual resource management objectives? X Yes _No_ (Explain on reverse side)

3. Additional mitigating measures recommended _Yes_ X _No_ (Explain on reverse side)

Evaluator's Name: Erin Rajala
Date: 11/14/13
The proposed project would result in temporary short-term and beneficial long-term visual impacts. The proposed restoration project introducing various vegetation treatments will primarily affect the elements of line and color. Short-term visual impacts would primarily be affected immediately after the treatments occurred until the existing vegetation started to blend into the surrounding area. The treatment processes would expose more of the lighter understory vegetation as the tree canopy coverage is removed within the treatment areas. Any minimal visual contrasts would decrease over time and appear more natural. The proposed project would better mimic the characteristic landscape as it was prior to tree canopy encroachment, the treatment process would create more natural patterns across the landscape and improve the visual quality overall.

Changes to the characteristic landscape would be moderate to weak from KOP 1, along the Pony Express NHT. From KOP 1 the proposed project will likely not dominate the view of the casual observer or affect the experience of those travelling along the NHT as the project will be located and visible from a distance. A break up in vegetation may be seen, but will likely not be largely noticeable as it will likely mimic the existing landscape patterns.

Additional Mitigating Measures (See item 3)

Design features mitigating visual impacts have already been considered by the project lead and integrated within the proposed action.
KOP 2- Treatment Unit 1 within the Pony Express National Historic Trail

<table>
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<tr>
<td>UNITED STATES</td>
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<tr>
<td>DEPARTMENT OF THE INTERIOR</td>
</tr>
<tr>
<td>BUREAU OF LAND MANAGEMENT</td>
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<td>VISUAL CONTRAST RATING WORKSHEET</td>
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<td>1. Project Name</td>
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<td>2. Key Observation Point</td>
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<td>KOP 2 – Treatment 1 within the Pony XP NHT Corridor</td>
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<tr>
<td>3. VRM Class</td>
</tr>
<tr>
<td>II Pony XP NHT</td>
</tr>
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</table>

| 4. Location Township (see map) |
| Range |

| 5. Location Sketch |
| Sections |

<table>
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<th>SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION</th>
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<td>2. VEGETATION</td>
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<td>3. STRUCTURES</td>
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| FORM |
| Carving & Continuous |
| Irregular & Undulating |
| Pony XP NHT/Road |

| COLOR |
| Light to dark tans |
| Light to dark greens with browns and tans |
| None |

| TEXTURE |
| Gradational |
| Continuous & Dense |
| None |

<table>
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<th>SECTION C. PROPOSED ACTIVITY DESCRIPTION</th>
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<td>2. VEGETATION</td>
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<td>3. STRUCTURES</td>
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</table>

| FORM |
| Irregular & Flowing |
| Carving & Broken |
| None |

| COLOR |
| Light to dark tans |
| Light greens with browns and tans |
| None |

| TEXTURE |
| Gradational |
| Uniform & Purity |
| None |

<table>
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<th>SECTION D. CONTRAST RATING</th>
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<th>LONG TERM</th>
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<td>COLOR</td>
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</tr>
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2. Does project design meet visual resource management objectives? Yes X No (Explain on reverse side)

3. Additional mitigating measures recommended Yes X No (Explain on reverse side)

Evaluator’s Names: Erin Rajala Date: 11/14/13
The proposed project would result in temporary short-term and beneficial long-term visual impacts. The proposed restoration project introducing various vegetation treatments will affect all of the elements, form, line, color and texture. Short-term visual impacts would primarily be affected immediately after the treatments occurred until the existing vegetation started to blend into the surrounding area. The treatment processes would expose more of the lighter understory vegetation as the tree canopy coverage is removed within the treatment area. Any minimal visual contrast would decrease over time and appear more natural.

Changes to the characteristic landscape would be moderate to weak from KOP 2, within the Pony Express NHT corridor. The changes created by the tree thinning project will likely be seen and unavoidable due to the proximity of the treatment area as it surrounds the NHT, noted from KOP 2. The view of the casual observer will be dominated in the short-term due to most of the tree canopy being removed and especially to those that are familiar with what the area looked like prior to the treatment. However over time, the eye of the casual observer will naturally be brought across the landscape and less focused on the immediate surrounding area, as the removal of the tree canopy will allow for a more broad view of the natural landscape; which may be more pleasing to the eye of unknowing casual observer.

The experience of those travelling along the NHT will most likely be impacted by the project immediately after the treatments have commenced, due to the fresh appearance of the cut tree bases. However in the long term, the overall experience after the treatments may be improved as it may appear more consistent with the natural landscape that existed during the era of the Pony XP Trail.

The proposed project is expected to better mimic the characteristic landscape as it was prior to the tree canopy encroachment, the treatment process would create more natural patterns across the landscape and improve the visual quality overall.

Additional Mitigation Measures (See item 3)

Design features mitigating visual impacts have already been considered by the project lead and integrated within the proposed action to include repeating the basic elements of form, line, color, and texture; and coordinated with the assigned cultural specialist on the project to include any mitigation to preserve the heritage values within the Pony XP Trail and along its corridor.
KOP 3- Treatments within the Pony Express National Historic Trail Corridor and extend beyond the trail into VRM Class III; looking east and west.
Comments from item 2.

The proposed project would result in temporary short-term and beneficial long-term visual impacts. The proposed restoration project introducing various vegetation treatments will affect primarily the elements including, line, color and texture. Short-term visual impacts would primarily be affected immediately after the treatments occurred until the existing vegetation started to blend into the surrounding area. The treatment processes would expose more of the lighter understory vegetation as the tree canopy coverage is removed within the treatment area. Any minimal visual contrast would decrease over time and appear more natural.

Changes to the characteristic landscape would be moderate to weak from KOP 3, within the Pony Express NHT corridor including the VRM Class III portion of the treatment unit. The contrast will be beneficial from KOP 3 as the treatments proposed will break up the hard tree line that currently exists from where the natural fire boundary ends and the dense tree canopy begins, creating a more moderate contrast than that of the strong vegetation contrast which currently exists.

The changes created by the tree thinning project will likely be seen but would not dominate the view of the casual observer due to the proximity of the fire area, which naturally treated the vegetation adjacent to the treatment area. The treatment proposed and viewed from KOP 3 will mimic the natural patterns in the landscape, as seen through the fire area. Due to the proximity of the treatment area and the fire area, the visual impacts are expected to be minimal overall once the treatments are completed since the fire area provided a foundation for this treatment to mimic; which will allow both areas to naturally flow through the landscape.

The experience of those travelling along the NHT will most likely be impacted by the project immediately after the treatments have commenced, due to the fresh appearance of the cut tree bases. However in the long term, the overall experience after the treatments may be improved as it may appear more consistent with the natural landscape that existed during the era of the Pony XP Trail.

The proposed project is expected to better mimic the characteristic landscape as it was prior to the tree canopy encroachment, the treatment process would create more natural patterns across the landscape and improve the visual quality overall.

Additional Mitigating Measures (See item 3)

Design features mitigating visual impacts have already been considered by the project lead and integrated within the proposed action to include repeating the basic elements of form, line, color, and texture; and coordinated with the assigned cultural specialist on the project to include any mitigation to preserve the heritage values within the Pony XP Trail and along its corridor.
KOP 4- Looking at northern treatment units proposed on upward slopes

**SECTION A. PROJECT INFORMATION**

1. Project Name: Egan and Johnson Basin Habitat Restoration Project
2. Key Observation Point: KOP 4– Looking at northern treatment units proposed on upward slopes
3. VRM Class: III; looking from the Pony XP NHT

**SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION**

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<tr>
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<td>COLOR</td>
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</tr>
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2. Does project design meet visual resource management objectives? **X** Yes **X** No
   (Explain on reverse side)

3. Additional mitigating measures recommended
   **X** Yes **X** No
   (Explain on reverse side)

Evaluator’s Names:
Erin Bajada

Date: 11/14/13
Comments from item 2.

The proposed project would result in temporary short-term and beneficial long-term visual impacts. The proposed restoration project introducing various vegetation treatments will primarily affect the elements of form, line and texture. Short-term visual impacts would primarily be affected immediately after the treatments occurred until the existing vegetation started to blend into the surrounding area. The treatment processes would expose more of the lighter understory vegetation as the tree canopy coverage is removed within the treatment areas. Any minimal visual contrast would decrease over time and appear more natural. The proposed project would better mimic the characteristic landscape as it was prior to the tree canopy encroachment, the treatment process would create more natural patterns across the landscape and improve the visual quality overall.

Changes to the characteristic landscape would be moderate to weak from KOP 4, along the Pony Express NHT. From KOP 4 the proposed project will likely not dominate the view of the casual observer or affect the experience of those travelling along the NHT as the project will be located and visible from a distance. A break up in vegetation may be seen, but will likely not be largely noticeable as it will likely mimic the existing landscape patterns.

Additional Mitigating Measures (See item 3)

Design features mitigating visual impacts have already been considered by the project lead and integrated within the proposed action to include repeating the basic elements of form, line, color, and texture.
KOP 5- Looking north from the end of the southern treatment units
The proposed project would result in temporary short-term and beneficial long-term visual impacts. The proposed restoration project introducing various vegetation treatments will primarily affect the elements of form, line, and texture. Short-term visual impacts would primarily be affected immediately after the treatments occurred until the existing vegetation started to blend into the surrounding area. The treatment processes would expose more of the lighter understory vegetation as the tree canopy coverage is removed within the treatment areas. Any minimal visual contrast would decrease over time and appear more natural. The proposed project would better mimic the characteristic landscape as it was prior to the tree canopy encroachment, the treatment process would create more natural patterns across the landscape and improve the visual quality overall.

Changes to the characteristic landscape would be moderate to weak from KOP 5, along the Pony Express NHT. From KOP 5 the proposed project will likely not dominate the view of the casual observer or affect the experience of those travelling along the NHT as the project will be located and visible from a distance. A break up in vegetation may be seen, but will likely not be largely noticeable as it will likely mimic the existing landscape patterns.

**Additional Mitigating Measures (See item 3)**

Design features mitigating visual impacts have already been considered by the project lead and integrated within the proposed action to include repeating the basic elements of form, line, color, and texture.