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Environmental Assessment

Vya PMU Habitat Restoration and Fuels Reduction Project

June 25, 2013

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Environmental Assessment
Vya PMU Habitat Restoration and Fuels Reduction Project

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Chapter 1. Introduction

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1.1. Background:

The greater sage-grouse (*Centrocercus urophasianus*) is a keystone sage-steppe native wildlife species that is being adversely affected by the encroachment of juniper into sagebrush communities. In the Vya Population Management Unit (PMU), juniper encroachment was rated as a High risk factor threat to maintaining sage-grouse populations and their habitats in the PMU.

In March 2010, the US Fish and Wildlife Service (FWS) announced its listing decision for the greater sage-grouse as "warranted but precluded." Candidate species designation means the USFWS has sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list, but issuance is precluded by higher priority listing actions. At this time the species is officially considered a Candidate Species, but does not receive statutory protection under the Endangered Species Act (ESA). Individual states continue to be responsible for managing sage-grouse. "Candidate species and their habitats are managed as Bureau sensitive species" (BLM Manual 6840, December 2008).

The Vya Sage Grouse PMU encompasses 501,247 acres of sage-grouse habitat in northwestern Washoe County in Nevada and a small portion of northeastern Modoc County in California. Sage-grouse population estimates based on ten years of lek counts indicate relatively stable numbers with a spring breeding population of 1,500 to 2,000 within the Vya PMU. Sagebrush is a dominant vegetation type in this PMU with low sagebrush, Wyoming big sagebrush and mountain big sagebrush occurring in similar amounts. Large stands of juniper also occur within this PMU.

In 2008, the Modoc National Forest (USFS), BLM Alturas Field Office, and cooperating agency, Modoc County, California, prepared the Sage Steppe Ecosystem Restoration Final Environmental Impact Statement (SSER FEIS) (USFS 2008). The SSER focused on the restoration of sage-steppe ecosystems that have come to be dominated by juniper, as the density of juniper has increased over the landscape. The SSER implemented a programmatic, landscape-scale approach to restoration. Restoration projects are proposed on National Forest lands and public lands administered by the Bureau of Land Management (BLM) in parts of Modoc, Lassen, Shasta and Siskiyou counties, California and in Washoe County, Nevada. The SSER Strategy is consistent with the Vya PMU Conservation Goals of minimizing the loss of existing sage-grouse habitat and restoring historical habitat.

1.2. Proposed Action Location:

The Vya PMU Habitat Restoration and Fuels Reduction Project Area (Project Area) is located within the Vya PMU, excluding areas without juniper encroachment, private lands, and WSAs (Figure 1.1). See Table 1.1 below for a list of grazing allotments that are within the Project Area.

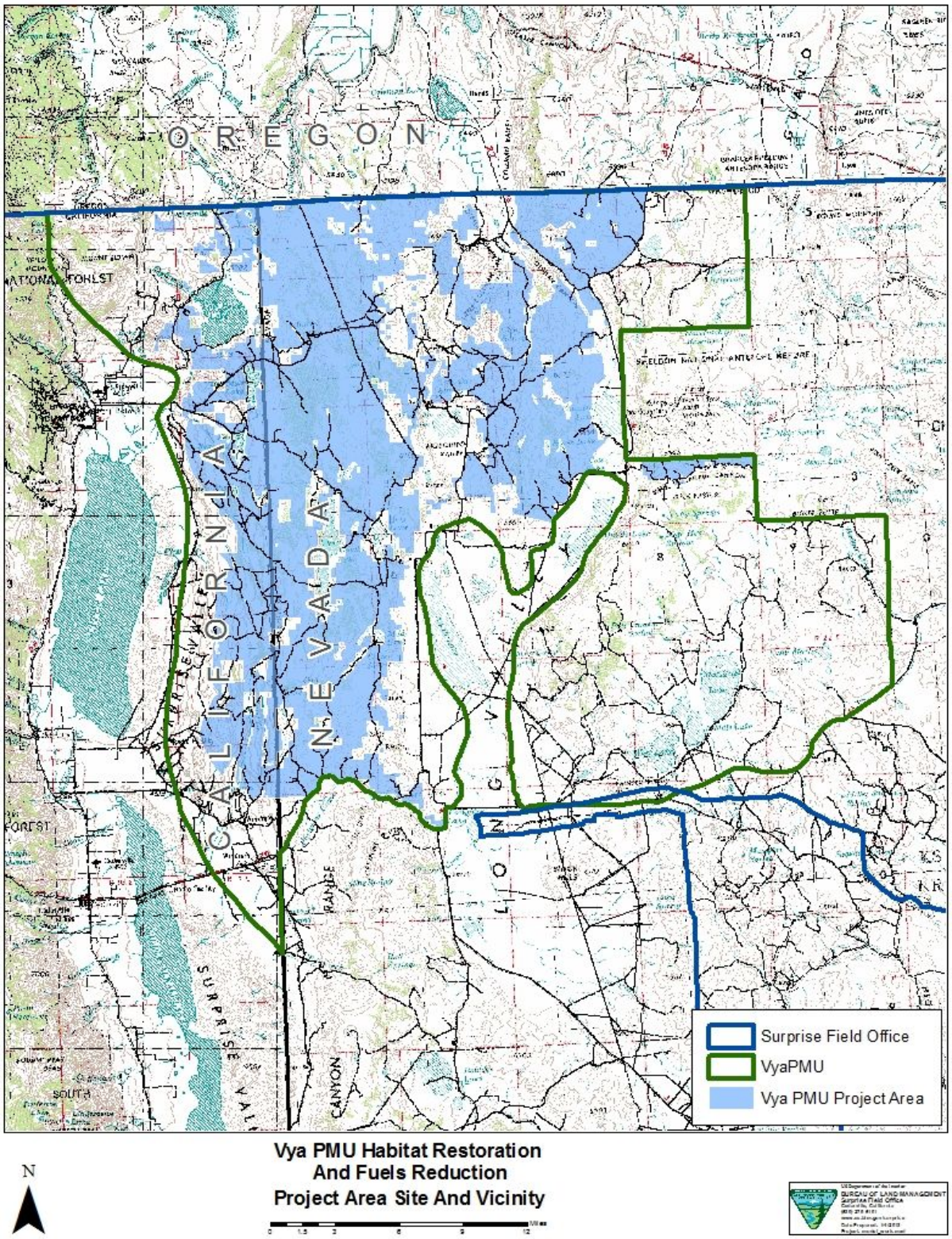

Figure 1.1. Project Area Site and Vicinity

Table 1.1. Grazing Allotments within Project Area

ALLOTMENTS WITHIN VYA PMU		
12 Mile	Alkali Lake	Bally Mountain
South Larkspur	Board Corral	Boggs
Bull Creek	Calcutta	Crooks Lake
East	East Bally	Gravelly
Horse Lake	Lartirogoyen	Nevada Cowhead
Long Valley	West	Mosquito Valley
Nevada Coleman	Warner Valley	Ninemile
North Cowhead	North Larkspur	Upper Sand Creek
Sand Creek	Scammon	

1.3. Programmatic EA Approach:

This is a Programmatic Environmental Assessment document for juniper reduction treatments within the Vya PMU using an integrated Vegetation Management Approach that is tiered to and consistent with the Sage Steppe Ecosystem Restoration Final Environmental Impact Statement (SSER FEIS). Projects consistent with activity descriptions and project design features as described in this EA will be available for implementation across the Project Area. Decisions for treatments will be limited to a maximum of 10,000 acres per year for a total of 100,000 acres over a 10-year period. It is expected that treatments would be dispersed across the Vya PMU, and no more than 2% of lands within the PMU would be treated under this EA in any one year. Actual acres treated in a given year will depend upon funding availability and other field office workloads and priorities. Projects proposed under this Programmatic EA may either be part of a larger landscape planning effort or be implemented as stand-alone projects. It is expected that streamlining the planning process through a programmatic project development and analysis will greatly improve management efficiencies.

After the public review period for this EA, it will become available for the Surprise Field Office (SFO) to use for specific projects. The SFO resource specialists will propose and develop individual projects consistent with descriptions and stipulations in this EA. Individual projects would require preparation of a Documentation of Land Use Plan Conformance and Documentation of National Environmental Policy Act Adequacy (DNA), tiered to this programmatic document, to identify specific project areas and select appropriate treatments based on management direction in this programmatic document. Additional on-the ground surveys and clearances for special status wildlife, plants, and cultural resources would be required for each project plan area prior to implementing treatments. All projects will meet current direction for land management and appropriate consultation under the Endangered Species Act and National Historic Protection Action (NHPA) will be completed as necessary for each project. If, during the DNA process, it is determined that effects will exceed those disclosed in this EA, separate NEPA analysis would be required or the project will not be implemented. Project proposals / draft Decision Records would be written and posted on the SFO BLM website and available for at least 30 days for public review. Following public review, Decision Records would be subject to Administrative Remedies in accordance with 43 CFR Chapter 4 regulations. See Appendix G for pre-project clearances and a template for Decision Records that will be used for project-specific decisions.

1.4. Purpose and Need

The purpose of the action is to contribute to healthy and resilient sage-steppe landscapes by enhancing and restoring sage-grouse habitat, restoring vegetation conditions that resemble historic plant community mosaics, and reducing risks of catastrophic wildfire associated with high fuel loading from juniper encroachment. The primary purpose of using an Integrated Vegetation Management (IVM) approach is to implement treatments consistent with and to meet the restoration objectives identified by the SSER FEIS.

The need for the action is to address juniper encroachment within Preliminary Priority sage-grouse habitat at a landscape scale to ensure large blocks of habitat remain intact and connected.

1.4.1. Objectives of the Vya PMU Habitat Restoration and Fuels Reduction Projects

- Increase heterogeneity of fuels across the landscape by reducing the canopy cover of juniper by at least 75 percent on sagebrush ecological sites on approximately 75,000 acres (75 percent) of the 100,000 acre Project Area.
- Improve sage-grouse habitat by implementing habitat improvement projects that are consistent with the Vya PMU Conservation Strategy.
- Reduce vertical fuel loading within juniper stands to increase the herbaceous understory within sagebrush sites.
- Maintain sagebrush cover greater than 10 percent on low sage and Wyoming big sagebrush ecological sites.
- Maintain herbaceous vegetative composition on dominant ecological sites consistent with achieving land health standards and the SSER FEIS monitoring protocol.
- Improve the ecological health (i.e. resilience and resistance) of sites currently dominated by juniper to provide for improved wildlife habitat.
- Maintain old growth juniper stands on portions of the landscape where they would be expected to occur.

1.4.2. Decisions to be Made

- The BLM will decide whether or not to reduce hazardous fuels and restore sage-grouse habitat on up to 100,000 acres through 1) hand treatment of juniper, 2) mechanical treatment of juniper, and 3) prescribed fire treatment of juniper. If the proposed action is selected, up to 10,000 acres per year over a 10-year period could be treated following site-specific NEPA compliance through DNAs and Decision Records tiered to this document.
- The BLM will decide on a variety of vegetation management treatments, implemented individually or in combination, which are designed to attain multiple management objectives using an IVM approach.

1.5. Scoping

Internal scoping for this project took place with the SFO interdisciplinary team of resource specialists. An initial scoping letter was sent out on November 10, 2011 in anticipation of this EA. Scoping letters were sent to all identified interested parties and livestock grazing permittees within allotments that lie within the Vya PMU. One response letter was received supporting juniper treatments. Federally recognized tribes were consulted with during the project planning process and the California State Historic Preservation Officer (SHPO) was consulted with during the project planning process. The BLM also requested technical assistance from the USFWS relating to the project planning process for sage-grouse. On March 6, 2013 the SFO sent out a second scoping letter to update interested parties and grazing permittees on the status of the EA. For responses to this scoping see section 4.9 External Scoping Results.

1.6. Issues identified through internal and external scoping

- What would be the effect of the alternatives on cultural resources?
- What would be the effect of broadcast burning on sage-grouse habitat?
- What are the current sage-grouse population trends and quality of habitat?
- Is the current extent of juniper extent a naturally occurring ecological event or is this phenomenon influenced by human activities such as fire suppression?
- What is the extent of juniper invasion in the Vya PMU?
- What factors contribute to the increase in juniper densities?
- What impacts and disturbances to sage-grouse could occur and how would these impacts be mitigated?
- What impacts do fences have on sage-grouse nesting and predator perches?
- How is a programmatic EA different from a regular EA?
- How would grazing rest occur and would there be areas where grazing rest is not needed?
- How would areas with old growth juniper be treated, and how would old growth juniper be retained?
- Would young trees be retained in areas of old growth, to replace current old growth trees in the future?
- What would be the effect of juniper treatments to other sage-steppe obligate wildlife species?
- How would treatments be prioritized between areas at different stages of juniper encroachment?
- What impact would prescribed fire have on cheatgrass invasion and sage-grouse habitat and how would this impact be mitigated and/or reduced?
- How does reduced shrub cover affect sage-grouse nest success?

- What impact would the alternatives have on migratory birds and how would direct disturbances be mitigated?
- How will the BLM manage livestock grazing to incorporate the rest requirements identified in the sage-steppe FEIS?

1.7. Plan Compliance and Tiering

1.7.1. Tiering

The Vya PMU Habitat Restoration and Fuels Reduction Project EA references and is tiered to the 2008 SFO RMP FEIS and the 2008 SSER FEIS.

2008 Surprise Field Office Resource Management Plan Final Environmental Impact Statement (SFO RMP FEIS).

- Section 2.22, Wildlife and Fisheries (2-92): "Conduct juniper reduction programs to enhance species composition and understory vegetation, and provide structural and age-class diversity in sagebrush ecosystems."
- Section 2.6, Fuels Management (2-29): "Long-term restoration projects and fuel treatment plans would be developed to produce and maintain healthy ecosystems by reducing hazardous fuel build-up on a landscape level […] to protect high-risk communities, [and] improve wildlife habitat."
- Section 2.22.6.4 Proposed Management Actions for Group 4- Sagebrush Obligate and Associated Species: "Implement the Greater Sage-Grouse Conservation Plan for Nevada and Eastern California, First Edition (2004), including the Vya and Massacre Conservation Strategies."
- Section 2.22.6.4 Proposed Management Actions for Group 4-Sagebrush Obligate and Associated Species: "Implement strategies and actions from "Partners in Flight—Birds in a Sagebrush Sea" and other BLM approved conservation plans specifically developed for this biome."

2008 Sage Steppe Ecosystem Restoration Strategy Final Environmental Impact Statement (SSERS FEIS).

Proposed Action (p. iii): "create an integrated, landscape-scale management Restoration Strategy that restores the sage steppe ecosystem across a 6.5 million acre Analysis Area. […] The treatments would require site-specific environmental analysis to meet the objectives of the proposed Restoration Strategy and obtain federal agency approval prior to implementation."

1.7.2. Land Use Plan (LUP) Conformance

The SFO RMP FEIS represents a comprehensive guidance document for managing all uses and resources administered by the BLM SFO. Key management actions identified by the SFO RMP FEIS include restoration of communities encroached by invasive juniper using prescribed fire, mechanical, chemical, and manual treatments. The Proposed Action would be consistent with the SFO RMP FEIS.

1.7.3. Relevant Laws, Regulations, Environmental Impact Statement (EIS's), and Other Documents

The Proposed Action identified by this EA would facilitate the restoration of ecological site conditions to improve watershed values consistent with the standards outlined in the following plans and acts:

Sage Steppe Ecosystem Restoration Strategy Record of Decision (ROD) and Final Environmental Impact Statement, Modoc, Lassen, Shasta and Siskiyou counties, California and Washoe County, Nevada. Record of Decision signed December 2008 (SSER FEIS). The Sage Steppe Ecosystem Restoration Strategy focuses on the restoration of sage-steppe ecosystems that have come to be dominated by Western and Utah juniper, as the density of juniper has increased over the landscape. The SSER Record of Decision (ROD) for the Surprise Field Office identified acres within Northeastern Californian and Northwestern Nevada for restoration of sagebrush steppe ecosystems by removal of juniper trees and a programmatic strategy to implement specific treatment projects. The programmatic approach includes design standards of protection and management of cultural resources, firewood gathering, livestock grazing, old growth juniper, and roads. Additionally, the ROD implements an Adaptive Management approach to validate the treatment rates and treatment techniques. The Proposed Action would implement the restoration strategies defined by the Sage Steppe Ecosystem Restoration Strategy.

The Healthy Forest Restoration Act (HFRA) was signed into law on December 3, 2003 by United States President, George W. Bush. It is designed to improve the capacity of the Departments of Interior and Agriculture to implement the National Fire Plan, and conduct hazardous fuels reduction projects to protect communities, watersheds, and other at-risk lands from catastrophic wildfire. The Proposed Action meets the criteria for an Authorized Hazardous Fuels Reduction Project.

A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment, 10-Year Comprehensive Strategy was a policy developed in 2001 that placed emphasis on reducing risk to communities and the environment by managing wildland fire, hazardous fuels, and ecosystem restoration and rehabilitation on forest and rangelands. Three of the four goals of this policy are to: 1) Improve prevention and suppression; 2) Reduce hazardous fuels; and 3) Restore fire adapted ecosystems. The Proposed Action would facilitate these goals.

National Fire Plan of August 2000. The NFP was developed in August of 2000 after a substantial wildland fire season. In 2001, the U.S. Congress funded the NFP (NFP 2001) to reduce hazardous fuels and restore forest and rangeland. The HFRA was established and then signed Public Law to provided improved statutory processes for hazardous fuel reduction projects on public land. HFRA contains provisions to expedite hazardous-fuel reduction projects and forest/rangeland restoration projects on federal lands that are at risk from wildland fire or insect and disease epidemics to reduce hazardous fuel and/or improve forest/rangeland health and vigor. The Proposed Action would implement goals outline by the National Fire Plan of August 2000.

Vya Population Management Unit Population Conservation Plan, 2003. The Vya Sage Grouse Population Management Unit (PMU) encompasses 501,247 acres of Greater sage-grouse habitat in northwestern Washoe County and a small portion of northeastern Modoc County in California. Sage-grouse in the Vya PMU occur over a large geographic area with little or no occurrence of habitat fragmentation. The Proposed Action would facilitate sage-grouse habitat restoration and conservation through the implementation of vegetative treatments to restore

ecological conditions consistent with the PMU, as well as the existing BLM General Decision #15 for the Cowhead/Massacre Planning Unit. The Vya PMU Conservation plan is available at: http://www.ndow.org/wild/conservation/sg/wm/pmu/index.shtm.

IM 2012-043, Greater Sage-Grouse Interim Management Policies and Procedures. This Washington Office Instruction Memorandum (IM) outlines interim conservation policies and procedures for the BLM to be applied to ongoing and proposed authorizations and activities that affect sage-grouse and its habitat.

Chapter 2. Proposed Action and Alternatives

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2.1. Description of the Proposed Action:

The BLM Surprise Field Office (SFO) is proposing hazardous fuels reduction and habitat restoration treatments on BLM-managed lands in the Vya Sage-Grouse Population Management Unit (PMU) that lies in the vicinity of northern Surprise Valley, Barrel Springs and Long Valley. The Proposed Action would utilize a mix of hand clearing, mechanical thinning, broadcast burning, and pile burning to remove invasive juniper trees on up to 100,000 acres of sage-steppe ecosystems. These projects are proposed to enhance and restore sage-grouse habitat by treating juniper in sage-steppe plant communities which are decadent or declining in vigor as a result of competition, improving hydrologic conditions, enhancing the forage base for wildlife and domestic animals, and reducing hazardous fuels.

The Vya PMU Habitat Restoration and Fuels Reduction Project Area (Project Area; see Figure 1.1) comprises 195,578 acres within the Vya PMU. The Project Area represents portions of the Vya PMU that have varying phases of juniper encroachment ranging from very low densities of juniper to high densities of juniper. Of the 195,578 acre Project Area, no more than 100,000 acres would be treated under the Proposed Action over a 10-year period, and a maximum of 10,000 acres could be treated each year. See Table 2.1 below for a breakdown of treatment types and associated acres for the Project Area.

Table 2.1. Potential Treatment Types and Associated acres within Project Area

Treatment Type	Acres
Hand Treatment only*	103,131
Mechanical only	56,297
Broadcast burning or Hand Treatment	11,659
Broadcast Burning or Mechanical Treatment	4,615
Maintenance **	19,876
TOTAL	195,578

Note

*All sites can be treated by hand methods; acreage in this column reflects areas where hand treatment is the only option due to lack of roads and juniper density

** Maintenance acres are areas within the Project Areas where juniper has previously been removed via implementation of juniper projects or wildfire, and treatments would occur to reduce newly established juniper.

Treatments would take place between 2013 and 2022, and would be completed by either BLM employees or contractors. No new permanent roads would be constructed to complete work associated with the Proposed Action. It is anticipated that a maximum of one mile of temporary roads per year would be needed to access heavy juniper areas.

Due to the large size of the restoration area, treatments will occur across the Project Area over several years. Implementation of juniper reduction treatments within the Project Area on any given year will occur in smaller treatment areas within the Project Area (typically from 20 to 1000+ acres) based on prioritization of habitat (see Figure 2.1) and ability to secure funding for a certain project area. Funding is often secured to implement restoration work for a specific reason, such as mule deer habitat enhancement, sage-grouse habitat restoration, or fuels reduction, and treatments within the Project Area will often reflect these priorities. Crews completing juniper

reduction projects will follow the Standard Operating Procedures (SOP's), Standard Resource Protection Measures (SRPM's) and mitigation measures outlined in this document. Additionally, more intensive cultural and wildlife surveys will be completed in a treatment unit before implementation of the project occurs. Cultural and wildlife staff will outline additional mitigation measures, as needed, to ensure resources within a specific treatment area are not negatively and/or adversely affected. The SFO Field Manager will review and approve all additional mitigation measures. See Appendices D, E, and F for SOP's, SRMP's, and Mitigation Measures.

Treatments will be designed based on the site-level phase of juniper encroachment. On Phase 1 sites, juniper canopy cover is less than 6% and the understory vegetation (shrubs and perennial grasses) dominates ecological processes. These sites are characterized by vigorous intact sage-steppe communities that are becoming invaded by young juniper, generally trees less than 50 years old. Phase 2 and 3 sites are characterized by a mixture of both younger juniper trees (less than 50 years old) and older juniper trees (greater than 50 years old). Juniper is co-dominant at these sites, and both the juniper canopy and understory vegetation drive ecological processes. These sites are at risk of crossing an ecological threshold where juniper dominates ecological processes and restoration of sage-steppe vegetation cannot occur without extensive efforts. Within the Project Area, Phase 3 sites are generally small components of Phase 2 areas of juniper encroachment. In these sites, older juniper trees (greater than 50 years old) dominate ecological processes. Some Phase 3 sites have already crossed ecological thresholds and little herbaceous vegetation exists. In these areas, reseeding and/or removing biomass is needed for successful vegetative response after treatment. Phase 3 areas are of lower priority due to increased time and expense required for treatment and reduced probability of successful restoration.

Treatment Restrictions

Depending on resources and landscape limitations such as juniper canopy cover, accessibility of roads, steepness of slope, and potential for and/or location of biological and cultural resources, site-specific treatment restrictions may be required. Treatment restrictions and a description of the restrictions are outlined below in Table 2.3.

Special Habitats and/or Sensitive Areas Common to All Units:

Special habitats and vegetation exist within the Project Area, including aspen stands, riparian areas, old growth juniper, mahogany/bitterbrush stands, perennial drainages/streams, raptor nest sites, and sage-grouse lek sites. Sensitive areas are primarily archaeological sites. These types of habitats are important resources across the landscape and thus may require a different treatment type than what the rest of the landscape requires. Hand cutting will often be required in these special habitats; however, prescribed fire (pile burning and broadcast) may be required as a standalone treatment or in conjunction with hand treatment to meet resource objectives. See Table 2.4for identification of special habitats and proposed treatment types.

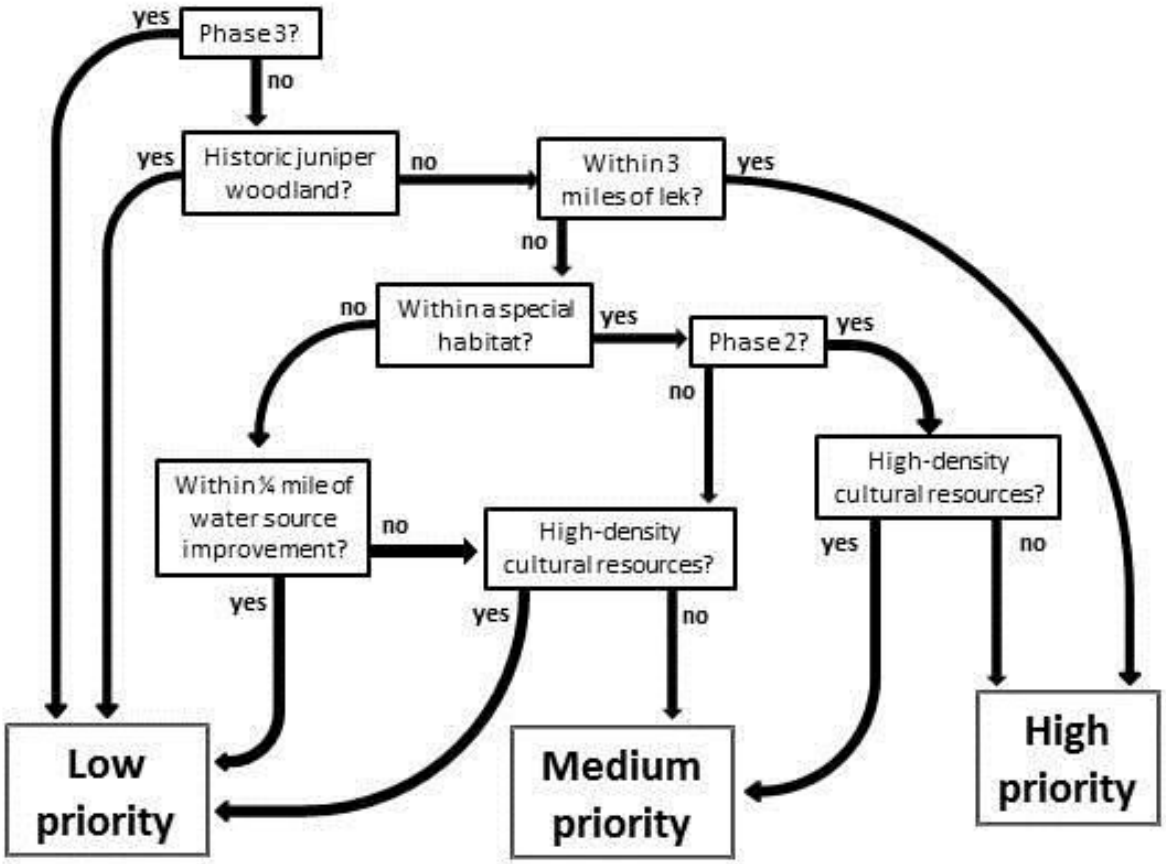

Figure 2.1. Priority Ranking of Treatment Areas

Table 2.2. Justification of Priority Rankings in Figure 2.1

Prioritization criteria	Justification
Within 3.0 miles of active sage-grouse lek sites	Important areas for sage-grouse breeding and nesting habitat/use areas
Phase 2 juniper sites	Herbaceous understory layer and juniper canopy are both influencing ecological processes, could transition to phase 3.

Phase 1 juniper sites	Juniper encroachment into habitat has begun but herbaceous understory layer still dominating ecological processes.
Phase 3 juniper sites	Juniper canopy is dominating ecological processes, extensive restoration techniques, e.g. seeding is often required to meet objectives.
Special Habitats (See Table 2.1.4 below)	Important for completion of life cycle/important use areas for many sage steppe obligates.
≥ .25 miles away from water source improvement (e.g. pit reservoir, windmill, trough)	Heavier use from livestock is not as evident, key upland species e.g. bunchgrasses are more likely to be present.

Table 2.3. Treatment Restrictions

Treatment Restrictions	Justification
Mechanical treatments only in Phase 2 and 3 juniper sites	Phase 1 juniper density is too low to facilitate use of machinery.
No prescribed fire (does not include pile burning) in low and Wyoming sagebrush sites, predominate mahogany stands, and in sites below 6,000 ft. elevation on south slopes and 5,500 on north slopes. No Rx fire in Phase 3 juniper sites. See prescribed fire map.	Scientific evidence strongly suggests these types of sites do not respond favorably to fire (Davies et al. 2011). Phase 3 juniper lack the fuels necessary to carry fire and the understory vegetation to recover after fire.
Use fire or hand treatments only on slopes greater than 30%. All treatments may be used on slopes less than 30%.	Slopes above 30% are too steep to safely or efficiently operate machinery.
Maintain individual juniper trees with old growth characteristics.	Stipulation of Sage Steppe FEIS.
Maintain historic juniper woodlands where they are expected to occur.	Juniper is expected to be present on these sites, so they should be managed to maintain juniper stands.
Reseed as needed on Phase 3 juniper sites where the upper canopy is dominating ecological processes and sage-steppe vegetation is not expected to positively respond to treatment.	This type of site often requires reseeding to successfully restore understory vegetation.

Table 2.4. Special Habitats/Sensitive Areas

Special Habitats/Sensitive Areas	Mechanical Treatment (including biomass)	Prescribed Fire Treatment (pile burning and broadcast)	Hand Treatment
Sage-grouse leks	No Mechanical within ½ mile of active lek sites from March 1-May 15	Pile burning allowed; limit prescribed fire within 2 miles of lek sites	No cutting within ½ mile of active lek sites from March 1-May 15
Riparian Areas	No Mechanical within 250 yards of riparian zone	No restrictions	No restrictions
Perennial Drainages/ Streams	No Mechanical within 250 yards of riparian zone	Stabilize soil as needed after fire use	No restrictions
Aspen Stands	No Mechanical within aspen stand	No restrictions	No restrictions
Mahogany Stands	No Mechanical within mahogany stand	Pile burning allowed; limit prescribed fire within Mahogany stand to the extent possible	No restrictions
Active Raptor Nest Sites	No Mechanical within ¼ mile (½ mile if project is within line of site of nest) from February 1- August 31 depending on species	Pile burning allowed; no prescribed fire within ¼ mile (½ mile if project is within line of site of nest) from March 1- August 31 depending on species	No cutting within ¼ mile (½ mile if project is within line of site of nest) from March 1- August 31 depending on species
Cultural Resource Sites	See SRMP's	See SRMP's	See SRMP's

2.1.1. Early Juniper Encroachment: Phase 1 and Early Phase 2 Juniper Areas

Phase 1 and early Phase 2 juniper sites have low densities of juniper cover, and would be treated to remove young juniper invading intact sage-steppe communities. Mechanical treatments would not be conducted in early juniper encroachment sites due to the small stature of trees and the absence of large groups of trees across the landscape. Hand treatments would usually involve leaving cut trees in place and un-limbed; cut trees would occasionally be limbed if site conditions and tree sizes warrant. There would be limited pile burning following treatment. Broadcast burning would be used as a treatment tool where site conditions allow.

Rest requirements may be waived after hand treatment on Phase 1 juniper areas and treatment maintenance projects (removing newly established trees from old treatments).

Photograph courtesy of Hugh Barrett, CSR Natural Resource Consulting, Inc.

Figure 2.2. Photograph of Typical Phase 1 Juniper Encroached Site

Mechanical treatments

- No mechanical treatments.

<u>Hand treatments</u>

- Hand cutting of junipers with chainsaws would be required over the entire site;
- Cut trees would remain in place and un-limbed on approximately 70-90 percent of the sites;
- Cut trees would be fully or partially limbed (limbs above the downed trunk removed) on approximately 10-30 percent of the site.

Burning

- Individual trees or small numbers of trees and limbs would be piled and burned on approximately 0-20 percent of the area;

- Larger piles of trees would be burned on approximately 0-20 percent of the site. Whole trees, limbs or trunks would be carried or dragged from their original location to the burn piles;
- Broadcast burning would be conducted on up to 16,274 acres of sage-steppe and juniper communities as defined in the prescribed fire model.

2.1.2. Advanced Juniper Encroachment: Phase 2 and Early Phase 3 Juniper Areas

Phase 2 and early Phase 3 juniper sites have increasing densities of juniper and the goal of treatment would be to reduce the canopy cover of juniper by at least 75 percent on invaded mountain brush communities. Additionally, projects would be designed to increase shrub and herbaceous cover in area where juniper trees would be removed. Mechanical treatments would be limited to areas with low to moderate slope and near an existing road. Hand treatments options would resemble those used in early juniper encroachment sites, except that fewer cut trees would be left unlimbed in advance encroachment sites. Pile burning would be more widespread on advanced encroachment sites, while broadcast burning would be less commonly used in areas with high juniper densities.

Photograph courtesy of Hugh Barrett, CSR Natural Resource Consulting, Inc.

Figure 2.3. Photograph of Typical Phase 2 Juniper Encroached Site

Photograph courtesy of Hugh Barrett, CSR Natural Resource Consulting, Inc.

Figure 2.4. Photograph of Typical Phase 3 Juniper Encroached Site

Mechanical treatments

- Mechanical treatments would be allowed in areas with 1) less than 30% slope and 2) within 1 mile of a pre-existing road.

Hand treatments

- Hand cutting of junipers with chainsaws over the entire site;
- Cut trees would remain in place and un-limbed on approximately 50-75 percent of the site;
- Cut trees would be fully or partially limbed (limbs above the downed trunk removed) on approximately 25-50 percent of the site.

Burning

- Individual trees or small numbers of trees and limbs would be piled and burned on approximately 10-30 percent of the area;

- Broadcast burning would be conducted on up to 16,274 acres of sage-steppe and juniper communities as defined in the prescribed fire model.

2.1.3. Treatment Elements Common to All Sites

Rest Requirements

Mechanical and hand treatments would be rested for at least one full year the first season of treatment and one growing season the following year. Decisions to resume grazing before the end of the second growing season will be based on ecological site potential and seed production objectives (see Appendix F – Standard Operating Procedures – for objectives). Rest requirements may be waived on Phase 1 juniper areas and treatment maintenance projects.

Livestock grazing would be temporarily restricted within any allotment treated (see Table 1.1 for list of allotments) for one growing season prior to, and two growing seasons following broadcast burning to allow for enough fine fuels to carry fire and to allow for recovery of desirable forage species following prescribed fire. Rest would be implemented through a cooperative agreement between the permittee and the BLM. If a cooperative agreement cannot be reached, the BLM will temporary restrict grazing within any allotment treated through a grazing decision.

Fencing within the project boundaries to accommodate rest would also be considered when necessary if existing pastures and herding techniques are not sufficient to accommodate rest. All fencing under this Programmatic EA would be temporary fencing and would be removed after completion of the rest period. All fencing would be to BLM standards and all mitigation measures for wildlife that apply for existing fences would also be applied to temporary fences. Under no circumstances would a temporary fence be permitted across a cultural resource site or within 6/10th mile of an active sage-grouse lek.

Mechanical Treatment

Mechanical treatment would involve the use of mechanized equipment to either cut or chip juniper onsite. The equipment could be either rubber tired or track mounted. Mechanical treatment would only be used on slopes less than 30 percent, within one mile of existing roads, and where juniper canopy cover is greater than 6 percent. Mechanical treatments would be discontinued when ruts exceed 4 inches. Mechanical treatments in areas greater than approximately 15 percent juniper canopy cover would require piling and burning of juniper limbs and slash.

As identified in Standard Resource Protection Measures (Appendix D), treatment options for all cultural properties recommended eligible or that remain unevaluated to the National Register, would be limited to hand thinning and prescribed fire only. For ineligible sites, treatments may include mechanical treatments.

Hand Treatment

Hand treatment would be accomplished by crews with chainsaws cutting down juniper trees. Whereas all sites can be hand treated, hand treatment is the only option in sites not suitable for mechanical or broadcast burning treatments. Following cutting, there are four options for the limbs and slash associated with the down trees:

1. Trees would be left where they were cut with no limbing. This treatment would be used in areas with low juniper densities (i.e. less than 6 percent canopy cover) and where the cut trees would not be in the foreground visibility zone from roads.

2. Trees would be left where they were cut and the limbs above the bole would be cut and scattered. This treatment would be used in areas with taller brush and where the cut trees would be within the foreground visibility zone from minor roads.

3. Trees would be limbed and limbs would be scattered. This treatment would be used in areas of shorter shrubs (i.e. less than 2 feet tall), tree cover less than 10 percent, and within the foreground visibility area from maintained roads.

4. Trees would be partially limbed and the limbs would be piled at the site of cutting (may be more than one tree in the pile) for burning. This treatment would be used in areas of tree cover greater than 6-10 percent.

Pile Burning

Pile burning is a method of prescribed burning and would occur in all units where slash is generated from hand cutting with chainsaws or mechanized cutting of juniper. Piles would be burned in the late fall through spring period when the ground is saturated and frozen to reduce risks of burning piles causing wildfires. Some piles in the vicinity of water would be left for wildlife habitat. Pile burning would require an approved Prescribed Burning Plan.

Piles from hand cutting would generally be small, up to 10 feet in diameter, and would be in the immediate area of the cutting. The number of piles per acre would vary based upon juniper density but would expected to be in the range of 10 to 20 piles per acre.

Piles associated with mechanized cutting would be larger, up to 50 feet in diameter, and would involve mechanized equipment dragging trees up to several hundred feet from cutting locations to the piles. The number of piles per acre would vary based upon juniper density but would be expected to be in the range of one to five piles per acre.

Broadcast Burning

Broadcast burning is a prescribed burning technique used to burn vegetation in place. It would be used where young juniper trees would be killed by fire and the vegetation communities expected to return after burning would meet the objectives for the project. Broadcast burning would be used where enough fuel exists to carry a fire, where a fire can be managed safely, and where conditions are good for achieving restoration objectives of removing juniper from the site. Following a fire, it is expected that most of the juniper would be dead but snags would remain standing for up to several decades. The location and extent of use would be determined by community protection requirements and management decisions of resource specialists, according to specifications of approved burn plans. Plans would be designed and approved by qualified resource specialists on a project-by-project basis.

This method of treatment would not total more than 16,274 acres of the project areas over the ten year period. No burning is proposed in high potential cheatgrass areas, below 5500 feet Above Sea Level (ASL) on north slopes and 6000 feet ASL on south slopes, within 2 miles of active leks, and in low sagebrush and Wyoming sagebrush vegetation communities. Each burn area would be no larger than 200 acres and not be adjacent to each other. These areas of broadcast burning would require the building of hand line no greater than 10 feet wide that would

serve as fuel breaks during ignition. The use of natural barriers such as rocky or barren areas would be utilized to reduce the amount of hand line required. The effects of broadcast burning would rely on various factors, including: Fuel Loadings, Fuel Continuity, Slope, Aspect, Wind Velocities, Relative Humidity, Live Fuel Moisture, Dead Fuel Moisture and Seasonality. These aforementioned variables would be studied within the Burn Plan document in detail to ensure prescribed fire and resource objectives are being met. It is planned to mimic naturally occurring fires in the areas of broadcast burn. Areas burned are expected to experience a mixed severity fire and create a mosaic and or patchy pattern.

A Prescribed Burn Plan would need to be developed, reviewed and approved by SFO Fire Management Officer, SFO Manager, NOR CAL Fire Management Officer and the BLM State Fire Management Officer before any prescribed burns occur as required by BLM Standards.

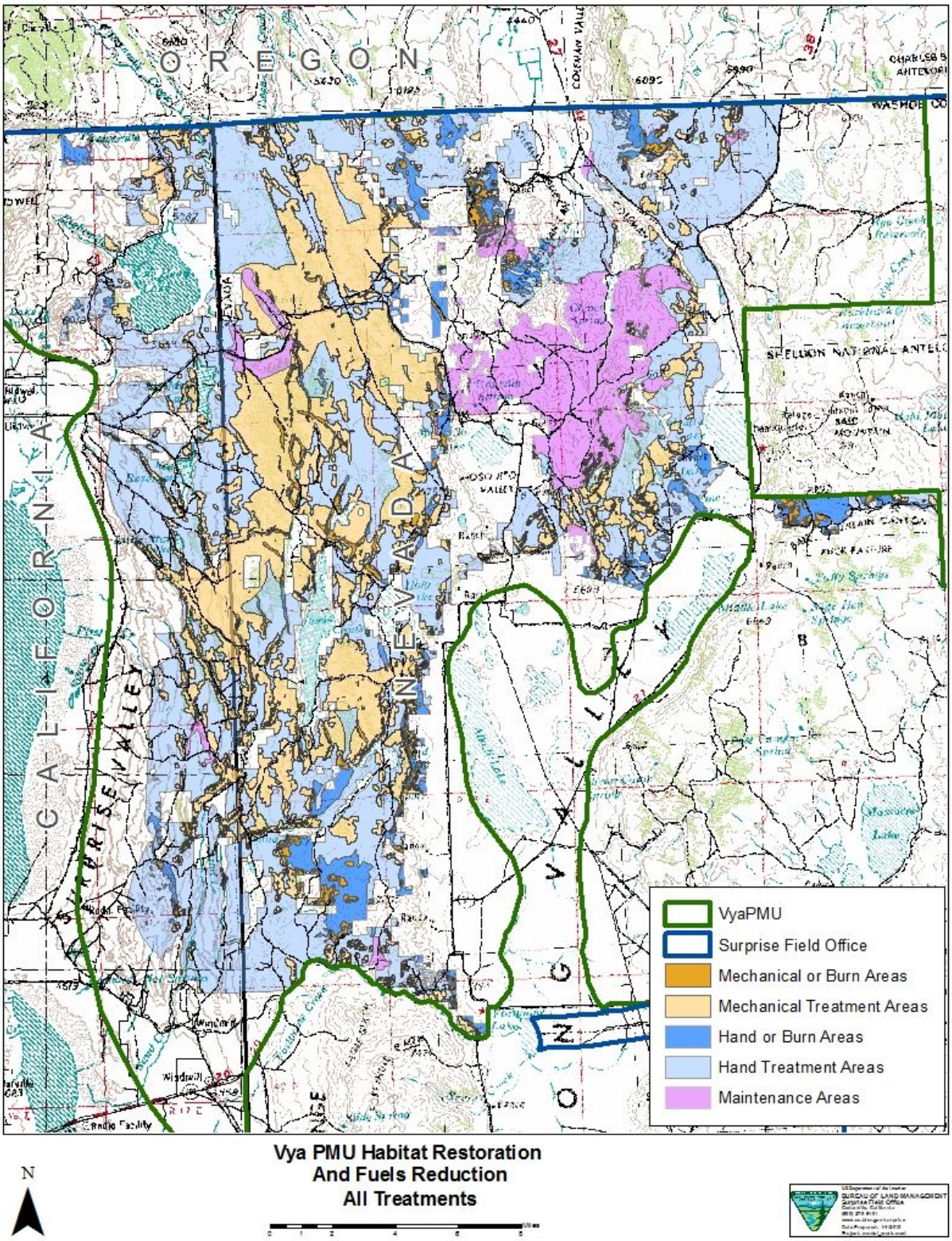

Figure 2.5. Proposed Treatment Types within Project Area

2.2. Alternative 2 - No Action:

The No Action Alternative is the current management situation. Under the No Action Alternative, the proposed Vya PMU Habitat Restoration and Fuels Reduction Projects would not be implemented. Sage-grouse habitat within the Vya PMU would continue to decline in quality and quantity, with expected declines in sage-grouse populations within the PMU. The fuel conditions would continue to accumulate beyond levels representative of the natural (historic) fire regime. Habitat values would continue to decline as perennial, herbaceous and shrub understory would further be reduced in the long term.

2.3. Alternatives Considered but Dismissed from Detailed Analysis

Prescribed burning wherever possible to thin or remove western juniper which has established on sagebrush sites. This alternative was eliminated from detailed analysis because of the difficulty in keeping fire within the targeted vegetation types and the inability to prevent the burning of the existing shrub and grass understory. Cheatgrass invasion would also be a significant risk following prescribed burning in certain vegetation types. The objective of treatments is to maintain the existing shrub and grass component and remove enough trees to allow the shrub and grass component to reach ecological site potential, and this alternative was considered unlikely to achieve this objective.

Hand Treatment Only Alternative. This alternative was eliminated from detailed analysis because the 2008 SSER FEIS identified a combination of different techniques that can be used to treat sage-steppe habitats that are encroached by juniper and specifically incorporates these techniques into the FEIS to provide the BLM with the necessary information and tools to select the correct restoration technique. The SFO BLM completed detailed analyses to identify the areas where hand treating is the only management option and areas where other restoration techniques including mechanical and prescribed burning is biologically appropriate and feasible to implement.

Reduced Grazing/Habitat Restoration Alternative. This alternative was eliminated from detailed analysis because reducing grazing levels and/or changes in permitted livestock use is accomplished through the grazing permit renewal process and is not completed through a project level NEPA analysis. This alternative is outside the scope of analysis and would not address the purpose and need for action, which is to treat sage-steppe communities that are already encroached and declining in vigor as a result of juniper.

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Chapter 3. Affected environment and environmental effects:

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3.1. General Description

The Project Area is located in northern Modoc County, California and Washoe County, Nevada, within the Vya PMU. Elevations within the Project Area range from approximately 5,000 to 8,000 feet ASL and slopes range from an estimated 2 to 50 percent. Mean annual precipitation levels range from approximately 8 to 15 inches across the project area. Vegetation within the Project Area consists of Western juniper and sagebrush communities, as well as smaller areas of aspen and riparian vegetation communities.

3.2. Environmental Effects

The following section describes the affected environment, followed by the environmental consequences for each resource. The direct, indirect and cumulative effects contained in the following chapter include considerations brought forward in both internal and external scoping.

For the purposes of the analyses presented in this document, short-term effects are those project-related effects generally lasting between one and five years. Long-term effects are project-related effects generally lasting between six and twenty years.

3.2.1. Direct and Indirect Effects

Direct effects are defined as effects caused by the action and occurring at the same time and place. Indirect effects are defined as effects caused by the action but occurring later in time or further removed in distance.

3.2.2. Cumulative Effects

Past, present, and reasonably foreseeable future actions considered in the cumulative effects analysis include: juniper cutting/removal on public and private lands, domestic livestock grazing, wild horse grazing within Wild Horse Management Areas (WHMA), range management practices, Integrated Weed Management, recreational uses, off-highway vehicle use, and the Ruby Pipeline Project on lands within the region of the Proposed Action. The Cumulative Assessment Area (CAA) defines the area in which cumulative effects are considered in light of the Proposed Action. The CAA is determined individually for each resource.

3.3. Past, Present, and Reasonably Foreseeable Future Actions

Juniper Removal

Juniper has been cut by local residents for posts and firewood for at least 100 years. Recent averages equate to approximately 30 permits annually and around four cords per permit (BLM 2011). In the past several decades juniper has also been removed through cutting or burning to decrease juniper canopy cover and increase vegetative composition of grasses or shrubs on public and private lands. The first of these efforts was designed primarily to increase forage for livestock. Forage related projects still continue on private land with an estimated 900 acres treated within the past twenty years. Juniper removal projects on public lands originally were conducted with the objective of forage production, but more recently focused on creating fuel breaks and restoring wildlife habitat, including efforts to retain sagebrush cover on Greater

sage-grouse habitats. In the past twenty years approximately 12,000 acres have been treated on public lands managed by the Surprise Field Office.

Local residents will continue to cut juniper. The BLM will continue to treat juniper encroached areas using mechanical, hand, and prescribed fire. This work will be focused in Wildland Urban Interface (WUI) areas and important wildlife habitats. This work will be focused at the landscape level and include large blocks of land that are actively being encroached by juniper.

Juniper treatments will continue to occur on private lands throughout Modoc and Washoe counties. This work will generally be smaller in scope (500-1000 acres) and include blocks of land that are actively being encroached by juniper to enhance forage and wildlife habitat. It is estimated that approximately 5,000-10,000 acres are treated annually on private lands in Modoc and Washoe counties.

Fire Suppression

The BLM will continue to actively suppress wildfires within the field office during fire season. Fire suppression is expected to occur throughout Modoc and Washoe counties.

Domestic Livestock Grazing

Domestic livestock grazing has occurred within the Project Area for at least 150 years. Initially cattle were turned out in the area to take advantage of vast stands of native bunchgrasses. Cattle grazing had a profound impact on native vegetation in areas within a few miles of existing water sources, primarily springs. Starting in the early 1900s, sheep grazing began in addition to the ongoing cattle grazing, primarily by itinerant herders. Sheep were herded to areas outside the areas heavily grazed by cattle, primarily during the spring months. At times dozens of sheep bands covered the landscape. Sheep grazing began to decrease during the droughts associated with the Dust Bowl Era and the advent of the Taylor Grazing Act, which favored cattle users with established ranches over sheep herders without ranch property. Domestic horses also used the public lands for grazing to supply local, regional and national demand for working animals (Camacho and Kingston 1977, Hedel *et al.* 1981).

Since the advent of the Taylor Grazing Act (TGA) in the mid-1930s, levels of grazing in the Project Area have decreased dramatically. Prior to the Act, livestock grazing was uncontrolled so exact levels of grazing are unknown. The limited existing records, along with the condition of vegetation and other resources during the 1930s and 1940s provide historic accounts that point to grazing levels many times greater than what are currently harvested by livestock and wild horses. During World War II ranchers were encourage to produce as much meat and hide as possible from public land in support of the war effort.

Over the past forty years the amount of livestock grazing in the allotments in the Project Area has been reduced. Additionally, domestic sheep grazing has been eliminated and the number of months grazed in most cattle allotments has been reduced. Livestock grazing management practices have been also been modified to reduce or eliminate impacts to uplands and riparian/wetland sites.

Livestock grazing continues to be authorized under the provisions of the TGA in all or portions of 30 grazing allotments associated with the Project Area. Seasons of use are generally three to six months long, and livestock turnout areas and multiple pastures are used to manage the frequency, duration and intensity of grazing on native bunchgrasses.

Wild Horse Management Areas

Wild horse use has occurred in the Bitner, Carter Reservoir, Nut Mountain and Massacre Lakes Horse Management Areas (HMAs) within the Project Area since 1971. When populations of wild horses have exceeded the established Appropriate Management Level (AML), disturbance to uplands and riparian/wetland sites has occurred in some areas. Since 1979 the BLM has conducted periodic gathers of wild horses with the HMAs to remove excess animals to manage the population size within the established AML ranges.

Wild horses will continue to be found and thrive within the HMAs within the Project Area. Gathers and removals will be expected to occur on a three- to five-year schedule to manage the populations within or near the designated AMLs for each HMA. Less frequently, resource monitoring information will be used to assess the AML, and potentially adjust AMLs, within each HMA. The direction or magnitude of any AML adjustment is impossible to predict.

Range Management Practices

Several important vegetation communities, riparian/wetland areas, or cultural resource sites have been fenced or partially fenced from livestock grazing and from wild horse use within the Project Area.

The BLM will continue to monitor vegetation and land treatments. The BLM will continue to complete Rangeland Health Analysis to assess land health and assess impacts of livestock grazing and land uses. Fencing of riparian/wetland areas will continue to be considered to protect vegetation and cultural resources from grazing and trampling damage by livestock and wild horses.

Integrated Weed Management

The BLM has conducted Integrated Weed Management for the past twenty years to monitor and treat infestations of noxious weeds and invasive species.

Inventory efforts to identify new infestations of noxious weeds will continue, and the BLM will provide treatment of identified infestations.

Recreation

Recreation use has occurred mainly in the form of hiking, camping, hunting, and general sightseeing. Activities that have occurred with very low frequency are wildlife observation, nature study, and archaeological sightseeing. Recreation use is expected to continue at approximately the same levels as presently occur.

Off-Highway Vehicle Use

Some areas of the Project Area have been impacted by off-highway vehicle use that has occurred off of established roads and trails. The Surprise RMP (2008) limited all off-highway vehicle use to designated trails.

Ruby Pipeline Project

The Ruby Pipeline Project is a forty-two inch buried natural gas transmission pipeline constructed within the eastern part of the Project Area. This east-to-west pipeline was completed in the summer of 2011 to transport natural gas from Wyoming to a transfer station located in Malin, Oregon. From this transfer station natural gas would be distributed throughout the western United

States, primarily to California, Oregon, and Nevada. Construction of the pipeline resulted in impacts to approximately 2,795 acres of sagebrush dominated habitats within the Surprise Field Office. Pipeline restoration activities are currently underway with restoration goals not expected to be achieved for several years.

Private Land Development

A small amount of private land development is expected to occur. Most development will be agriculturally-based and not industrial developments. In both northern Washoe and Modoc County, very little industry development has occurred in the recent past.

3.4. Resource Issue Areas

The interdisciplinary review has concluded that the following resources are not present or would not be affected by implementation the Proposed Action:

- Areas of Critical Environmental Concern
- Environmental Justice
- Essential Fish Habitat
- Floodplains
- Prime and Unique Farmlands
- Threatened or Endangered Species
- Unusual Plant Assemblages
- Waste, Hazardous and Solid
- Wild and Scenic Rivers
- Wilderness Study Areas (WSA)

See Table 3.1 below for a list of resources that are present and potentially affected by the Proposed Action.

Table 3.1. Resources Potentially Affected by Implementation of the Proposed Action and Supplemental Authorities to be Considered

Resource Issue Area	Supplemental Authority
Air Quality	The Clean Air Act as amended (42 USC 7401 et seq.)
Cultural Resources	National Historic Preservation Act, as amended (16 USC 470)
Invasive, Non-native Species	
Global Climate Change	
Livestock Management	Taylor Grazing Act of 1934, as amended, The Public Rangeland Improvement Act of 1978.

Native American Religious Concerns	Federal Land Policy and Management Act, the American Indian Religious Freedom Act, Executive Order 13007, Native American Graves Protection and Repatriation Act, and National Historic Preservation Act, as amended (16 USC 470)
Recreation	
Paleontological Resources	
Social and Economic Values	
Soils	
Water Quality	Safe Drinking Water Act, as amended (43 USC 300f et seq.) Clean Water Act of 1977 (33 USC 1251 et seq.)
Wetlands /Riparian Zones	E.O. 11990 Protection of Wetlands 5/24/77
Wilderness (lands with wilderness characteristics)	Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.); Wilderness Act of 1964 (16 USC 1131 et seq.)
Wild Horse and Burros	Wild Free-Roaming Horses and Burro Act of 1971, PL 92-195, (as amended)
Wildlife and Threatened/Endangered Wildlife Species	Endangered Species Act of 1983, as amended (16 USC 1531) E.O. 131186, "Responsibilities of Federal Agencies to Protect Migratory Birds" January 10, 2001
Vegetation and Threatened/Endangered Vegetation Species	Endangered Species Act of 1983, as amended (16 USC 1531)

3.5. Air Quality

3.5.1. Affected Environment

The Vya PMU Habitat Restoration and Fuels Reduction Project Area is located in the eastern portion of Modoc County, California and the northwestern corner of Washoe County, Nevada. Modoc County is part of the Northeast Plateau Air Basin (NPAB), which includes Siskiyou, Modoc, and Lassen counties. The Modoc County Air Pollution Control District (MCAPCD) has jurisdiction over air quality issues throughout Modoc County and administers air quality regulations developed at the federal, State, and local levels. The Washoe County District Health Department, Air Quality Management Division, Washoe County, has jurisdiction over air quality issues throughout Washoe County and administers air quality regulations developed at the federal, State, and local levels.

Weather in northern California and northwestern Nevada is influenced by the position of a semi-permanent high pressure cell in the North Pacific Ocean. Due to the positioning of this cell southward during winter months, an almost unbroken chain of winter storms occurs in the Project Area, and a bulk of the precipitation in the Project Area occurs during this winter storm period. Weather systems in the region usually result in strong winds and unstable air masses, providing for good dispersion conditions. During fair weather periods, stable air conditions prevail throughout the region. Summers are hot and dry. Winds generally prevail from the south and southwest.

Air quality for the project area is generally good due to the remoteness and the limited amount of development/activity taking place within the project area. Air pollution in the region of the Project Area is predominately characterized by particulate matter (PM10 and PM 2.5) (CARB 2010), resulting from a variety of sources including fugitive dust from construction and the use of unsurfaced roads, windblown dust, vehicular and equipment emissions, and smoke from

prescribed burns and wildfires during summer months, and wood-burning stoves and furnaces used for heating during winter months.

Modoc County is designated by national standards as "Unclassified" for 8-Hour Ozone, PM10, PM2.5, Carbon Monoxide, Nitrogen Dioxide, and Sulfur Dioxide (CARB 2010a). Washoe County is designated by national standards as "Unclassified/Attainment" for 8-Hour Ozone, PM10, PM2.5, Carbon Monoxide, Nitrogen Dioxide, and Sulfur Dioxide (USEPA 2011).

3.5.2. Direct and Indirect Effects of Proposed Action

The Proposed Action would produce smoke from prescribed fires and to a lesser degree particulate matter from mechanical treatments and fuel wood cutting, as well as construction of temporary access roads and landings. Potential effects to air quality from prescribed fire and pile burning could range from reduced visibility, to potential pneumonic irritation, as well as smoke odors affecting people in proximity to the project area when such treatments are underway. However, the duration of these effects is expected to be short (24 hours), with the greatest impact occurring during the actual ignition or active burning phase, and lasting from one to a few days depending on the size or number of actual burn units or number of piles to be ignited. Residual smoke produced from the burnout of large fuels, or slower burning fuel concentrations could also occur, and may last between one to three days following the ignition phase. Effects to air quality from mechanical treatments and wood cutting would be dominated by airborne particulate matter generated during the operation of mechanical equipment and transport vehicles and may temporarily reduce visibility in the immediate project area. However, these impacts would quickly cease once operations cease. Therefore, for the purposes of this analysis, the evaluation of potential effects related to air quality relies on estimated smoke emissions generated from prescribed fire, extrapolated from the analysis within the SSER FEIS.

The degree of effect would be dependent on atmospheric conditions at the time of ignition. Ecosystems containing more overall biomass would yield more smoke than rangelands and sage-steppe communities. Prescribed fires are planned and implemented when atmospheric stability and wind conditions promote smoke dispersion into the atmosphere and/or transport out of the area. Per BLM Standards for Fire and Aviation and any applicable State and or County regulations, a Prescribed Burn Plan would need to be developed, reviewed and approved by SFO Fire Management Officer, SFO Manager, NOR CAL Fire Management Officer and the BLM State Fire Management Officer before any prescribed burns occur. Close coordination with the SFO resource staff would be needed when establishing Resource Objectives for the Burn Plan.

The areas of greatest impact from mechanical treatments and road and landings construction would include the immediate project area, as well as areas adjacent to unimproved, dirt or gravel roads utilized for project site access.

Smoke from prescribed burning would result in minor short-term adverse effects due to a higher level of emissions annually due to smoke and vegetation loss. Smoke emissions would generally dissipate in the direction of prevailing winds. Estimated PM10 and PM2.5 emissions shown in **Table 3.2 below** are calculated using First Order Fire Effects Model 6.0 and are based on acreages by treatment area for the Proposed Action.

Table 3.2. Estimated Tons PM10 and PM2.5 Emissions Resulting from Implementation of the Proposed Action

Treatment Area	Treatment Area Acreages Proposed for Prescribed Burn	Estimated Emissions (Tons per Acre)*	
Vya PMU Project Area	Mountain big sagbrush-Bluebunch wheatgrass	**PM**2.5 75	**PM**10 13
Vya PMU Project Area	Juniper-ex. From van Wagtendonk and Syndoiak, '98	PM**2.5** 1080	PM**10** 915

Note

*Estimations made using First Order Fire Effects Model 6.0.

All prescribed burning would comply with the California Smoke Management Guidelines for Agricultural and Prescribed Burning and would be required to comply with all standards and conditions specified by the local regulatory authority for Air Quality (MCAPCD and Washoe County). Prescribed fires would be implemented based on approved burn plans and would follow project-specific prescriptions identified by these burn plans. Prescribed fires are planned and implemented to accelerate restoration of ecological processes within biological communities, and in the long-term, beneficial effects would result from reduction of wildland fire potentials.

The Proposed Action would be consistent with the SSER FEIS, SFO RMP FEIS, and State and other federal regulatory directives, including, but not limited to the National Fire Plan, Forest Land and Resource Management Plans, Resource Management Area Plans, Manual Direction, Standards and Guides. Smoke Management Plans and Prescribe Fire Plans for site-specific projects would include federal and State regulatory mandates of the federal Clean Air Act of 1990, the California Air Resources Board, and the Nevada Bureau of Air Pollution Control.

Smoke Management Plans and Prescribe Burn Plans for site-specific projects would implement State and federal regulatory directives. The determination for compliance with State and federal air quality attainment standards would be assessed through agency coordination at the time of project implementation. The short-term effects on air quality resulting from potential smoke generation and PM10 and PM2.5 emissions from prescribed fire would be temporary and would last less than five days. Potential air quality impacts would be monitored and controlled through existing regulatory process, potential adverse impacts would not be allowed to occur, as authorizations would not be issued for prescribed fires proposed under conditions conducive to adverse effects. Mechanical treatments causing temporary short-term impacts from dust and exhaust emissions would last less than an hour. No long-term air quality effects would result from implementation of the Proposed Action. The long-term beneficial effects from fire use and mechanical treatments would reduce the magnitude of negative effects from smoke generated from large wildfires. With implementation of the Standard Operating Procedures identified in **Appendix F**, in addition to compliance with existing regulatory requirements relevant to air quality, no adverse effects are anticipated to result from implementation of the Proposed Action.

3.5.3. Cumulative Effects of Proposed Action

The cumulative assessment area for Air Quality is the Northeast Plateau Air Basin and Northern Washoe county. The past, present and future foreseeable effects include hand and mechanical vegetative treatments, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, and range management throughout the CAA, as well as construction of the Ruby Pipeline Project. It is not anticipated that these activities would result in degraded air quality throughout the CAA through substantial contributions of pollutants.

Prescribed fire fuel reduction projects are planned throughout the Sage Steppe Ecosystem Restoration Strategy area, including within the CAA. The Proposed Action would utilize prescribed fire within approximately 16,279 acres, representing an approximate 9.2 percent of the total acreage proposed for prescribed fire management within the SSER FEIS. The projected contributions of PM2.5 and PM10 resulting from implementation of the Proposed Action would amount to approximately four percent (each) of the total estimated particulate matter emissions projected by the SSER FEIS. Smoke from simultaneous prescribed fires in adjacent areas, including Modoc National Forest, adjacent or neighboring BLM field offices and other private and public lands within the CAA, could affect air quality in the region. However, BLM coordinates prescribed fire planning and implementation with other field offices, as well as the U.S, Forest Service and Cal Fire; therefore with proper planning and management of prescribed fire, as required by existing regulatory requirements, combined with implementation of the Standard Operating Procedures identified in **Appendix F** relevant to air quality, potential cumulative effects are considered negligible.

3.5.4. Direct and Indirect Effects of the No Action Alternative

Under the No Action Alternative no fuel treatments/habitat restoration treatments would occur within the project area. The potential for wildfires to occur would be increased where fuel treatments are not implemented, as the project area would continue to amass fuel loads in the absence of treatment and continued full suppression management of wildfires. Impacts to air quality resulting from wildfire would likely be greater as wildfires are typically characterized by a longer ignition phase, and/or a longer burn period, and consume more biomass, producing increased volumes of smoke and particulate matter than implementation of prescribed fires or slash pile burning practices typically would. Prescribed fires are ignited and designed to reduce these emissions. In addition, multiple wildland fires burning at one time would substantially degrade air quality. Potential effects related to the No Action Alternative are considered moderate.

3.5.5. Cumulative Effects of the No Action Alternative

Ongoing hand and mechanical vegetative treatments, continued livestock grazing, wild horse range, recreational use, off-highway vehicle use, and range management activities would continue throughout the CAA. Construction of the Ruby Pipeline Project was completed during the summer of 2011. It is not anticipated that these activities would result in degraded air quality throughout the CAA through substantial contributions of pollutants.

Continued increases in Project Area and regional fuel loading would result in increased risk from large-scale catastrophic wildfires characterized by a longer ignition phase, increased burning duration and intensity, high biomass consumption, and a long duration. These factors would result in large volumes of smoke, potentially extending over a long duration, depending on the size of

the wildfire and atmospheric conditions, as well as the number of wildfires burning concurrently, resulting in significant adverse effects to air quality. Potential cumulative effects related to the No Action Alternative are considered moderate.

3.5.6. Mitigation Measures

No mitigation is proposed.

3.6. Cultural Resources

3.6.1. Affected Environment

The consideration of cultural resources is a critical component of Bureau of Land Management practices on Public Lands in the Surprise Field Office. Cultural resources are locations or objects of human activity, occupation, or use. These resources include archaeological, historic, architectural sites, structures, and places with important public and scientific values; and locations of traditional cultural or religious importance to specific social or cultural groups. Cultural resources discussed in this section include districts, sites, buildings, structures, objects, and traditional cultural properties listed on or eligible to the National Register of Historic Places (NRHP). The cultural resource component of the affected environment is covered by several legislative authorities including Section 106 of the National Historic Preservation Act of 1966 as amended (NHPA), the Archaeological Resources Protection Act (ARPA), the American Indian Religious Freedom Act and Executive Order (E.O.) 13007, and the Native American Grave Protection and Repatriation Act (NAGPRA). Cultural resources within the Nevada portion of lands managed by the SFO also fall under purview of the State Protocol Agreements between BLM Nevada and Nevada SHPO (2009c), and BLM California and California and Nevada SHPO (2012).

The Vya Project Area is located in the northern portion of the field office that includes portions of North Hays Range and areas around Crooks Lake and Cowhead Lake. The Project Area also encompasses 15,696 acres (94%) of the Barrel Springs Traditional Cultural Property (TCP), 78,126 acres (94%) of the North Hays Range Cultural Resource Management Area (CRMA), and 933 acres (5%) of the Rahilly-Gravelly Area of Critical Environmental Concern (ACEC). Additionally, the Vya Project Area is in the vicinity of three obsidian sources. The Barrel Springs TCP was designated in 2010 due to the high density of archaeological resources and cultural resources; this area includes the Rock Creek Archaeological District and is frequently used by the Fort Bidwell Indian Community for traditional hunting and plant gathering resources. The North Hays Range CRMA was designated in 2008 for the high density of archaeological sites and sensitive cultural resources. The Rahilly-Gravelly ACEC was designated in 2008 due to high density and variety of archaeological sites and for the presence of plants traditionally used by the Northern Paiute including juniper trees.

The Project Area consists of 195,597 acres of public land. Approximately 22,513 acres (11.5%) within the Project Area have been previously surveyed; 13,861 acres were surveyed employing a stratified sampling technique using 30 meter-wide transects and 8,652 acres were surveyed using a stratified sampling technique that employed transects 30 to 100 meters apart. As a result of the inventories, 422 archaeological sites have been discovered and recorded. Previously known historic archaeological sites within the Project Area include trash dumps or scatters, arbolglyphs,

an historic corral, and a road. The southern portion of the Project Area includes areas around the Applegate Emigrant Trail. Previously identified archaeological sites include habitation/village sites, temporary camps, sites associated with resources processing and hunting, lithic reduction sites, lithic quarries, rock, prehistoric architectural features, and rock shelters. There are also a number of culturally sensitive sites (including sacred sites and burials) within the Project Area. Only the Applegate Trail has been formally nominated for the National Register of Historic Places (NRHP). The remaining sites have not been formally evaluated for the NRHP; however, all sites are considered eligible to the National Register by the BLM until they are found to be not eligible.

Ethnographically, the Project Area lies within the territory of the Northern Paiute. The Northern Paiute, comprising 22 bands occupied a vast territory which was bounded on the west, for some 600 miles, by the western edge and/or the crest of the Sierra Nevada and the watershed separating the Pit and Klamath rivers. These peoples speak dialects of the Northern Paiute language, one of the several closely related Numic languages which are spoken across the Great Basin (Fowler and Liljeblad 1986:435). The Project Area encompasses the territory of one of the Northern Paiute bands: the Kidütökadö ("Marmot-eaters"). Kidütökadö settlements focused on Surprise Valley, California, and adjacent territory in southern Oregon and northwestern Nevada (Stewart 1941:365). Their boundary is at Goose Lake, north to the Warner Mountains, south to the southern end of Long Valley, then west past the south end of Lower Lake.

Historically, land use in this region has been largely dominated by cattle and sheep ranching and farming, with limited mining activity and military development. Early immigrants bound for California or Oregon from the east traveled through the region. Wagon-wheel tracks in these backcountry locations remain today as the only definitive cartographic evidence of this historic migration. Geographic landmarks, such as prominent mountains or gorges, became road signs for immigrants following the trails (Feiereisen 1993). Portions of the Applegate-Lassen Trail CA-MOD-4642-H) and the Fort Crook to Fort Bidwell Military Road (CA-MOD-3549-H) are located within the Project vicinity. Homesteads, livestock corrals, pasture fences, roads, trash dumps, and arbolglyphs are the typical features remaining that mark the agricultural expansion that occurred in the area from the 1860s through the 1960s.

Only a small percentage of the Project Area has been previously surveyed for archaeological sites. Based on the proximity to water, approximately 29,253 acres of the Action Area are located in areas with a high probability for archaeological sites. Approximately 31,578 acres are located within 5,000 meters of a known obsidian source which typically increases the size and density of archaeological sites. Additionally, mining claims have been filed on 613 acres within the Project Area. Consequently, there could be a variety of significant and culturally sensitive sites unknown at the time of this assessment.

Research Context

The evaluation of cultural sites especially under Significance Criterion D of the National Register requires a consistent framework of research issues and questions, allowing for unique characteristics and data sets. Evaluation of sites discovered during the current project relies on prehistoric and historic-era contexts and research designs outlined within the Class I Cultural Resources Overview and Research Design for the Alturas, Eagle Lake, and Surprise Resource Areas for the Surprise Resource Area (King *et al*. 2004:Chapter IV). The Class I Overview (King *et al*. 2004) presents a detailed background of regional prehistoric and historic research and research themes for the Project vicinity.

National Register of Historic Places Criteria

For sites to be eligible under Criterion A, it must be associated with a particular period (e.g., early exploration). It should be a good representative or outstanding example of a property type unlikely to be better represented elsewhere in the region. In addition, if the site or resource can be clearly associated with a particular ethnic group it is also eligible under Criterion A.

For Criterion B, a site should be identified clearly with an individual who was important for developing early travel or ranching activities, or a person who was important in the development or use of a road transportation system in the study area.

To be eligible under Criterion C, a property should embody the distinctive characteristics of a type, period, or method of construction. The property can also represent the work of a master or possess high artistic values.

To be eligible under Criteria D, a property should have yielded, or may be likely to yield, information important to prehistory or history.

Determination of National Register eligibility is critical to this assessment and can only be provided by the federal lead agency, the BLM Surprise Field Office, with concurrence from the Nevada and California SHPO. If a cultural resource (site, building, TCP, or district) is eligible to the NRHP, then it is a historic property warranting protection, avoidance, or mitigation. If a cultural resource is unevaluated for the NRHP, it would be managed as if eligible until a determination can be made. If a cultural resource is ineligible for the NRHP, no further mitigation is warranted.

3.6.2. Direct and Indirect Effects of Proposed Action

The analysis of potential impacts on cultural resources is based on the known 422 archaeological sites identified during Class I, Class II and Class III cultural resources surveys and government to government tribal consultations between the BLM Surprise Field Office and the Fort Bidwell Indian Community, Cedarville Rancheria, and Summit Lake Paiute Tribe. Historic properties within the Project Area include prehistoric sites, historic era sites, trails, traditional cultural properties (TCP), and culturally sensitive sites.

Potential effects on cultural resources, specifically historic and prehistoric properties, would include both direct and indirect effects. As noted, BLM is preparing to reduce juniper densities using a variety of mechanical and manual means (i.e. rubber tire harvesters, skidders, dozers, whole tree chippers, chain saws). This proposed work will be completed to reduce wildland fuels and juniper densities.

Direct ground disturbances associated with this project include, but are not limited to, debris from fallen trees, vehicle traffic, artifacts being broken by heavy machinery, and heat damage (such as burning, spalding, cracking, and the altering of obsidian hydration rims of lithic artifacts) from prescribed fire. Visual impacts to historic properties could also occur from large scale alteration of the landscape. Indirect impacts include increased human access that may lead to artifact collection, erosion due to the removal of vegetation, and the shade left by standing trees that may concentrate livestock disturbance on historic properties.

The implementation of the Standard Resource Protection Measures (see Appendix D) would lessen direct and indirect impacts to cultural resources. For all of the ineligible cultural properties no further mitigation is recommended.

3.6.3. Cumulative Effects of the Proposed Action

The Cumulative Assessment area for Cultural Resources is the Project Area. Cumulative effects on cultural resources, specifically historic and prehistoric properties, from the Proposed Actions combined with other past, present, and reasonably foreseeable future actions would include juniper cutting/removal on public and private lands, domestic livestock grazing, wild horse grazing within Wild Horse Management Areas (WHMA), range management practices, Integrated Weed Management, recreational uses, and off-highway vehicle use on lands within the Project Area.

Vegetation removal could increase recreational access to sites, leaving them vulnerable to various types of vandalism including artifact collecting and degradation from off-highway vehicle (OHV) access. Effects from grazing are usually confined to areas where range improvements (like watering troughs, shade from remaining trees, or spring enhancements) create an environment where livestock congregate. With the implementation of the Standard Resource Protection Measures (Appendix D), such as removing shade trees from archaeological sites, cumulative effects resulting from the Proposed Action would be reduced, and potential adverse effects mitigated.

The Proposed Actions would contribute incrementally to effects to regional cultural properties. Prescribed and wildland fire would remove vegetation, increasing soil erosion and alteration of site surface components. Intense fire may also damage artifacts on the site surface. However, the tree removal will aid in less intense wildfires in the future and provide better habitat for local wildlife. Fire would not necessarily have an effect on a site's overall eligibility for the National Register as fire has undoubtedly occurred across the landscape over the prehistoric millennia (Zeier *et al*. 2005).

3.6.4. Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, proposed vegetative treatments would not be implemented, and BLM management actions proposed by this EA would therefore not result in increased ground disturbance, soil erosion, or access to sites.

3.6.5. Cumulative Effects of the No Action Alternative

Under the No Action Alternative, proposed vegetative treatments would not be implemented, and BLM management actions proposed by this EA would therefore not result in increased ground disturbance, soil erosion, or access to sites. Other hand and mechanical vegetative treatments, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, and range management activities would continue throughout the Project Area. The expansion of juniper woodland could have negative cumulative impacts on the habitats of plants and animals traditionally used by the Northern Paiute.

3.6.6. Mitigation Measures

Cultural resources within the proposed Project Area will be identified and evaluated prior to project approval for the individual treatment units. This will be accomplished through a records search of previously identified resources, tribal consultation, and an intensive cultural resource survey within the Area of Potential Effect (APE). Formal tribal consultation will be initiated

early in the planning process in order to identify Traditional Cultural Places, Sacred Sites, and properties of traditional and religious significance to the tribes. The findings from these identification efforts will be evaluated and documented in a Cultural Resource Inventory Report consistent with BLM guidelines.

Following the identification and evaluation of cultural resources within the proposed Project Area, protection measures will be implemented in order to mitigate potential impacts to cultural resources below the threshold of an adverse effect. These efforts will emphasize avoidance through project redesign but may also include site specific protection measures. The scheduling of proposed treatments will be designed to not impede Native American access to ceremonial sites or areas of traditional use.

At the request by one of the Tribes, the Tribes will be notified if bow stave trees are identified within the Action Area.

See Appendix D for Standard Resource Protection Measures.

3.7. Fire and Fuels

3.7.1. Affected Environment

Fire and fuels resources are primarily described by vegetation and fuel type and are influenced or affected by precipitation, temperature, soils, and seasonal fluctuations. Fuel in the natural environment includes live vegetation, as well as materials such as dead branches, needles, and cones. Fire and fuels on lands within the Project Area have been influenced by active and passive management actions since prehistoric times (BLM 2007).

Fire Regime Condition Classes

Fire regimes represent an index of pre-settlement historical fire processes generated for the period from around 1500 to just prior to the mid-1800s and are described in terms of frequency and severity. As shown in **Table 3.3 below**, five fire regimes have been classified based on average number of years between fires combined with the severity of the fire on the dominant overstory vegetation.

Table 3.3. Fire Regime Classifications

Fire Regime	Frequency	Severity
I	0-35 Year Return Interval	Low
II	0-35 Year Return Interval	High
III	35-100+ Year Return Interval	Mixed
IV	35-100+ Year Return Interval	High
V	200+ Year Return Interval	High

Note

Source: Fire Regime and Condition Class [ESRI Grid]. 3.2. California: Department of Forestry and Fire Protection, 2003, (http://frap.cdf.ca.gov/data/frapgisdata/select.asp). *Source: BLM 2011

Lands within the Project Area are classified primarily within the Fire Regime III and IV indices. Fire Regimes III and IV primarily represent forest, shrub, and grasslands with a longer return

interval ranging from 35-100+ years with a mixed severity in III to a high severity in IV. In big sagebrush (*Artemisia tridentata*) vegetation communities within the Project Area, low intensity fires (Miller et al. 2008) occurred at intervals of about 32 to 70 years (Wright et al. 1979). In Mountain big sagebrush (*Artemisia tridentata ssp. vaseyana*) the mean fire return interval was between 12 and 15 years (Miller and Rose 1999). For the low sage brush communities in the Project area Area, fires were low severity and the historic return interval is estimated to be around 90 years (Miller and Rose 1999).

Condition classes describe the degree of departure from historical fire regimes resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, and canopy closure. This departure from historical conditions may result from several factors including fire exclusion, timber harvesting, grazing, introduction and establishment of exotic plant species, insects and disease (introduced or native), or other past and present management activities (USFS 2008).

Descriptions for current Condition Classes are presented below in **Table 3.4 below**.

Table 3.4. Fire Regime Condition Class Descriptions

Condition Class	Fire Regime	Example Management Options
Condition Class 1	Fire regimes are within an historical range, and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within an historical range.	Where appropriate, these areas can be maintained within the historical fire regime by treatments such as fire use.
Condition Class 2	Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). These results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range.	Where appropriate, these areas may need moderate levels of restoration treatments, such as fire use and hand or mechanical treatments, to be restored to the historical fire regime.
Condition Class 3	Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. These results in dramatic changes to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range.	Where appropriate, these areas may need high levels of restoration treatments, such as hand or mechanical treatments, before fire can be used to restore the historical fire regime.

Note

Source: U.S. Forest Service General Technical Report RMRS-GTR-87

Approximately 49 percent of the Project Area is classified as Condition Class 1, 50 percent of the Project Area is classified as Condition Class 2, and 1 percent of the Project Area is classified as Condition Class 3. **See Table 3.5 below** The risk of losing key components of the sage-steppe ecosystem within approximately 99 percent of the Project Area is moderate. Normally these areas would experience mixed intensity wildland fire events every 35-100 years for lands classified in the Fire Regime III index, and every 35-100+ years with high severity for lands classified in the Fire Regime IV index. In 2005, the Barrel Fire burned 24, 370 acres and is the largest documented fire within the Project Area. Historic fire suppression land management actions have resulted in juniper encroachment which has increased the risk of uncharacteristic wildfire in the Project Area. With fire suppression activates being full suppression over the past century; Condition Classes within the Project Area could start to shift from Condition Class 1 to Condition Class 2 and from Condition Class 2 to Condition Class 3 if treatments are not introduced to mimic the historical Fire Regimes.

Table 3.5. Fire Regime Condition Class within the Project Area

Condition Class	Vegegation Condition Class
Condition Class 1	49%
Condition Class 2	50%
Condition Class 3	1%

Vegetation Zones and Fire Ecology

Vegetative communities influence fire behavior. The composition of vegetative communities is influenced by several environmental factors, including elevation, aspect, climate and soils. Amongst these factors, precipitation zone plays a significant role, and the association of vegetative community and precipitation zone provide key information relevant to determining the appropriate fire and fuels management strategy. Vegetation within the Project Area is highly variable, but is dominated by big and low sagebrush communities and by areas of juniper woodlands.

Fire Management

Since its enactment in 2000, BLM has been implementing the National Fire Plan (NFP) to reduce wildfire impacts on rural communities, and ensure adequate levels of firefighting resources in the future. NFP prioritizes a change of existing fuel levels and providing increased protection of rural communities referred to as “communities at risk.” These communities are defined within an area called the “Wildland Urban Interface” (WUI). Typically the WUI has flammable vegetation near or in close proximity to improvements (homes, businesses and other structures) at risk of being damaged or destroyed by wildfire.

Human development within and adjacent to the Project Area includes scattered homes, ranches, and associated outbuildings. These areas are considered the WUI and consequently have an influence over fire and fuels management within the Project Area. Fort Bidwell is located within the Surprise Valley Watershed and is designated by the Federal Register list as an urban wildland interface community in the vicinity of federal lands at high risk from wildfire (Federal Register 2001). Although not designated by the Federal Register as a “community at risk,” the Cowhead

Communities consist of several large ranches within the Warner Lakes Watershed WUI (BLM 2007).

The project lies within the Surprise Field Office Fire Management area currently designated as "full suppression." Any wildland fires within the project area would be actively suppressed until controlled. The implementation of a "full suppression" management strategy over the last century has reduced the frequency of medium-sized fires and has resulted in increased fuels buildup, contributing, over time, to an increased risk of large, intense wildfire and fire-related damage, including damages to private landholdings. During high to extreme burn conditions catastrophic wildfire may result from these conditions, potentially requiring additional resources to suppress and rehabilitate fire and fire-related damages.

3.7.2. Direct and Indirect Effects of Proposed Action

The Proposed Action would consist of treatments in Phase I, II, and III juniper areas where up to 16,274 acres (8.3 percent) of these sites would be broadcast burned using hand ignition. Additionally, BLM would implement hand cutting of junipers throughout the Project Area, and mechanical treatments are proposed on up to 56,297 acres (28.8 percent) within the Project Area, ultimately to reduce the canopy cover of juniper by at least 75 percent on mountain sagebrush communities.

The Proposed Action would decrease fuel loads and could potentially reduce fire line intensities within the Project Area, potentially resulting in an increased ability for fire suppression resources to suppress wildfire in and around private property surrounding the project area. In addition, proposed treatment would facilitate Resource Management Plan objectives for using wildland fires to restore, maintain, and improve ecosystems.

Although dense juniper stands are somewhat fire resistant, juniper is highly intolerant of fire. With an increase in fire frequencies, through implementation of prescribed burns, young juniper seedlings would be eradicated, and the natural fire cycle restored more quickly, resulting in smaller fires, more vigorous plant communities, and reduced rehabilitation costs. Without an understory or a seed bank, Phase III juniper woodland will likely respond to prescribed fire by transitioning into annual grassland. If applied correctly to sites with less than 30 percent canopy cover and/or less than 75 percent dead shrub cover (the upper end of Phase II Juniper Woodland Succession), positive response in perennials and shrubs can be achieved with low intensity fires (USGS 2007). Additionally, the restoration of natural fire regimes and reduction in fuel loads would reduce the probability of large, catastrophic wildfires and would increase the safety for residences and private landholdings within the WUI.

Fuel reductions would result in decreased fire size, intensity and rate of spread. Vegetation management treatments would restore diversity and seral stages within biological communities, resulting in a less homogenous landscape characterized by a diverse mosaic of vegetation types and stages, and subsequently slowing the spread of future wildfires.

As treatments under the Proposed Action are implemented, approximately 99,745 acres of the 195,578 acre Project Area would be moved toward Condition Class 1 through the implementation of proposed treatments for individual treatment areas. These numbers represent the total acres if the entire project area was treated, however only a total of 100,000 acres could be treated over a ten year period. A total of 51 percent of the Project Area would be reduced in Condition Class and the remaining 49 percent would be maintained as Condition Class 1. As implementation

progresses, the historical fire regimes would become more established. Although the risk of large wildfires would still exist, over time the expected fire intensity would be less than that under current conditions, resulting in less severe ecological damage from wildland fire.

The Proposed Action is consistent with the SSER FEIS, SFO RMP FEIS, and State and other federal regulatory directives, including, but not limited to the National Fire Plan, Forest Land and Resource Management Plans, Resource Management Area Plans, Manual Direction, Standards and Guides. Smoke Management Plans and Prescribe Fire Plans for individual treatments would include federal and State regulatory direction of the federal Clean Air Act of 1990, the California Air Resources Board, and the Nevada Bureau of Air Pollution Control.

Implementation of the Proposed Action is not anticipated to result in adverse effects to fire and fuels. Implementation of the Proposed Action would result in long-term moderate benefits.

3.7.3. Cumulative Effects of Proposed Action

The Cumulative Assessment Area for Fire and Fuels is lands encompassed and managed by the Surprise Field Office BLM. Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project. It is not anticipated that ongoing wild horse grazing, recreational uses, off-highway vehicle use, range management activities other than grazing or the construction of the Ruby Pipeline Project (completed summer 2011) would result in or contribute to cumulative effects related to fire and fuels.

Livestock grazing has changed fire regimes throughout the Project Area through the reduction of fine fuels. BLM will manage livestock grazing to achieve restoration objectives using grazing restrictions and compliance with existing standards and guidelines that would determine the timing, duration, and intensity of grazing.

Implementation of the Proposed Action would reduce juniper canopy cover within the Project Area by 75 percent on pine and mountain brush communities, resulting in decreased fuel loads within the CAA, and ultimately reducing the scale and frequency of wildfires. Fire severity and intensity would also be reduced. Implementation of prescribed fire on approximately 16,279 acres as habitat restoration and fuels reduction proposed within the Project Area. The SSER FEIS identifies a total of 152,250 acres for fire use under the preferred Alternative. However, due to other RMP constraints, resource concerns, logistics and funding, only a portion of those acres will be accomplished. This combination of fire use would result in moving towards the return of historical fire regimes within a large area of the CAA and the associated reduction of fire hazard from large, uncharacteristic wildfires. The Proposed Action would facilitate the restoration of fire as a natural ecological process, potentially resulting in the restoration of more diverse vegetative communities within the area and complementing prescribed fire and fuel reduction actions implemented within adjoining forests, refuges, and BLM field offices encompassing a vast area in northeast California and northwest Nevada. Therefore, implementation of the Proposed Action would not result in cumulative adverse effects related to fire and fuels.

3.7.4. Direct and Indirect Effects of the No Action Alternative

Under the No Action Alternative fuel loading would continue to increase. Considering the current fuel loading, wildfire has the potential to start on BLM land and quickly encroach onto private landholdings within surrounding areas.

Under the No Action Alternative, during an active wildfire, conventional direct attack methods may not be sufficient to suppress wildfires due to fuel loading and increased fire line intensities. In addition, fire access may be increasingly difficult due to juniper density. Under these extreme scenarios for burning conditions, the potential risk of injury to firefighters and the public is increased. Local ranches and improvements would also be at increased risk during wildland fires occurring within lands surrounding the Project Area. Potential effects under the No Action Alternative are considered moderate.

3.7.5. Cumulative Effects of the No Action Alternative

Under the No Action Alternative, proposed vegetative treatments would not be implemented. Hand and mechanical vegetative treatments, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, and range management activities would continue throughout the CAA. Construction of the Ruby Pipeline Project was completed during summer 2011. It is not anticipated that wild horse grazing, range management activities, or construction of the Ruby Pipeline Project would result in or contribute to cumulative effects related to fire and fuels. Continued recreational uses and off-highway vehicle use may contribute to the potential for wildfire. Recreational use may result in limited demand and use of fuel wood resources for camp fires.

"Full Suppression" practices would continue within the Project Area. Limited biomass reduction would continue through grazing and fuel wood cutting. However, it is anticipated that wildfires occurring in the future would become more intense and would result in a longer duration required for suppression activities and resources, and would therefore pose an increased threat to private property. Due to continued increases in fuel loading, the potential for severe and intense wildfires would continue to increase, increasing the risk of danger to firefighters, neighboring residents and residences and other private landholdings and improvements. Vegetative communities would continue to succumb to invasion by juniper across the landscape. Potential cumulative effects under the No Action Alternative are considered major.

3.7.6. Mitigation Measures

No mitigation is proposed.

3.8. Fuel Wood Utilization

3.8.1. Affected Environment

Although most of the treatment areas are too remote and/or are not easily accessed, the Project Area lies within an active fuel wood cutting area managed by Surprise Field Office. The majority of the fuel wood that is harvested within the Project Area is juniper and comes from treatments that are completed off of major roads, which within the Project Area is the Barrel Springs

road and Highway 8A. Approximately 30 fuel wood permits are issued yearly on average and approximately 120 cords are removed within the Project Area.

3.8.2. Direct and Indirect Effects of Proposed Action

Under the Proposed Action, effects to the potential for harvesting of commercial products within the Project Area are expected to be minimal. By reducing fuel loads within the Project Area, the risk of a severe, intense wildfire would be reduced, resulting in conserved fuel wood resources. Areas immediately adjacent to and within the Project Area would remain available for the harvest of commercial products, although the availability of juniper would ultimately be reduced as a result of implementing the Proposed Action. Potential effects related to fuel wood cutting result from implementation of the Proposed Action are considered negligible.

3.8.3. Cumulative Effects of Proposed Action

The Cumulative Assessment Area for Fuel Wood Utilization is the Project Area. Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project. It is not anticipated that ongoing livestock grazing, wild horse grazing, off-highway vehicle use, or the previous construction of the Ruby Pipeline Project (completed summer 2011) would result in or contribute to cumulative effects related to fire and fuels. Ongoing recreational activities as well as rangeland management would continue to utilize juniper for fuel wood and livestock improvements, resulting in negligible cumulative contributions to effects to fuel wood resources.

A reduction in the overall fuel loading within the Project Area would reduce the potential risk of future severe, intense wildfire and would conserve wood resources within the Project Area. Implementation of the Proposed Action, combined with any past, present or future treatments is not expected to result in any cumulative effects to the harvest of commercial products. Potential cumulative effects related to fuel wood utilization resulting from implementation of the Proposed Action are considered negligible.

3.8.4. Direct, Indirect and Cumulative Effects of the No Action Alternative

Under the No Action Alternative, proposed vegetative treatments would not be implemented. Hand and mechanical vegetative treatments, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, and range management activities would continue throughout the CAA. Construction of the Ruby Pipeline Project was completed in summer 2011. It is not anticipated that wild horse grazing, off-highway vehicle use, or construction of the Ruby Pipeline Project would result in or contribute to cumulative effects related to fuels and firewood. Recreational use may result in limited demand and use of fuel wood resources for camp fires and range management activities would continue to utilize juniper for rangeland improvements. Cumulative effects resulting from ongoing recreational and range management activities would result in negligible cumulative contributions to effects related to fuel wood resources.

Under the No Action Alternative, the potential for a severe, intense wildfire would increase which could result in the loss of wood resources within the Project Area, as well as areas immediately

adjacent to the Project Area. Potential direct, indirect and cumulative effects related to Fuel Wood Utilization resulting from the No Action Alternative are considered minor.

3.8.5. Mitigation Measures

No mitigation is proposed.

3.9. Global Climate Change

3.9.1. Affected Environment

The earth absorbs energy from the sun, and also radiates energy back into space. Much of this energy going back to space is absorbed by gases in the atmosphere. Because the atmosphere then reflects most of this energy back to the earth's surface, our planet is warmer than it would be if the atmosphere did not contain these gases. Without this natural "greenhouse effect," temperatures would be about 60 degrees Fahrenheit lower than they are now, and life as we know it would not be possible (USEPA 2009a). Thus, the "greenhouse gases" (GHGs), including carbon dioxide, methane, and nitrous oxide, serve to regulate the earth's surface temperature, keeping the earth's average temperature close to 60 degrees Fahrenheit. Greenhouse gases occur both naturally and as a result of manmade activities (anthropogenic sources).

Climate change refers to any significant change in measures of climate (such as temperature, precipitation or wind) lasting for an extended period (decades or longer). Over the past 200 years, anthropogenic sources, including the burning of fossil fuels (such as coal and oil) and deforestation have caused the concentrations of heat-trapping "greenhouse gases" to increase significantly in our atmosphere (USEPA 2009a). As atmospheric concentrations of greenhouse gases rise, so do temperatures, because less heat is able to escape the atmosphere. This rise in temperature is accompanied by climatic changes that affect how organisms live, adapt, and survive on the planet (CARB 2008a).

In the United States, energy-related activities account for three-quarters of human-generated greenhouse gas emissions, mostly in the form of carbon dioxide emissions from burning fossil fuels. More than half the energy-related emissions come from large stationary sources such as power plants, while about a third comes from transportation. Industrial processes (such as the production of cement, steel, and aluminum), agriculture, forestry, and waste management are also important sources of greenhouse gas emissions in the United States (USEPA 2009b). GHGs from anthropogenic sources which are of most concern include carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). The individual GHGs have different global warming potential (GWP) as each traps heat in the atmosphere to a different degree compared to the others. Carbon dioxide is set as the reference gas for climate change analyses, and the emissions from the other gases are typically expressed as CO2 equivalents. For example, methane is approximately 23 times as effective as CO2 in trapping heat (i.e. methane has a GWP of 23). Therefore, a ton of methane emissions would be expressed as 23 tons of CO2 equivalent emissions.

Federal Regulations

The various GHGs that are considered to contribute to global warming have not been regulated by the federal government in the past as "air pollutants" in the sense that ambient air quality

standards had not been set for their emissions on the basis of their impacts to health. Beginning in 2003, the stance of the USEPA was that the Clean Air Act did not authorize regulation to address global climate change, based upon the absence of express authority in the Act and no indication of congressional intent to provide such authority. Therefore, to address climate change at the federal level, the United States had established non-regulatory policies outside of the Clean Air Act to implement its climate change policy through voluntary and incentive-based programs.

In April 2007 the U.S. Supreme Court ruled that the gases that cause global warming are pollutants under the Clean Air Act. The court also found that the U.S. government has the authority to regulate carbon dioxide and other heat-trapping gases. Per the Court's decision, in April 2009 the USEPA issued a proposed finding that greenhouse gases contribute to air pollution and may endanger public health or welfare. The proposed finding identified six greenhouse gases that pose a potential threat.

The finding states, "In both magnitude and probability, climate change is an enormous problem. The greenhouse gases that are responsible for it endanger public health and welfare within the meaning of the Clean Air Act" (USEPA 2009c).

The USEPA finding may lead to federal regulatory action in the future. In addition, legislation concerning climate change, GHGs, and energy independence is being addressed in the U.S. Congress.

State Regulations

The State of California has enacted legislative and executive measures to implement policies and regulatory actions to quantify and reduce GHGs. The most prominent of these is AB 32, Nunez (2006) - The California Global Warming Solutions Act of 2006. AB 32 declares that global warming is a serious threat to the public health, economic well-being, natural resources, and environment of California. AB 32 makes California Air Resources Board (CARB) responsible for monitoring and reducing GHG emissions, and requires CARB to:

- Establish (by January 1, 2008) a statewide GHG emissions cap for 2020, based on 1990 emissions;
- Adopt a plan by January 1, 2009 showing how emissions reductions will be achieved from significant GHG sources via regulations, market mechanisms, and other actions; and
- Adopt a list of discrete early action measures by July 1, 2007 that can be implemented by regulation before January 1, 2010.

Pursuant to AB 32, in December 2007, CARB approved a greenhouse gas emissions target for 2020 equivalent to the state's calculated greenhouse gas emissions level in 1990. CARB developed the 2020 target after extensive technical studies and a series of stakeholder meetings. The 2020 target of 427 million metric tons of CO2 equivalent (MMTCO2E) requires the reduction of 169 MMTCO2E, or approximately 30 percent, from the state's projected 2020 emissions of 596 MMTCO2E (business-as-usual) and the reduction of 42 MMTCO2E, or almost 10 percent, from 2002-2004 average emissions (CARB 2008b).

In December 2008, CARB adopted the Climate Change Scoping Plan, containing strategies to achieve the GHG reductions required by AB 32. Strategies include:

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
2. Achieving a statewide renewables energy mix of 33 percent;
3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
4. Establishing targets for transportation-related greenhouse gas emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
5. Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
6. Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

In October 2007, CARB released a list of 44 early actions, nine of which were recommended as "discrete early actions" as required by AB 32. The nine discrete early actions include:

1. Low Carbon Fuel Standard;
2. Reduction of HFC emissions from non-professional servicing of motor vehicle air conditioning systems;
3. Landfill methane capture;
4. SF6 Reductions in the Non-Electric Sector;
5. Reduction of High GWP GHGs in Consumer Products
6. Smart Way Truck Efficiency;
7. Tire Inflation Program;
8. Reduction of PFCs from the Semiconductor Industry; and
9. Green Ports (shipping industry).

These actions are primarily transportation related, with commercial actions included as well. They are intended to target the most significant sources of GHGs.

In addition to the AB 32 legislative action, Governor Schwarzenegger has issued Executive Orders relating to climate change and GHG reductions:

S-3-05 (2005): Executive Order S-3-05, on GHG emission targets (issued on June 1, 2005), established State GHG emission reduction targets and requires oversight of the reduction efforts by a climate action team led by the Secretary of the California Environmental Protection Agency.

S-01-07 (2007): Executive Order S-01-07, the Low Carbon Fuel Standard (LCFS) (issued on January 18, 2007), calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. It instructed the California Environmental Protection Agency to

coordinate activities between the University of California, the California Energy Commission and other state agencies to develop and propose a draft compliance schedule to meet the 2020 target. The Executive Order also directed CARB to consider initiating regulatory proceedings to establish and implement the LCFS.

3.9.2. Direct, Indirect and Cumulative Effects

The assessment of GHG emissions and climate change remains in a formative phase. The lack of scientific models designed to predict and quantify climate change on regional or local scales limits the ability to assess potential future effects of projects.

Implementation of the Proposed Action may have the potential to result in an increase in GHGs. Neither MCAPCD nor Washoe County has set specific quantitative criteria for determining the significance of effects resulting from individual project GHG emissions. Due to the global nature of GHG emissions, California has undertaken statewide efforts to reduce these emissions. Many state actions are transportation related, specifically efforts to reduce vehicle miles traveled, improve vehicle gas mileage, and improve gasoline formulations. State and local initiatives are also addressing vehicle miles traveled by encouraging “smart growth” development, specifically encouraging mixed-use development that places goods, services, and facilities such as schools and recreational facilities closer to residential uses. Additional State and local actions focus on reducing energy use by improving building codes.

The Proposed Action consists of Phase I, II and III juniper treatments where up to 100,000 acres of vegetation would be manipulated and treated using hand treatment, mechanical and broadcast and pile burning. GHG’s would be emitted from crews using chainsaws, large equipment to cut and skid trees, and from vehicles commuting to and from the work site over the ten year life of the EA. In comparison to the extent and amount of gas emission at a global scale that is resulting in increased global temperatures, emissions that would contribute to GHG and global warming is considered negligible. Particulate matter (PM) was used to determine emissions, which are tiny pieces of solid or liquid matter associated with the Earth's atmosphere. They are suspended in the atmosphere as atmospheric aerosol, a term which refers to the particulate/air mixture, as opposed to the particulate matter alone. Sources of particulate matter can be manmade or natural.

Subtypes of atmospheric particle matter include suspended particulate matter (SPM), respirable suspended particle PM 10 (particles with diameter of 10 micrometres or less) and fine particles (diameter of 2.5 micrometres or less). Prescribed burning of 1,000 acres per year over the 10 year life of the EA could contribute to an average of 15 lbs and acre for PM 10 and 13 lbs an acre for PM 2.5 in the Big sagebrush fuel types and 417 lbs an acre for PM 10 and 353 lbs per acre for PM 2.5 in the Western juniper fuel types. This would result in an average of 216 lbs an acre for PM10 and 183 lbs an acre for PM 2.5. Over the life of the EA the estimated total emissions would be 1080 tons of PM10 and 915 tons of PM 2.5. The estimated tons were made through calculations with a total of 10,000 acres burned in each fuel type than averaging those two outputs. Particulate matter calculations were made using FOFEM 6.0 (First Order Fire Effects Model) program. The cover type that was used was SRM 314 Big sagebrush-Bluebunch wheatgrass-moderate shrub cover and Juniper-ex. (From van Wagtendonk and Sydoiak, ’98). This emission output would be greater than hand and mechanical treatments in the short term, however the resulting decreased fuel loading following prescribed burning would reduce overall emissions in the event of a future wildfire; therefore overall emissions over decades would be similar to hand and mechanical treatments. The scale of prescribed fire treatments in relation to

the global scale that is resulting in increased global temperatures that would contribute to GHG and global warming is considered negligible.

Cumulative Effects of Proposed Action

The Cumulative Assessment Area for Global Climate is Modoc and Washoe counties. Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project. It is not anticipated that hand vegetative treatments, ongoing livestock grazing, wild horse grazing, recreational uses, or range management activities would result in or contribute to cumulative effects related to greenhouse gas emissions. Construction of the Ruby Pipeline Project was completed summer 2011. The operation of heavy equipment associated with pipeline excavation and construction activities may have resulted in negligible contributions to greenhouse gas emission within the CAA. Implementation of mechanical vegetative treatments and off-highway vehicle use would result in negligible contributions to greenhouse gas emissions.

While the Proposed Action may involve future contribution of GHGs, including an estimated 2.8 tons per acre in the Mountain big sagebrush communities and 10 tons per acre in the Juniper vegetation communities of carbon dioxide related to prescribed fire treatments as analyzed above, these contributions would not substantially affect, independently or cumulatively, a phenomenon occurring at a global scale believed to be related to more than a century of human activities. Potential effects related to implementation of the Proposed Action are therefore considered negligible.

3.9.3. Direct, Indirect and Cumulative Effects of the No Action Alternative

The No Action Alternative would result in no GHG emissions as a result of hand, mechanical or prescribed fire treatments of juniper in the short term due to no juniper projects occurring. This would have a slight positive impact related to GHG emissions. In the long term, under the No Action Alternative, during an active wildfire, conventional direct attack methods may not be sufficient to suppress wildfires due to fuel loading and increased fire line intensities. Large-scale, high intensity wildfires would have the potential to result in increased and concentrated carbon dioxide emissions. These emissions would not be planned to occur within the constraints of existing regulatory requirements pertaining to air quality emissions and may coincide with other land use and management activities within the CAA also resulting in emission releases, and would therefore contribute to direct effects related to GHG emissions. In the long term, overall emissions would be expected to be higher than the proposed action due to long term increases in fuel loading that would result in increased emissions when wildfires occur.

Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project. It is not anticipated that these actions would result in major contributions of GHG emissions. Cumulative effects related to the No Action Alternative are considered negligible.

3.9.4. Mitigation Measures

No mitigation is proposed.

3.10. Livestock Grazing

3.10.1. Affected Environment

Agriculture, including ranching operations ranks as one of the top three economic activities in the region of the Proposed Action. Grazing on public lands is an integral part of many of these ranching operations. Ranchers typically use public lands for three- to six-month periods while their base (private) property is devoted to alfalfa and grass hay production for winter feed. Reductions in public land grazing disrupt this ranch/public land balance and will generally result in a decrease in the number of livestock a given ranch operation can support (USFS 2008).

All BLM-administered lands within the area of the Surprise Field Office are included in grazing allotments. The Project Area is located on lands within 26 grazing allotments, as shown in **Table 3.6 below**.

Table 3.6. Grazing Allotments within the Project Area

Grazing Allotment	Acres within Project Area	Number of Permittees	Authorized Use		
			Max. Number of Livestock	Season of Use	AUMs
12 Mile	175	1	29	4/16 – 10/31	192
Alkali Lake	170	1	2	4/16 – 9/30	11
Bally Mountain	1,412	1	24	4/25 – 12/30	198
Board Corral	2,329	1	250	4/15 – 7/15	690
Boggs	8,521	2	306	4/16 – 9/	1483
Bull Creek	0.1	1	394	4/16 – 9/30	2176
Calcutta	5,503	1	140	4/16 – 10/15	778
Crooks Lake	35,210	2	464	4/15 – 10/31	2880
East	6,826	3	316	5/1 – 6/30	510
East Bally	758	1	27	4/20 – 12/31	58
Gravelly	1,545	1	464	9/1 – 9/30	270
Horse Lake	7,415	4	487	4/16 – 10/15	2124
Lartirogoyen	346	1	55	4/16 – 10/31	364
Long Valley	124	2	529	5/1 – 9/30	2660
Mosquito Valley	15,308	1	419	5/1 – 10/31	2203
Nevada Coleman	23,802	3	746	3/15 – 10/31	4477
Nevada Cowhead	38,830	1	600	4/15 – 10/26	2880
Ninemile	303	1	30	6/1 – 6/30	30
North Cowhead	3,551	2	203	4/15 – 6/30	453
North Larkspur	22	1	75	10/1 – 11/30	150
Sand Creek	22,552	7	816	4/1 – 9/30	3563
Scammon	340	1	11	5/1 – 9/30	55
South Larkspur	10,043	1	202	4/5 – 10/15	1040
Upper Sand Creek	717	1	106	10/1 – 10/12	42
Warner Valley	2,920	1	276	6/15 – 9/15	321
West	1,259	1	199	5/1 – 6/15	161

Note

Source: Surprise Field Office BLM 2013

3.10.2. Direct and Indirect Effects of Proposed Action

Treatments implemented as components of the Proposed Action would result in short-term effects to livestock grazing. Areas affected by proposed treatments would require exclusion and/or other management practices as necessary to facilitate revegetation to a stage where rangeland success criteria are met for the re-introduction of grazing practices. The exclusion of treatment areas from livestock grazing until vegetation is reestablished sufficiently to accommodate grazing, would result in short-term impacts to livestock grazing due to a loss of available acreage. However, long-term benefits are anticipated to include: soil stability and retention, elimination of noxious and invasive weeds, and rangeland health restoration characterized by productive vegetative communities dominated by perennial species. Short-term impacts to the livestock industry and the local livestock producers would occur; however, in summary, long-term productivity of the local livestock producers would be improved by the Proposed Action.

Grazing management practices would be required within the Project Area to prevent or minimize negative effects. Livestock grazing would be temporarily restricted within a treated pasture for one growing season prior to, and two growing seasons after broadcast burning.

BLM would manage livestock grazing to achieve restoration objectives using rest periods and compliance with existing standards and guidelines that would determine the timing, duration, and intensity of grazing. Potential adverse effects related to livestock grazing are therefore not anticipated with implementation of the Standard Operating Procedures described in **Appendix D**. Potential effects related to livestock grazing resulting from implementation of the Proposed Action are considered minor.

3.10.3. Cumulative Effects of Proposed Action

The Cumulative Assessment Area for Livestock Grazing is all allotments within the Project Area. Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse use, recreational use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project. It is not anticipated that hand and mechanical vegetative treatments, ongoing livestock grazing, wild horse grazing, recreational uses, off-highway vehicle use, range management activities or construction of the Ruby Pipeline Project (completed summer 2011) would result in or contribute to adverse cumulative effects related to livestock grazing.

BLM administers lands within and surrounding the Project Area to accommodate a number of objectives under the mixed-use principle, including livestock grazing. As BLM planning and management strategies focus on individual resources (i.e. fuels reduction and habitat restoration) there are resulting impacts to other resources (i.e. livestock grazing). However, implementation of proposed management activities by BLM, as well as other agencies and non-profit organizations, within the CAA ultimately fosters improved ecological diversity, resulting in improved ecological integrity and subsequent increased forage availability for livestock grazing where appropriate and allowed. If left unmanaged, native rangeland vegetation communities often experience a

conversion to non-native and invasive species resulting from wildfire suppression, and disturbance related to adjacent land uses, as well as the development of grazing-related improvements. The changes in vegetative community composition often result in a reduction in forage density and productivity.

The Proposed Action would facilitate improved rangeland health within the Project Area, complementing restoration actions implemented on surrounding lands. Therefore, it is not anticipated that implementation of the Proposed Action would result in adverse cumulative effects to livestock grazing. Potential cumulative effects related to livestock grazing resulting from implementation of the Proposed Action are considered minor.

3.10.4. Direct and Indirect Effects of No Action Alternative

Excessive livestock grazing on lands administered by BLM through the SFO from the late 1800s through the 1930s resulted in significant changes to vegetative communities and productivity on a large portion of these lands. These effects have been compounded by effective fire suppression, and as a result, rangelands in the area are degraded as a result of changes in vegetation community composition and distribution, and soil erosion, as well as the introduction and establishment of invasive annual grasses, dominated by cheatgrass.

If left unmanaged, native rangeland vegetation would continue to experience a conversion to non-native and invasive species, including cheatgrass and medusahead, as well as juniper, resulting in a reduction in vegetation and forage density and productivity, and ultimately long-term adverse effects to the grazing potential on these lands. The No Action Alternative would allow degraded rangelands to continue to decline, resulting in loss of forage productivity and the need to exclude livestock from greater areas to prevent further degradation. Rangeland productivity and overall health would continue to decline under the No Action Alternative. Potential effects related to livestock grazing under the No Action Alternative are considered moderate.

3.10.5. Cumulative Effects of No Action Alternative

Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project. It is possible that continued hand and mechanical vegetative treatments, ongoing livestock grazing, wild horse grazing, recreational uses, off-highway vehicle use, and/or range management activities could result in or contribute to adverse cumulative effects related to livestock grazing through ground disturbance and the potential spread and establishment of invasive plant species. Construction of the Ruby Pipeline Project was completed in summer 2011, and no additional ground disturbing activities are anticipated. However, it is possible that previous ground disturbing activities would have facilitated the potential spread and establishment of invasive plant species.

Federal grazing permits are an essential part of local ranch operations, and consequently the local economy of Modoc County. As rangeland health declines as a result of lack of management and restoration efforts, productivity and availability of grazing lands within the Project Area and surrounding lands would continue to decline, requiring additional resources from local ranch operations and potentially making ranching infeasible for some operators. Potential cumulative effects related to livestock grazing under the No Action Alternative are considered moderate.

3.10.6. Mitigation Measures

No mitigation is proposed

3.11. Native American Religious Concerns

3.11.1. Affected Environment

Native American religious concerns are defined under various authorities including Federal Land Policy and Management Act (FLPMA), the American Indian Religious Freedom Act, Executive Order 13007, Native American Graves Protection and Repatriation Act (NAGPRA), and National Historic Preservation Act (NHPA). Under these authorities, federal agencies have the responsibility for managing Native American resources by considering them in land use planning and environmental documentation. These resources are generally defined as places or resources, such as plants and animals, associated with cultural practices or beliefs of a living community that are rooted in a tribal community's oral traditions or history, and are important in maintaining the continuing cultural identity of the community. Where possible, impacts on places or resources important to contemporary Native Americans and federally recognized tribes should be mitigated. From a practical perspective, this means identifying, evaluating, and managing ethnohistoric sites and resources, traditional use areas, sacred and ceremonial sites, and Traditional Cultural Properties (TCPs).

Since tribal heritage resources are defined culturally by the people and groups that value them, these resources can be identified and managed only in consultation with the people infusing them with cultural value. In the final analysis and decision-making, a federal agency has the legal authority to determine how these resources would be managed and what, if any, mitigation would be used to avoid undue and unnecessary impacts on these resources.

Ethnographic information indicates that the Kidütökadö band of the Northern Paiute occupied the project area. Many members of the Kidütökadö continue to reside at the Fort Bidwell Reservation and rely on access to traditionally used hunting and plant gathering locales and sacred sites. Information regarding the Northern Paiute and Kidütökadö band comes from contemporary ethnographic studies (Deuer 2010a, 2010b; Fowler and Liljeblad 1986) and early ethnographies (Kelly 1932; Stewart 1939, Stewart and Wheeler-Voegelin 1974).

Traditional Cultural Properties (TCP)

Traditional cultural properties (National Register Bulletin 38) refer to a properties that may be eligible for inclusion on the National Register of Historic Places (NRHP) because of its association with cultural practices or beliefs of a living community that are rooted in that community‘s history and that are important in maintaining the continuing cultural identity of the community. Properties of traditional religious and cultural importance to an Indian tribe may be determined to be eligible for inclusion on the National Register. Although the term TCP is not found in the NHPA or its implementing regulations, TCPs are considered when determining National Register eligibility and compliance with Section 106 of the NHPA. The concept of TCP is used here only when tribes have specifically identified a resource as a TCP.

The Barrel Springs TCP was identified by the Fort Bidwell Tribal Community in 2010. The TCP is important to the tribe as it remains one of the few reaming accessible areas for traditional

hunting and plant gathering. Additionally, the TCP includes many culturally sensitive sites such as rock art, rock cairns, burials, and sacred spots. These cultural resources play a vital role in daily life as well as passing traditional knowledge from one generation to the next.

3.11.2. Direct and Indirect Effects of Proposed Action

The BLM Surprise Field Office conducted government to government consultation with the Fort Bidwell Tribal Council (March 9, 2013), the Cedarville Rancheria (January 7, 2012) and the Summit Lake Paiute Tribe (March 16, 2013) during which time the tribes expressed no specific concerns regarding the proposed projects within the Project Area. Therefore implementation of the Proposed Action would not affect known Native American religious concerns. However, consultation will continue with the tribes in order to identify concerns and sensitive cultural resources before individual field projects occur.

3.11.3. Cumulative Effects of Proposed Action

The Cumulative Assessment Area for Native American Religious Concerns is the Project Area. Although no Native American religious concerns have been identified within the Project Area, the possibility exists that Native American religious concerns may be relevant within the Project Area. Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, and off-highway vehicle use. The implementation of project-specific mitigation measures would be required to minimize the potential for adverse effects resulting from project development.

Past, present and future foreseeable actions within the Project Area may result in cumulative effects to Native American religious concerns where these resources are present. However, no Native American religious concerns have been identified within the Project Area; implementation of the Proposed Action would therefore not contribute to cumulative effects to these resources.

3.11.4. Direct and Indirect Effects of No Action Alternative

No Native American religious concerns have been identified within the Project Area; therefore no adverse effects would result from the No Action Alternative.

3.11.5. Cumulative Effects of No Action Alternative

No Native American religious concerns have been identified within the Project Area; therefore implementation of the No Action Alternative would not contribute to cumulative effects to these resources.

3.11.6. Mitigation Measures

Mitigation would include formal and informal consultation with the tribes to continue identifying culturally sensitive areas. If culturally sensitive areas are identified, mitigation measures would be determined on a case-by-case basis.

3.12. Noxious Weed Species

3.12.1. Affected Environment

The BLM defines a weed as a non-native plant that disrupts or has the potential to disrupt or alter the natural ecosystem function, composition and diversity of the site it occupies. The presence of weeds results in deterioration in the health of a site, makes efficient use of natural resources difficult, and may interfere with management objectives for that site. Invasive species require a concerted effort (manpower and resources) to remove from its current location, if they can be removed at all. Invasive species are defined as an alien species whose introduction causes or is likely to cause economic or environmental harm or harm to human health. "Noxious" weeds refer to those plant species which have been legally designated as unwanted or undesirable. This includes national, State and county or local designations.

Known noxious weeds within the Project Area include:

Cirsium vulgare Bull thistle

Cirsium arvense Canada thistle

Isatis tinctoria Dyer's woad

Salvia aethiopis Mediterranean sage

Taeniatherum caput-medusae Medusahead

Lepidium latifolium Perennial pepperweed

Centaurea diffusa Diffuse knapweed

Onopordum acanthium Scotch thistle

Carduus nutans Musk Thistle

Adjoining Cooperative Weed Management Areas (CWMA) are participants in a Memorandum of Understanding with BLM in an effort to coordinate noxious weed abatement efforts.

Extensive noxious weed populations are mostly not apparent within the proposed treatment areas, with only minor infestations that are generally associated with access roads and riparian areas. The general remoteness of the Project Area and the lack of disturbances such as fire appear to be the primary reason for relatively undisturbed conditions.

3.12.2. Direct and Indirect Effects of Proposed Action

Disturbances within the Project Area related to implementation of proposed treatments could facilitate the introduction, establishment, and/or spread of invasive non-native plants and noxious weeds. The combination of a reduction of shade, exposure of mineral soil, and flush of nutrients resulting from fire is conducive to promoting colonization of a wide variety of invasive or noxious weeds. These invasive species not only effectively out-compete native species for resources, but also contribute to changes in fire seasonality, facilitating fire during the active growing season for native perennials (Whisenant 1990).

Ground or surface soil disturbance provides an environment conducive to the establishment of invasive and noxious weeds. Proposed mechanical treatments that may be implemented on up to 56,297 acres within the Project Area may facilitate the establishment of invasive or noxious weeds through ground disturbance or by transport on contaminated equipment. Proposed conservation measures would minimize potential transport of noxious weeds to or from proposed treatment areas by requiring equipment to be pressure washed prior to transport in or out of proposed treatment areas. Hand treatments would result in relatively small, localized areas of soils disturbance and are generally not expected result in an establishment or increase in noxious weeds. Mechanical treatments would target juniper, while retaining the shrub and herbaceous undergrowth, and therefore not resulting in disturbance or damage to the root systems of native perennial vegetation. It is anticipated that native vegetation would re-establish within areas of disturbance relatively quickly in areas resulting from hand treatments. All vegetation manipulation areas will be managed following treatment to ensure that noxious and invasive weeds do not become established per BLM standards.

Although mechanical and hand treatments would not be expected to result in the establishment of noxious weeds, susceptibility would potentially increase in areas of prescribed fire. Proposed conservation measures include provisions for monitoring and managing disturbed areas to prevent the establishment and colonization of noxious weeds, in addition, all equipment would be required to be washed prior to transport in or out of the Project Area. Additionally, the SFO Interdisciplinary Team would review and approve all burn plans for implementation of prescribed fire and areas where sites have crossed ecological thresholds and/or are lacking a sufficient herbaceous understory would not be burned to avoid the potential for non-native plant invasion. A sufficient herbaceous understory for purposes of this project is defined as 3 perennial grass plants per square meter.

In the short-term, implementation of the Proposed Action may increase the risk of noxious weed introduction and spread. However, BLM management and restoration efforts, including implementation of Standard Operating Procedures described in **Appendix F** would prevent or minimize potential negative effects. If monitoring detected noxious weed invasions, the BLM would treat weeds invasions immediately to reduce the spread of the noxious weeds and attempt to eradicate noxious weeds from the site. The long-term effects of reducing fire risk and intensity, combined with reducing juniper encroachment into adjacent plant communities and juniper canopy cover densities would facilitate restoration of ecological diversity through the restoration and enhancement of a mosaic of vegetative communities and early seral stages, ultimately resulting in an ecological community capable of effectively resisting invasion from noxious and invasive weeds. Potential effects related to noxious weeds resulting from implementation of the Proposed Action are considered minor.

3.12.3. Cumulative Effects of Proposed Action

The Cumulative Assessment Area for Noxious Weeds is the 501,247 acre Vya sage-grouse PMU. Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project. It is not anticipated that recreational activities or rangeland management activities including exclusion fencing, would result in cumulative effects related to noxious weeds.

Areas of wild horse grazing, areas used off-highway vehicle use, and disturbed areas within the construction area of the Ruby Pipeline Project may be susceptible to establishment and spread of

noxious weeds within areas of disturbed ground. However, BLM management across the 501,247 acre Vya PMU has not resulted in any widespread noxious weed invasion.

Future wildfire events within the Project Area are anticipated, as are additional fuels management activities and livestock grazing. Pre-existing infestations of noxious weeds may be discovered and eradication or control actions would be initiated. Similar effects could be expected in the Project Area following proposed or future unplanned disturbances due to the spread and establishment of adjacent undetected noxious weed populations outside of the Project Area, but within the CAA. With implementation of planned disturbances such as mechanical treatments or other treatment methods, the identification of, and subsequent application of Best Management Practices (BMPs) for noxious weed infestations prior to disturbance would be possible. Implementing the Proposed Action may improve the ability of native vegetation communities to resist noxious weed and invasive species establishment through the development of a more vigorous, diverse and productive ecosystem. In addition, implementing individual treatments over time would reduce the potential of invasions from noxious weeds or invasive species over a large area. Potential cumulative effects relate to noxious weeds resulting from implementation of the Proposed Action are therefore considered negligible.

3.12.4. Direct, Indirect and Cumulative Effects of No Action Alternative

Future wildfire events within the CAA are anticipated, as are additional fuels management activities and livestock grazing. Each of these actions implemented within the Project Area, as well as within surrounding lands would have the potential to facilitate the establishment of noxious and invasive weed populations. Pre-existing, yet undetected stands of noxious weeds may be discovered and eradication or control actions would be initiated per BLM protocols. Similar effects could be expected in the Project Area following proposed or future unplanned disturbances due to the spread and establishment of adjacent undetected noxious weed populations outside of the Project Area. Under the No Action Alternative, noxious weeds populations may eventually increase within the Project Area, particularly along traveled roads, but populations may also potentially spread into areas of bare soil resulting from juniper encroachment. In addition, understory species in sagebrush and woodland sites declining as a result of juniper encroachment may not be able to resist noxious weed and invasive species establishment following a natural disturbance (i.e. wildfire) due to the lack of vigor and diversity in desirable, native perennial grasses and forbs. Ongoing increased densities in woodland canopy cover would also increase the potential severity and intensity of future wildfires, indirectly providing potentially expansive areas for noxious weeds and invasive species establishment following a wildfire event. Potential effects related to noxious weeds resulting from the No Action Alternative are considered moderate.

Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project (completed summer 2011). It is not anticipated that recreational activities or rangeland management activities including exclusion fencing, would result in cumulative effects related to noxious weeds.

Areas of wild horse grazing, areas of off-highway vehicle use, and disturbed areas within the construction area of the Ruby Pipeline Project may be susceptible to infestations of noxious

weeds due to areas of disturbed ground. However, these areas would represent small contributions to potential cumulative effects within the CAA.

3.13. Recreation

3.13.1. Affected Environment

Public recreation activities within the Project Area include dispersed primitive camping, OHV driving, hiking, fishing, hunting, photography, rock hounding, fossil hunting, horseback riding, and sightseeing. Woodcutting is also considered by some as a recreational activity and occurs frequently in the Project Area. Peak seasons for recreational use include spring, summer, and fall, with the highest number of visitors during holiday weekends, and the months associated with antelope, deer, and upland game hunting seasons. Recreational values offered by the Project Area include quiet solitude, scenery, and the perception of rugged untamed country. Abundant wildlife and a diverse landscape provide the public with opportunities for wildlife viewing and photography among other uses.

A large segment of the Barrel Springs Backcountry Byway crosses through the Project Area as well as numerous dispersed camp sites. Fee Reservoir campground is also within the Project Area. No established trails or special recreation areas exist within the Project Area.

3.13.2. Direct and Indirect Effects of Proposed Action

Effects are expected to occur during treatments both indirectly and directly. Hand and mechanical treatments would have a small effect on recreation resources based on timing and the number of acres that would potentially be treated annually. Hand and mechanical treatments would generate noise, traffic, and dust effects, which could be disruptive to recreational visitors within the vicinity of treatments. Prescribed fire could result in visual effects, as well as possibly the smell of smoke during and immediately after prescribed burning. All treatments could result in a temporary discernment of wildlife populations within individual treatment areas. This could affect wildlife viewing and hunting opportunities.

Direct effects from the proposed action would include increased noise, dust, and traffic along roads used to access units during hand and mechanical treatment or prescribed burning. Since small portion of the proposed acres treated would involve prescribed burning, the effects of smoke and hazy conditions would exist in the short-term and have limited direct effects of recreational visitors. However, these effects would only temporarily alter recreation settings, and would be short-term in nature. Treatments that would occur within the Fee Reservoir vicinity could impact visitors experience at that site. Dispersed camp sites, such as those associated with hunting and backcountry camping could experience additional effects of temporary loss of recreation use due to treatments occurring making it less desirable to camp in those locations.

Indirect effects for the Proposed Action would include changes in views from scenic byways or viewpoints. Effects to views from scenic byways or viewpoints would be both adverse (short-term) and beneficial (long-term). However, as discussed in detail in **Section 3.16**, with implementation of proposed mitigation measures, effects related to visual resource management would be minor.

Implementation of the Proposed Action project would result in short-term effects, ultimately leading to long-term benefits. Habitat restoration would facilitate re-establishment of stands of grasses, forbs and shrubs in varying seral stages, more typical of the sagebrush-steppe ecosystem, and would subsequently support more upland birds and deer; providing for enhanced scenic quality, as well as recreational hunting opportunities and improved wildlife viewing opportunities.

Appendix F describes Standard Operating Procedures proposed to reduce potential effects to recreation resources resulting from implementation of the Proposed Action. Short-term effects to recreation resources from restoration activities such as noise, dust and traffic would not result in a loss of long-term productivity of those resources to support future recreation use. All effects to recreation resources would be short-term and consistent with the SSER FEIS and SFO RMP FEIS. Implementation of the Proposed Action would not result in unavoidable adverse effects to recreation resources. Potential effects related to recreation resulting from implementation of the Proposed Action are considered minor.

3.13.3. Cumulative Effects of Proposed Action

The Cumulative Assessment Area for Recreation is the Project Area. Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project.

Habitat restoration and fuels reduction treatments proposed by BLM within the Project Area, in combination with land uses and management actions proposed on surrounding lands within the CAA would have the potential to result in modifications to existing natural resources and recreational opportunities provided by these resources. Proposed management actions would affect recreational resources during implementation over a short duration and would be temporary by nature; however, as a result of these management actions, recreational opportunities and the visual quality of the region would improve as ecosystems are restored. Implementation of the Proposed Action, in combination with reasonable foreseeable activities within the CAA would not result in substantial cumulative effects related to recreation. Potential cumulative effects related to recreation resulting from implementation of the Proposed Action are considered minor.

3.13.4. Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, juniper canopy cover would continue to increase in density across former sage-steppe ecosystems, resulting in increased bare soils, declining soil moisture and potential colonization of noxious or invasive weeds. Juniper would continue to encroach into adjacent habitats, displacing a diverse assemblage of vegetative species. The direct effects of these changes in habitat would result in a decline in natural resources available to promote viable diverse populations of vegetation, as well as wildlife. Recreation activities within the Project Area rely on these natural resources and associated ecosystems as the mechanism for enjoyment. Hunting, fishing, sight-seeing, hiking and other recreational opportunities within the Project Area depend on a successful and diverse ecosystem. The decline in vegetative diversity and wildlife populations would lead to a decline in recreational appeal within the Project Area, and the subsequent reduction of recreational users, resulting in localized effects as a result of lack of opportunity, but also increasing demand for additional recreational opportunities within the region. Potential effects related to recreation resulting from the No Action Alternative are considered moderate.

3.13.5. Cumulative Effects of No Action Alternative

Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project. It is not anticipated that continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, or the previous construction of the Ruby Pipeline Project would result in cumulative effects related to recreation.

Under the No Action Alternative, juniper canopy cover would continue to increase in density across former sage-steppe ecosystems resulting in increased bare soils, declining soil, moisture and potential colonization of noxious or invasive weeds. Juniper would continue to encroach into adjacent habitats, displacing a diverse assemblage of vegetative species. The effects of these changes, in combination with reasonably foreseeable management actions on surrounding lands within the region, would potentially result in increased resources required to implement land management on these surrounding lands to maintain and or improve habitats within these lands. Lands within the Project Area would harbor increased juniper densities and facilitate juniper encroachment on surrounding lands, potentially resulting in the perpetuation of an assortment of undesirable ecological characteristics, as well as wildfire potential, resulting in the degradation of recreational resources and opportunities within the region and the potential for substantial cumulative effects to Recreation resources. Potential cumulative effects related to recreation resulting from the No Action Alternative are considered moderate.

3.13.6. Mitigation Measures

Vegetation around Fee Reservoir campground and identified dispersed camp sites would be flagged and not treated.

3.14. Soils

3.14.1. Affected Environment

The soil classifications for the Vya Project Area are contained in two soil surveys: the 1999 Soil Survey (#759) of Washoe County North Part; and the 2006 Soil Survey (#685) of Surprise Valley-Home Camp California and Nevada, as well as 2005 SSURGO Digital Soil Survey Data for Modoc and Washoe Counties. Soil survey can be found at: http://soildatamart.nrcs.usda.gov/Manuscripts/CA685/0/SV-HC.pdf

Soils in the Project Area are of volcanic origin, and can be generally described by the three common land forms within the project area: volcanic plateaus, north-south oriented mountain ranges and enclosed valleys. Soils on mountain ranges tend to be most productive of the land forms, have deep and darker soil profiles, but have the potential for higher erosion rates due to steeper slopes. Typical soil series include Newland, Hapgood and hartig; Ecological sites associated with these soils include loamy 10-12 pz and 12-14 pz, and loamy slopes. Mountain sage brush is the dominate shrub on these soils and juniper encroachment is common.

Soils on the volcanic plateaus tend to have high clay content, and high rock content, are shallow in depth over bedrock or a duripan. These soils are normally located on slopes on less than 10%,

therefore water runoff and erosion rates are slow. The common soils series with the project area include Devada, Ferver, Jaybee, Madeline, Tinpan and Ninemile. Ecological sites associated with these soils include claypan 10-12pz, and 12-14, shallow stony loams. These soils typically grow sage sagebrush and have all three phase of juniper classification, and often have Juniper old growth. Juniper woodland occurs on the Bidrim soil series.

The enclosed valleys or basins have soils that formed from runoff from the surrounding uplands. These valleys are characterized by flat playa or intermittent lakes, bordered by lacustrine terraces, and shoreline features, soils include Orr and Surprise soils series. Soil erosion processes are generally in equilibrium with the soil development. While these landforms and soils are common within the Project Area, western juniper tends to have a low density on these soils.

3.14.2. Direct and Indirect Impacts of Proposed Action

Implementation of the Proposed Action would result in ground disturbance within the Project Area. Approximately 56,000 acres of mechanical treatments are proposed in the Project Area and the construction of temporary roads and landings would create areas of ground disturbance, that if not properly managed could result in erosion and sediment loss, facilitating an overall decline in soil stability and hydrologic functions, as well as soil productivity. Susceptibility of Project Area soils to wind and water erosion is based on percentages of sand, silt, organic matter, soil structure, and permeability. Soil erosion is also influenced by management actions. Hand treatments would not have little or no ground disturbance.

Proposed treatments, including prescribed burning, mechanical treatment, and temporary road construction could result in short-term adverse effects to soil resources, including compaction and decreased infiltration, erosion and sediment loss. However, Standard Operating Procedures described in **Appendix F** would minimize adverse effects. In the long-term, it is anticipated that proposed treatments will result in improved soil stability and hydrologic function for the long-term benefit of soil resources.

Potential effects to water quality resulting from erosion and sediment loss are discussed in detail in **Section 3.13**.

Potential effects to soil resources resulting from implementation of the Proposed Action are considered negligible. It is anticipated that implementation of the Proposed Action would result in long-term benefits to soil resources within the Project Area.

3.14.3. Cumulative Effects of Proposed Action

The Cumulative Assessment Area for Soil resources includes all allotments that lie within the Project Area. Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, as well as remnant areas of disturbance related to the Ruby Pipeline Project. It is not anticipated that recreational use within the CAA will substantially contribute to cumulative adverse effects related to soils.

BLM will continue to manage lands used for livestock grazing, wild horse grazing, and other rangeland management activities to minimize the potential for adverse effects related to soils. Surrounding lands within the CAA may be susceptible to adverse effects related to soils (erosion

and sediment loss) due to a lack of proper management. This lack of management on surrounding lands would contribute to cumulative effects to soil resources within the CAA.

Off-highway vehicle use within the CAA would contribute to adverse cumulative effects related to soils.

Post-construction Best Management Practices (BMPs) associated with the Ruby Pipeline Project are subject to compliance with the National Pollution Discharge Elimination System, and would be required to implement, monitor, and maintain effective BMPs related to erosion and sediment control. It is not anticipated that the Ruby Pipeline Project would contribute to cumulative adverse effects related to soils.

It is anticipated that BLM would continue to coordinate management activities with surrounding stakeholders to minimize potential cumulative effects of proposed management actions. Potential adverse effects related to soil resources resulting from implementation of the Proposed Action would be short-term and temporary. Implementation of the Proposed Action would result in long-term benefits to the Project Area, potentially facilitating and complementing proposed restoration on surrounding lands as well. Potential cumulative effects to soil resources related to implementation of the Proposed Action are considered negligible.

3.14.4. Direct and Indirect Impacts of No Action Alternative

Under the No Action Alternative, proposed restoration treatments involving ground disturbing activities and prescribed fire would not be implemented. However, the risk of soil disturbance and accelerated erosion following a large-scale wildfire would increase as fuels continue to accumulate over time. Areas of bare ground beneath juniper woodland canopies would expand and increase the potential for surface erosion and sediment loss.

Soil productivity within the Project Area would decline as a result of increased juniper densities and the associated loss of the native shrub/perennial grass ground cover. Soil surface layers may degrade as organic matter, nutrients, and shrub and perennial grass cover are depleted. Potential effects related to soil resources resulting from the No Action Alternative are considered moderate.

3.14.5. Cumulative Impacts of No Action Alternative

Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project (completed summer 2011). It is not anticipated that recreational use within the CAA will substantially contribute to cumulative adverse effects related to soils.

BLM will continue to manage lands used for livestock grazing, wild horse grazing, and other rangeland management activities to minimize the potential for adverse effects related to soils. Surrounding lands within the CAA may be susceptible to adverse effect related to soils due to a lack of proper management. This lack of management on surrounding lands would contribute to cumulative effects within the CAA.

Off-highway vehicle use within the CAA would contribute to adverse cumulative effects related to soils resulting in areas of erosion and sediment loss.

Construction activities associated with the Ruby Pipeline Project would have been subject to compliance with the National Pollution Discharge Elimination System, and would be required to implement, monitor, and maintain effective Best Management Practices related to erosion and sediment control. It is not anticipated that the Ruby Pipeline Project would contribute to cumulative adverse effects related to soils.

The risk of soil damage and accelerated erosion following a large-scale wildfire would increase as fuel accumulates over time. Bare ground beneath juniper woodland canopies would increase over time and risk of surface erosion would increase. The potential decline in soil stability and productivity would have the potential to adversely affect surrounding lands and watersheds resulting in cumulative effects to soil resources. Potential cumulative effects related to soil resources resulting from the No Action Alternative are considered moderate.

3.14.6. Mitigation Measures

No mitigation is proposed.

3.15. Vegetation, Including Threatened and Endangered Plant Species

3.15.1. Affected Environment

The Project Area is inhabited by a variety of terrestrial and aquatic plant communities, including BLM sensitive species. The following sections describe habitats and plant species present within the Project Area. Wildlife use of these plant communities are discussed in greater detail in **Section 3.17**. Because this is a programmatic EA, conditions are described in general terms and ranges, and individual site information is not included. Detailed site information will be provided during project development.

Big Sagebrush

Big sagebrush (*Artemisia tridentata*) vegetation includes mountain, Wyoming, and basin sagebrush associations. Sagebrush plants are very well adapted to living in xeric climates and generally tend to out-compete other plants within an area three times the size of their crown. As a result, the sagebrush habitat often grows uniformly and exclusively depending on topography, soil composition, and moisture. Other shrub species with similar adaptations often co-occur, including bitterbrush (*Purshia tridentata*), rabbitbrush (*Chrysothamnus nauseosus*), and curleaf mountain mahogany (*Cercocarpus ledifolius*); or herbaceous species such as Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Pseudoregneria spicata*), penstemons (*Penstemon* spp.), paintbrushes (*Castilleja* spp.), balsamroots (*Balsamorhiza* spp.), and lupines (*Lupinus* spp.).

Big sagebrush (including mountain, Wyoming, and basin associations) occurs throughout the Project Area, with Mountain big sagebrush communities being the most common habitat type invaded by juniper. Habitat type inclusions within sagebrush vegetation zones include seasonally and perennially wet meadows, intermittent and ephemeral drainages, curleaf mountain mahogany, aspen, and juniper woodland.

Low Sagebrush

Low sagebrush (*Artemisia arbuscula*) vegetation includes early, Lahontan, and black sagebrush associations. In general, low sagebrush occurs on open, rocky soils and supports a wider diversity of native herbaceous species. Species such as bitterroot (*Lewisia* spp.), phacelia (*Phacelia* spp.), phlox (*Phlox* spp.), wild onion (*Allium* spp.), and locoweed (*Astragalus* spp.) thrive in these open low sagebrush habitats. Habitat inclusions identified within low sagebrush vegetation communities include: bitterbrush, early Lahontan, black sagebrush, and rabbitbrush, as well as intermittent and ephemeral drainages and wet meadows.

Antelope Bitterbrush

Antelope bitterbrush (*Purshia tridentata*) communities generally occur in complex association with big and low sagebrush communities. They are tolerant of a wide variety of soil textures, though they generally occur on deeper soils or soils with higher water holding capacities that are neither saline nor alkaline. Antelope bitterbrush is adapted to a wide variety of communities, including some with very short natural fire return rates. However, bitterbrush is killed by hot fires, particularly on more marginal sites. Antelope bitterbrush response to fire varies widely based on soil type, soil moisture, plant moisture, fire temperature, plant growth form, and time of year. As a member of the rose family, bitterbrush communities tolerate, and may actually require a level of disturbance (mechanical, such as browsing and trampling, fire, etc.) to be maintained. In the absence of disturbance, bitterbrush may become decadent and non-reproductive. Antelope bitterbrush leaves and stems are palatable to a wide variety of species, including most large ungulates. Seedlings and young plants are particularly palatable to livestock, deer, and antelope, and they are particularly vulnerable to over-utilization. Flowers and seeds are produced on the previous year's stem growth. Antelope bitterbrush reproduction is highly dependent on wildlife populations. Seeds are vulnerable to insect damage and are consumed by many species of birds and rodents. Antelope bitterbrush is present in pure stands within the Project Area, with scattered individual shrubs observed in the big and low sagebrush habitats.

Aspen

Aspen (*Populus tremuloides*) is adapted to a much broader range of environments than most plants found associated with it. It is one of the few plant species able to grow in all mountain vegetation zones, from subalpine tundra to the basal plains (Daubenmire 1943). Aspen reproduces vigorously by root suckers following fire. Grazing has contributed to the variability of aspen forests: the lush undergrowth of aspen forests is considered excellent summer range. More than a century of grazing (frequently intense in the late 1800s and early 1900s) has left its mark in both pronounced and ill-defined alterations in species composition and production (Mueggler 1988). In the Project Area, aspen is considered a sparse but valuable forage plant for wildlife and livestock, and aspen stands provide shade and resting cover for both wildlife and livestock.

Small isolated aspen communities are observed throughout the Project Area. There are two types of aspens groves within the Project Area: snow-pocket-induced and riparian. Aspen is also seen as inclusions within mountain big sagebrush communities.

Curleaf Mountain Mahogany

Most curleaf mountain mahogany (*Cercocarpus ledifolius*) stands are small and limited in distribution. In the Project Area, mahogany grows in combination with big sagebrush, and with a mixture of big and low sagebrush. Curleaf mountain mahogany grows on rocky ridges and steep slopes with thin soil. This plant can form nearly closed single- species communities or be a secondary component in other tree-dominated communities (Sawyer and Keeler-Wolf 1995).

Mountain mahogany is intolerant of fire. Because the species' seeds have low establishment success in the shallow, rocky soils in which the plant grows, plant reproduction rates are slow. Rabbits, rodents, and mule deer feed on mahogany seedlings—further reducing reproductive success. Mahogany is a valuable fuel wood, though sparse and difficult to access. Private harvesting of dead mahogany is currently allowed, although there is little demand**.** Mahogany is also a valuable forage plant and source of shade and resting cover for wildlife and livestock. Curleaf mountain mahogany stands generally occur as inclusions in big sagebrush communities within the Project Area, though are occasionally observed in monotypic pockets.

Juniper Woodland

Juniper is widely scattered throughout the Surprise Field Office area and the Intermountain West, where vegetation community composition is heavily influenced by historic patterns of wildfire. Historically, juniper existed in a continuum of densities throughout the landscape, characterized by two stand types. Juniper woodlands typically existed in areas of rocky, shallow soils surrounded by limited fine fuels. In these areas, fire intervals were infrequent. The second stand type was the juniper savanna, and was characterized by young trees colonizing the sage steppe communities from the fire-safe sites with densities inversely related to distance from the fire-safe sites until wildfire killed the invading juniper trees.

Juniper woodland habitats can be found at elevations ranging from sea level to above 10,000 feet above mean sea level (MSL). They generally form transitional habitats, depending on elevation, such as with Great Basin sagebrush scrub at lower elevations, and Jeffery pine (*Pinus jeffreyi*) at higher elevations. Juniper trees (*Juniperus* sp.) are relatively slow growing and can live up to 1,000 years. The berries they produce are a food source to numerous wildlife species and their foliage feeds several species of mammals. Dense stands of juniper woodland generally are associated with grassy understory whereas open stands of juniper woodland usually have a shrub understory. Plant species that can be found within this diverse vegetation type include Jeffery pine, bitterbrush, sagebrush, white fir (*Abies concolor*), ponderosa pine (*Pinus ponderosa*), California buckwheat (*Eriogonum fasciculatum*), curleaf mountain mahogony, clover (*Trifolium* spp.), and oatgrass (*Danthonia* spp.).

Juniper woodland habitat onsite provides food, water, protection, nesting habitat and thermal cover, as well as migration and dispersal corridors for a number of wildlife species. Juniper woodland can be found as inclusions within big sagebrush and low sagebrush habitats within the Project Area.

Introduction of domestic livestock grazing over 140 years ago reduced the fine fuels needed to carry wild fires, and active fire suppression decreased the size of fires that did start (USFS 2008). As a result of these decreases in fire frequency and extent, juniper expansion has accelerated during the last century. Now many juniper communities display greater than 21 percent crown closure within areas that would have typically supported low-density juniper woodland. In these areas, understory shrubs and herbaceous species have declined, resulting in expanses of bare ground and a loss of key ecosystem components (BLM 2007).

As the density of juniper increases, large portions of the sage-steppe ecosystem are being altered. In areas with relatively high densities of juniper, vegetative communities have shifted from sagebrush dominated shrub-steppe to juniper woodlands. This shift in vegetative communities has resulted in a loss of biodiversity on the landscape, diminished habitat values (particularly for sage-steppe obligate species), and has contributed to degraded surface hydrologic conditions. Increased juniper density in sage-steppe habitats also results in decreased ground cover and

exposure of bare soils, resulting in increased erosion potential and a loss of soil productivity (USFS 2008).

Special-Status Plant Species

Special-status plant species are those that have been afforded special recognition by federal, State or local resource agencies or organizations. Listed and special-status species are of relatively limited distribution and may require specialized habitat conditions. Special-status species are defined as meeting one or more of the following criteria:

- Listed or proposed for listing under the federal endangered species act (FESA);
- Protected under other regulations (e.g. BLM Sensitive Species);
- Listed under the California Native Plant Society (CNPS) Rare Plant Ranks, formally known as the CNPS Lists
- Listed as species of concern by United States Fish and Wildlife Service (USFWS); or
- Receive consideration during environmental review under NEPA.

The USFWS Listed, Proposed and Candidate Species, BLM Sensitive, and CNPS ranked species that may occur in Modoc County, California were compiled from respective agency websites, CNDDB records, and BLM Surprise Field Office literature review and staff interviews.

The following set of criteria has been used to determine each species' potential for occurrence on the Project Area:

- **High**: Species is known to occur on or near the site (based on known records within a five-mile radius of the site, and/or based on professional expertise specific to the site or species) and there is suitable habitat onsite.
- **Low**: Species is known to occur in the vicinity of the site, and there is marginal habitat onsite.-**OR**-Species is not known to occur in the vicinity of the site, however there is suitable habitat onsite.

Table 3.7. Special Status Plant Species Documented or Suspected in the Project Area

Regulatory Status	High Potential	Low Potential
Federal Species of Concern	1	0
BLM Sensitive	10	5
CNPS	21	3

Species Determined to Have a High Potential for Occurrence:

Based on records search of the FESA list, BLM Sensitive species list, and CNPS ranking list, the following special-status plant species have the potential to occur onsite or in the vicinity of the Project Area:

Adobe lomatium, Baker's globe mallow, Doublet, Dwarf resin birch, Geyer's milk-vetch, Great Basin nemophila, Green buckwheat, Hairy marsh hedge-nettle, Howell's thelypodium, Long bluebells, Little ricegrass, Modoc bedstraw, Playa phacelia, Prostrate buckwheat, Rigid pea, Sagebrush bluebells, Sagebrush loeflingia, Smooth goldenrod, Warner Mountains bedstraw, Western valerian, and Yakima birds-beak.

3.15.2. Direct and Indirect Effects of Proposed Action

Implementation of the Proposed Action would facilitate improved sage steppe habitat, while resulting in a decline in juniper woodland vegetation. Project activities associated with the Proposed Action would result in both temporary and long-term effects to vegetation and individuals, and would include both beneficial (vegetation changes) and adverse (primarily related to disturbance) effects.

In the short term, prescribed burning would result in the loss of vegetation, depending on the severity of burning and amount and species of sagebrush in each project unit to be burned. Where exotic species are present beforehand, prescribed burning may provide an opportunity for further invasion, negatively affecting native vegetation. In order to mitigate this effect, an inventory would be completed before treatments, and prescribed burning would be avoided where exotic species are present. Long-term effects related to prescribed burning are expected to be positive. Following fire, it is common to observe a diverse flush of native forb species, followed by grasses, and later shrubs. This process of site restoration following burning would begin immediately following the burn and continue for several decades. The resulting mosaic of seral stages and vegetative community composition is expected to result in increased landscape heterogeneity and resiliency.

Both hand treatment and mechanical treatments would cause short-term disturbances to vegetation, but would have minimal long-term negative effects. Mechanical treatment is expected to result in greater short-term disturbance than hand treatments. Following the removal of the juniper canopy, long-term, though gradual, beneficial effects are expected to understory grass and forb species. The risk of exotic plant invasion is much less following hand or mechanical treatment than following prescribed fire. Some shrubs would likely be crushed or removed during mechanical operations; however, many shrub species, including valuable forage species such as antelope bitterbrush, are adapted to disturbance. Overall, shrubs are expected to respond positively to treatments, resulting in increased foraging opportunities and cover for wildlife.

Numerous springs that feed intermittent and ephemeral drainages are present throughout the Project Area. Mechanical operations implemented within the vicinity of these areas would have the potential to result in erosion and sediment transport into the adjacent or connected aquatic habitats. Erosion and sediment loss are of great concern within perennial watersheds and areas where large acres of surface acres drain into a system. Implementation of Standard Operating Procedures detailed in **Appendix F** is anticipated to reduce the potential for erosion and sediment loss in areas adjacent to aquatic features and riparian areas.

Because the proposed treatments were designed to improve plant community health and resiliency, the treatments would also improve habitat conditions for most Special Status plants and their habitats. While the ultimate outcome would be beneficial to populations in the long term, some treatment methods create risks to specific plant species and populations and there may be short-term negative effects.

To avoid negative impacts, the project botanist would evaluate the proposed treatments for each project to determine what surveys are needed and what protection measures would be implemented for the Special Status species occurring in the treatment areas. Conducting pre-project surveys to determine what species are present in the treatment units and designing protection measures for each species and site would prevent direct or indirect impacts to Special Status and S&M plant populations. See **Appendix G** for required pre-project clearances.

Protection measures would be determined on a site-specific basis and would be based on known management recommendations, site conditions, and proposed treatment prescriptions. Methods to reduce potential effects of the treatments on Special Status plants may include full protection (installing variable-radius, no disturbance buffers), changing the timing of treatments (e.g., fall or winter burning versus spring burning), changing the intensity of disturbance (e.g., minimum canopy requirements for overstory or understory layers over a population), or duration of the treatment (e.g., only allowing a quick burn through a population).

Implementation of the Proposed Action would result in short-term effects to vegetation for some sage steppe plant species. However, the Proposed Action would be expected to improve long-term habitat productivity for sage steppe obligate species, increase landscape heterogeneity and therefore resiliency, and allow for the restoration of native plant communities. It is anticipated that implementation of the Standard Operating Procedures identified in **Appendix F**, in combination with proposed mitigation measures relevant to wildlife would minimize potential adverse effects. Effects associated with implementation of the Proposed Action are considered minor.

3.15.3. Cumulative Effects of Proposed Action

The Cumulative Assessment Area for Vegetation resources is the Project Area. Past, present and future foreseeable effects include hand and mechanical juniper removal, fire suppression, domestic livestock grazing, wild horse grazing, range management, weed management, recreation, off-highway vehicle use, and operation of the Ruby Pipeline Project.

It is not anticipated that continued fire suppression, or Ruby Pipeline operation within the Project Area would substantially contribute to cumulative adverse effects related to vegetation.

The use of temporary roads could result in increased future use by hunters, fire wood collectors and campers. Some amount of future permanent use could be expected, which would likely diminish the positive vegetation response within the Project Area. If temporary roads are decommissioned, potential cumulative effects would be greatly reduced.

Past juniper reduction treatments have occurred on private and public lands within the Project Area, and these treatments are expected to continue to occur. When added to the treatments in the Proposed Action, additional restoration treatments would be expected to have a slightly negative short-term impact on vegetation. In the long term, cumulative impacts are expected to be positive for sage steppe vegetation.

Domestic livestock and wild horse grazing within the Project Area would likely reduce the positive treatment response for grass species, as livestock and horses would have increased access to plants that may be reduced in vigor due to juniper canopy closure. Required rest from livestock grazing following treatments would mitigate some of this cumulative effect by allowing grass plants to increase in vigor before being grazed. Although complete post-treatment rest from wild horse grazing is not feasible, management of horse populations at Appropriate Management Levels (AMLs) would mitigate much of the adverse cumulative effect from horse grazing. Continued rangeland management practices of fencing riparian and wetland sites would likely have positive cumulative effects on riparian vegetation, allowing for a more rapid restoration process following treatment. These practices would also decrease the potential for erosion and sediment input into aquatic habitats.

Continuing integrated weed management will result in positive cumulative effects to native vegetation, including special status species. These treatments will also minimize the potential for proposed treatments to result in exotic species invasions.

Continued recreation in the form of hunting, camping, and hiking, and to a lesser extent wildlife observation, nature study and archaeological sightseeing would result in minimal cumulative impacts to vegetation populations. The project is not expected to result in increased recreation over the long-term. Unauthorized off-highway vehicle use may increase due to more open vegetation conditions, but restricting all vehicles to designated trails would reduce long-term cumulative effects from these activities to negligible.

Added to past, present, and foreseeable future activities in the district, the integrated vegetation treatments in the Proposed Action would not result in cumulative negative effects to native sage steppe vegetation or Special Status plants. The BLM would survey treatment areas before project implementation and would protect special status sites from direct and indirect effects through buffers. Treatments would benefit native plant species by making them more resilient to catastrophic events, such as wildfire and drought. The treatments would not reduce the amount of old growth juniper woodlands that provide habitat for some Special Status plants.

Overall, cumulative effects resulting from implementation of the Proposed Action are considered positive and minor.

3.15.4. Direct and Indirect Effects of No Action Alternative

Under the No Action Alternative, no restoration treatments would be conducted. The No Action Alternative would have no direct effects to vegetation since there would be no fuels treatments or associated disturbances.

Over the long term, there is a high probability that No Action would result in indirect effects to sage steppe vegetation communities. Juniper-encroached stands would continue to increase in density, and juniper may begin to appear in currently uninvaded areas of sage steppe. Overall range health and ecological potential in the area would continue to decline, and native sage steppe vegetation would continue to be reduced in extent, as well as vigor. Juniper encroachment would continue to negatively affect suitable habitat for sagebrush obligate species. Under increased juniper densities, wildfire under moderate conditions becomes less likely, although, in the event of a fire, vegetation and soils would be more at risk of burning at high intensity (USFS 2008). Increased fire intensity may result in widespread and unpredictable modifications to habitats within the Project Area, potentially damaging or eliminating Special Status plant populations. Potential effects are considered negative and moderate.

3.15.5. Cumulative Effects of No Active Alternative

Past, present and future foreseeable effects include hand and mechanical juniper removal, fire suppression, domestic livestock grazing, wild horse grazing, range management, weed management, recreation, off-highway vehicle use, and operation of the Ruby Pipeline Project.

It is not anticipated that continued livestock and wild horse grazing, range management practices, or Ruby Pipeline operation within the Project Area would substantially contribute to cumulative adverse effects related to vegetation.

Past juniper reduction treatments have occurred on private and public lands within the Project Area. These treatments are expected to continue to occur, although the scale of their implementation is unknown. When considered in combination with the No Action Alternative, these restoration treatments would be expected to have a slightly positive impact on vegetation, mitigating some of the impact of continued juniper expansion.

Fire suppression is expected to continue as the preferred management response to wildfire in the Project Area. By reducing the frequency and extent of fires that limit juniper densities in the sage steppe, fire suppression provides an opportunity for widespread juniper expansion. In combination with No Action, or no juniper removal, fire suppression is expected to result in negative cumulative impacts to sage steppe vegetation.

Continuing integrated weed management will result in positive cumulative effects to native vegetation, including special status species, by preventing invasions by exotic plant species and noxious weeds.

Continued recreation in the form of hunting, camping, and hiking, and to a lesser extent wildlife observation, nature study and archaeological sightseeing would result in minimal cumulative impacts to vegetation populations. Unauthorized off-highway vehicle use may contribute to a declining state of the native vegetation, but restricting all vehicles to designated trails would reduce long-term cumulative effects from these activities to negligible.

Added to past, present, and foreseeable future activities in the district, the No Action Alternative would add cumulative negative effects to native sage steppe vegetation and Special Status plants. Continued increases in juniper cover would lead to declines in sage steppe communities, and would result in a landscape that is more homogenous and vulnerable to disturbances.

3.15.6. Mitigation Measures

No mitigation is proposed.

3.16. Visual Resource Management

3.16.1. Affected Environment

The Surprise Field Office Resource Management Plan establishes Visual Resource Management (VRM) objectives for all land administered by BLM within the proposed Project Area. Three of the four VRM Classes exist within the proposed Project Area, Class II, III and IV; however Class II and Class III predominates the proposed Project Area.

3.16.2. Visual Resource Management Classes

BLM's Visual Resource Management (VRM) system provides a way to identify and evaluate scenic values to determine the appropriate levels of management. It also provides a way to analyze potential visual impacts and apply visual design techniques to ensure that surface-disturbing activities are in harmony with their surroundings. The VRM system is categorized as follows:

- Class I Objective: To preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.

- Class II Objective: To retain the existing character of the landscape. The level of change to the characteristic landscape should be low.
- Class III Objective: To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate.
- Class IV Objective: To provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high.

3.16.3. Visual Quality and Characteristics

Scenic quality varies among the treatment areas. The hand only treatment areas range from rugged, sparsely wooded, mountainous terrain, to flat rolling juniper covered hills. Landforms are generally ranging from rugged with moderate to steep slopes to lower elevation with gradual slopes. Majority of the areas have some evidence of human-induced changes, primarily roads and fences. Lines are bold and curving with both vertical (vegetation) and horizontal (fence line) elements. Colors are muted tans, greens and grays. Hand only treatment areas fall within all three of the VRM classes however they fall mostly within Class II and III.

The mechanical treatment areas lie in shallower sloping drainage close to roads for easy accessibility. Landforms visible from these areas are dominated by low rounded hills with horizontal rock shelves, outside of phase I juniper encroachment. The primary evidence of human disturbance visible within these treatment areas are fences, roads and grazing improvements. Mechanical treatment areas fall within all three of the VRM classes however they fall mostly within Class II and III.

The burn treatment areas lie in steeper sloping drainage in higher elevation closer to roads for easy accessibility. Landforms visible from these areas are dominated by high peaks with horizontal rock shelves, with different fuel types than lower elevation. The primary evidence of human disturbance visible within these treatment areas are fences, roads and grazing improvements. Burn treatment areas fall within all three of the VRM classes however they fall mostly within Class II and III.

Public Visibility

Majority of the treatment areas are located near 2 track roads or ways. Most of the roads are used by recreation users and permitted cattle grazers. Some of the treatment areas would be visible from visitors to primary traveled routes within Long Valley and Surprise Valley. However most of the treatment areas would be partially or completely screened by existing landforms.

The remoteness Larkspur Hills, Sand Creek and Crooks Lake areas would significantly reduce the visibility of treatments. Limited access, infrequently traveled dirt roads, most inaccessible during winter months, reduces the visual impact on public users.

The most highly visible point within the Project Area is from Barrel Springs Road and Fee Reservoir. From that location the treatment areas would be in the distant middle-ground range and individual treatments would likely be visible. From various viewpoints, individual boles and ground-plane disturbance would be readily identifiable, and while Barrel Springs Road is not a heavily traveled route, this route does receive some public use. Other members of the public viewing the treatment areas primarily consist of cattle ranchers, fishermen and hunters, who are

likely accustomed to viewing the effects from treatments identified by the Proposed Action.
Evidence of Existing Disturbance

Evidence of disturbance throughout the Project Area is low. Past treatments are visible along Barrel Springs Road in the vicinity of the proposed treatment area. Strong visual elements of disturbance resulting from past treatments include light gray contrasting boles and branches from harvested trees that appear to have been left where they were felled.

3.16.4. Direct and Indirect Effects of Proposed Action

Methodology

The methodology used to assess impacts of the Proposed Action included the following:

Key observation points (KOPs) were identified based upon the reverse-view shed maps, locations of treatment areas to traveled routes and other public use areas, and input from BLM personnel.

The KOPs were visited, photographed, and Visual Contrast Rating Worksheets were completed. In addition, other areas with prior treatments similar to the Proposed Action were visited and photographed to assess the visual impacts of those activities. Prior treatment areas visited included a variety of treatment ages and techniques.

The visual impacts of the Proposed Action were evaluated for each treatment area.

Analysis Assumptions

The assumptions used in this study primarily follow those utilized in the Sage Steppe Ecosystem Restoration Strategy, namely:

- Visual impacts from treatments viewed in the background (distances greater than 3 miles) would be largely indistinguishable and therefore negligible.
- Effects from mechanical treatments would be visible for up to 10 years.
- Effects from prescribed fire would primarily be visible during project implementation and would become indistinguishable within one to two years.

Direct and Indirect Effects

The Proposed Action would have the potential for both positive and negative direct effects to visual resources. Positive effects would include an increase in visual quality due to increased sage-steppe areas, with a corresponding increased variety in form, line, color and texture between clumps of juniper and sage-steppe areas. Potential negative effects would primarily be short-term but may persist for up to 10 years. The degree of short-term impact from hand and mechanical treatment is primarily contingent upon what is done with harvested material. If slash is burned, short-term effects would be similar to prescribed burning, and would primarily consist of smoke emissions. Effects of burning would persist for the duration of the burn, including flaming and smoldering portions. Emissions may appear as a point source (single plume) or as a dispersed cloud. Depending on smoke dispersion, this could result in concentrated effects of smoke emissions in one portion of the Project Area, while other areas would experience highly dispersed impacts.

If whole trees are left unburned following felling, they may be visible for several years following treatment. Boles are less visible if smaller branches are cut and burned. Negative effects would primarily consist of elements dominating foreground views, though larger masses of slash may also be visible in middle-ground views.

Due to the remote location of the majority of the treatment areas, visual effects from proposed treatments are expected to be negligible. The portions of the treatment areas that are highly visible from Fee Reservoir, Barrel Spring Byway, Surprise Valley and Long Valley.

Typically, visual effects primarily result from changes to the degree of contrast in the elements of form, line, color and texture. As related to the Proposed Action, these changes are generally weak or negligible; however, some form and line impacts may be moderate due to treatment of slash or alterations to the canopy cover. Canopy cover modifications would largely result in positive changes to visual quality, therefore treatment of slash would be the primary factor in negative impacts. As stated in the Project Description, the majority of cut trees would remain in place and un-limbed for all treatment areas. Visual impacts of slash, if not burned, masticated or otherwise removed, could remain up to 10 years, though visual effects would be substantially reduced within three to six years following treatment. Guidelines indicate that in the foreground zone of maintained roads, trees will be limbed and limbs will be scattered, which will help reduce visual impacts. Other treatment techniques, including partial and full limbing, piling and burning, and broadcast burning, would create lower visual impacts, with evidence of human disturbance decreasing in the order in which the techniques are listed.

Temporary roads may affect the visual quality of the Project Area during construction and use. These effects however would fade within several years after decommissioning of roads, unless significant cut or fill slopes were created.

Class II and II allow for moderate changes to the landscape. Proposed treatments associated with the Proposed Action would result in unavoidable adverse short-term effects to scenic resources in some portions of the Project Area. In the short-term (less than 10 years) changes to scenic resources would be evident, and would contrast with the characteristic landscape. Long-term, the characteristic landscape would change, such that the scenic quality of restored areas after recovery from restoration would approach the desired landscape. Site-specific design, careful restoration treatment locations and/or avoidance of visually sensitive areas would be required to reduce the potential for creating inconsistencies with the Surprise Field Office Resource Management Plan.

Untreated slash has the largest potential impact on VRM objectives. Treating slash occurring in the foreground of Surprise Valley and Long valley by burning, grinding or chipping would reduce impacts of slash to within acceptable levels for VRM Class II objectives. Excessive stumpage in the foreground of the high visible areas could also result in failure to meet VRM objectives. For instance, a 6” stump viewed at approximately 60 feet subtends an angle approximately the size of the full moon. Flush-cutting of stumps in the immediate foreground (within 200-feet of the road would help maintain VRM objectives). Additionally, locating slash piles in areas not visible from foreground and middle ground views on Surprise Valley Road and Barrel Spring Roads would maintain VRM objectives.

Strong geometrical patterns resulting in clearing of the juniper canopy in heavily wooded areas could result in failure to meet Class II objectives. Preserving clumps of juniper scattered throughout the treatment area (approximately 5 to 10 trees per acre) and creating openings in stands of trees that are irregular and natural in appearance would mitigate these affects to a less than significant level.

As discussed, potential impacts from temporary roads that could result in failure to meet VRM objectives include visibility of cut and fill slopes and contrasting soils in graded areas. Locating roads along routes that minimize cut and fill slopes, decommissioning temporary roads following treatment and restricting further access, and reseeding temporary roads and staging grounds following decommissioning would reduce impacts and meet VRM objectives.

The long-term productivity (more than 10 years) of scenic resources would not be affected. Potential effects to visual resources resulting from implementation of the Proposed Action are considered Minor. Long-term, the proposed project will improve the ability of project areas to meet Class II objectives, because the landscape will be more able to resist visual impacts from major wildfire.

3.16.5. Cumulative Effects of the Proposed Action

The Cumulative Assessment Area for Visual Resources is the 8th order watershed boundaries that are within the Project Area. Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use and range management throughout the CAA. It is not anticipated that continued livestock grazing and range management actions, recreational use, or wild horse grazing would contribute to cumulative effects related to visual resources. Off-highway vehicle use has the potential to result in degraded vegetative community compositions and densities, as well as ground disturbance and erosion.

Implementation of the Proposed Action would likely result in a positive effects relevant to meeting Class II VRMs in the event of wildfire. Removal of juniper in favor of a sage-steppe ecosystem through proposed treatments would reduce overall fuel loading and thus reduce the chances that a large stand-replacing fire will drastically alter the existing visual character of the landscape. The Proposed Action would reduce the need for future prescribed fire and other vegetation treatments within the treatment areas under consideration. Potential cumulative effects to visual resources resulting from implementation of the Proposed Action are considered minor.

3.16.6. Direct and Indirect Effects of No Action Alternative

Continued expansion of juniper habitat under the No Action Alternative has the likelihood of degrading visual quality due to replacement of sage-steppe vegetative communities and creation of a more homogeneous landscape. Additionally, the possibility of catastrophic wildfire would increase, the occurrence of which would significantly alter the visual quality of the Project Area and/or surrounding viewsheds. Changes resulting from a catastrophic wildfire would not be consistent with the Class II objective of retaining the existing landscape character. Potential cumulative effects to visual resources resulting from the No Action are considered moderate.

3.16.7. Cumulative Effects of the No Action Alternative

Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use and range management throughout the CAA. It is not anticipated that continued livestock grazing and range management actions, recreational use, or wild horse grazing would contribute to cumulative effects related to visual resources. Off-highway vehicle use has the

potential to result in degraded vegetative community compositions and densities, as well as ground disturbance and erosion.

Under the No Action Alternative, it is likely that some level of future management for wildfire would be needed in this area, whether hand, mechanical or prescribed fire. These management actions are more likely to cause visual impacts as stands of juniper continue increasing in density and extent. It is also possible, however, that the increasing density of juniper could help screen future management actions from potentially sensitive viewers by leaving buffers of trees along roadways, thus resulting in lesser impacts in some areas. Part of the natural beauty of the Surprise Valley and Long Valley lays in the sweeping vista views of the surrounding mountains, high desert sage steppe and alkali lakes. As has been mentioned, overall visual quality of a more homogenous juniper-dominated landscape would likely be lower than it is today through increased screening of vista views and a lower diversity of form, line, color and texture. Potential cumulative effects to visual resources resulting from the No Action Alternative are considered moderate.

3.16.8. Mitigation Measures

In the short-term (less than 10 years) changes to scenic resources would be evident, and would contrast with the characteristic landscape. The long-term productivity (more than 10 years) of scenic resources would not be affected. Long-term, the characteristic landscape would change, but the scenic quality of restored areas after recovery from restoration would approach the desired landscape.

The following mitigation measures are identified to reduce potential visual effects related to implementation of the Proposed Action and to ensure Class II VRMs are maintained within the Project Area:

- Dispose of slash through burning, grinding or chipping within foreground views of Surprise Valley, Long Valley, Fee Reservoir and Barrel Springs Road.
- Where slash remains in foreground, locate boles and scatter limbs in areas not highly visible from primary public roads, or screened from roads by existing vegetation.
- Locate temporary roads along routes that minimize cut and fill slopes.
- Decommission temporary roads following treatment with boulders or other access-restricting methods to prevent public use.
- Reseed areas cleared for temporary roads and staging grounds.
- Flush-cut stumps in immediate foreground adjacent to the road (Barrel Springs Road, Fee Reservoir).
- Preserve clumps of juniper scattered throughout the treatment area (5 to 10 trees per acre).
- Create openings in stands of trees that are irregular and natural in appearance.

3.17. Riparian/Wetland/Water Quality

3.17.1. Affected Environment

Aquatic Habitats

Intermittent Drainage

Intermittent drainages are those drainages with discernible channels, which show evidence of annual deposition or scour, but do not carry flow year round. Sources of hydrology include both stormwater runoff and groundwater discharges. Within intermittent drainages, topographic depressions within the channel may influence vegetation patterns. Often, intermittent drainages are lightly vegetated due to seasonal rapid flow events and the resulting scouring of the channel, bed, and bank. Larger drainages, which are fed by springs and the resulting wet meadows upstream, also support a hydrophytic vegetation community fringe transitioning to the surrounding habitat community (i.e. big sagebrush, low sagebrush, etc.). There are numerous intermittent drainages throughout the Project Area.

Perennial Streams

There are 250 perennial stream segments that are identified within the Project Area. Streams are divided into segments for management purposes and breaks generally occur when ownership changes, where steam order changes occur or where an obvious change in flow, plant communities, or gradient occurs. Streams are mapped using a combination of Geographic Information System (GIS) and field recording for multiple sources. Plant communities within stream systems are usually comprised of both herbaceous and woody riparian vegetation. In stream systems with high gradients, woody plants influence stream morphology to a higher degree than herbaceous vegetation and in low gradient systems, herbaceous plant communities dominate. Within the Project Area, most streams have a high rock component that influences stream morphology. Of the stream segments within the Project Area, the majority of stream segments where Recent Proper Functioning Condition (PFC) assessments were completed indicated an upward trend with many of the largest streams such as Horse Creek, Rock Creek, Cowhead Slough, Sand Creek, and Poison Creek being at PFC. This is partially due to specific management and objectives for these resources that have been in place for many years and improving trends that have resulted in increased vegetation production and water storage capacity. Of the sites within the Project Area that are not at PFC, livestock and/or wild horse impacts, roads going through stream sites, upland plant encroachment causing accelerated erosion, and juniper encroachment were noted. Juniper encroachment at the stream edge is evident at nearly all of the major stream systems within the Action Area including Horse Creek, Rock Creek, Cowhead Slough, Sand Creek, and Poison Creek.

Springs

There are 102 identified springs within the Project Area. Plant communities at springs are often diverse and a number of different plant species can be present depending on a number of factors including water quality, topography, gradient, and water flows. Most plant communities are comprised of herbaceous dominated systems with common species including *Carex, Juncus*, and *Agrostis*. In systems with higher gradients where a discernible channel develops, riparian shrubs and woody vegetation often are a component of the plant community. Recent Proper Functioning Condition assessments that were completed within the Project Area as a part of grazing permit

renewals indicate that many riparian areas are in a degraded condition and were rated as Functional at Risk (FAR). At sites that were rated as FAR or Non-Functional, the majority of sites not meeting PFC had livestock and/or wild horse impacts that were causing riparian degradation. Other impacts included roads going through riparian sites, upland plant encroachment, water developments that were dewatering spring sites and juniper encroachment. At many sites that were rated as FAR, multiple impacts were noted to be occurring.

Wet Meadow

Wet meadows can be found at all elevations and generally occur as ecotones between fresh emergent wetlands and perennial grasslands or mesic meadow types. Wet meadows occur in depressional sites with heavy-textured soils and/or shallow bedrock which hold water at the surface for most of the growing season. Water in wet meadows comes primarily from upstream sources and leaves via downstream runoff. The plant species composition can vary greatly and there is no general plant community for this habitat. Common genera found include *Salix, Agrostis, Juncus, Carex, Scirpus* and *Danthonia*. Wet meadows usually have a single plant layer, although they sometimes have shrubs or trees along the edge of the meadow.

Wet meadows occur throughout the Project Area. Most wet meadows within the Project Area are fed by springs in relatively level slopes and are therefore generally associated with spring systems. Some wet meadow occur on the steeper, more mountainous areas occur in areas where creeks and intermittent drainages transition from steep terrain to more level terrain that allows the water to spread out over a wider area. Wet meadows are generally small in size (1/2 acre or less). Larger meadow systems are often located on private lands or are fenced to allow special management attention to these resources.

Water Quality

There are no impaired waters listed for the watersheds within the Project Area (USFS 2008). The California portion of the Surprise Field Office is located within the jurisdiction of the Lahontan Regional Water Quality Control Board (RWQCB). Water quality standards and control measures for surface and ground waters of the Lahontan Region are contained in the Water Quality Control Plan for the Lahontan Region (Basin Plan). The Basin Plan designates beneficial uses for water bodies and establishes water quality objectives, waste discharge prohibitions, and other implementation measures to protect those beneficial uses (RWQCB 2011). Beneficial uses defined for the Surprise Field Office generally include municipal supply, agricultural supply, groundwater recharge, contact and non-contact water recreation, warm and cold spawning and freshwater habitat, and wildlife habitat (BLM 2007).

Water pollution control for lands within Nevada is implemented by the Nevada Revised Statutes and Nevada Administrative Code, under Sections 445A.300 through 445A.730. The Nevada Division of Environmental Protection is responsible for administering these laws and regulations. Protection under these laws and regulations is provided for water quality for public use, wildlife, existing industry, and agriculture, and the beneficial economic development of the State.

It is the responsibility of the BLM as federal land management agencies through implementation of the Clean Water Act (CWA), to protect and restore the quality of public waters under their jurisdiction. Protecting water quality is addressed in several sections of the CWA, including sections 303, 313, and 319. BMPs are used to meet water quality standards (or water quality goals and objectives) under Section 319. To this end, BLM will protect and maintain water quality where standards are met or surpassed, and restore water-quality-limited water bodies within their

jurisdiction to conditions that meet or surpass standards for designated beneficial uses through the development and implementation of a Water Quality Restoration Plan (WQRP) as the primary mechanism to address and restore impaired waters on BLM-administered lands to support State development and implementation of total maximum daily loads (TMDLs) on those lands.

The Project Area includes wet meadows, intermittent/headwater creeks, springs, perennial streams, unnamed perennial, intermittent and seasonal wetlands, and unnamed intermittent drainages and man-made water bodies including reservoirs. From a water quality standpoint the beneficial use of most areas is considered wildlife/riparian habitat and livestock grazing. Based upon the requirements of the LHS for water quality, the water quality within the Project Area is consistent with the intended use of these sites.

3.17.2. Direct and Indirect Effects of Proposed Action

Riparian areas and spring sources would potentially be impacted from foot travel within the riparian zone and from increased localized runoff from prescribed fire operations. Implementation of SOP's and BMP's would not allow mechanized equipment use within 250 yards of a riparian/spring site so impacted from mechanical operations are expected to be negligible. In the long term, after treatments are completed, increased riparian obligate plant cover is expected to occur along with increased riparian extent, resulting in improved riparian conditions. Treatment of juniper is also expected to make more water available within the soil profile. The majority of the water is expected to be used by native shrubs and grasses however a portion of the water that was previously being used by juniper will likely infiltrate through the soil profile and result in increased water storage within aquifers. This would increase the water holding capacity of riparian zones and increase the amount of water and time that water is available within the riparian zone. Overall, the Proposed Action is expected to have positive effects on riparian areas.

Soil disturbance would potentially be generated through the use of prescribed fire, mechanical, and hand restoration treatments, as well as the construction of temporary access roads and landings. Sedimentation occurs when soil leaves the site and enters a water body. Potential effects to Water Quality resulting from implementation of the Proposed Action would potentially consist of increased erosion and sedimentation related to exposure of bare soils resulting from prescribed fire, as well as ground disturbing activities associated with mechanical hand treatments. Hand treatments generally cause very little ground disturbance but could generate very localized disturbance associated with foot traffic and tree contact with the soil. Prescribed fire would result in the loss of ground cover and subsequent increased erosion due to temporary loss of ground cover. Mechanical treatments use large machines that would create soil disturbance. Hand treatments would have minimal effects on increasing soil erosion due to their limited ground disturbance (USFS 2008). Increased soil erosion potential due to ground disturbances from restoration treatments would be short-term because vegetation would cover bare soil quickly after treatment and reduce the potential for further erosion (EOARC 2007).

BMPs have been developed by both BLM for proposed restoration treatments, and BLM and the RWQCB have coordinated an agreement for complying with federal and State Clean Water Acts. The implementation of BMPs by BLM would include monitoring and evaluation to determine the effectiveness of the BMPs.

The Proposed Action would involve treatments that would include ground disturbing activities and may result in increased erosion, sedimentation, turbidity, runoff, and soil compaction and increased infiltration in the short-term. However, management measures including BMP

implementation and monitoring, as well as post-project stabilization and restoration would ensure that water quality effects are minimized. Proposed treatments would result in long-term benefits to water resources (BLM 2007), potentially resulting in improved hydrologic conditions and improved water quality. Therefore potential effects resulting from implementation of the Proposed Action related to water quality are considered negligible.

3.17.3. Cumulative Effects of Proposed Action

The Cumulative Assessment Area for Riparian/Wetlands and Water Quality is the 8th order watersheds that lie within the Action Area. Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project. It is not anticipated that continued recreational use within the CAA will substantially contribute to cumulative adverse effects related to water quality.

BLM will continue to manage lands used for livestock grazing, wild horse grazing, and other rangeland management activities to minimize the potential for adverse effects related to soils. Surrounding private lands within the CAA may be susceptible to adverse effects related to water quality due to a lack of proper management of soil resources and the resulting erosion and sediment loss. This lack of management on surrounding lands would contribute to cumulative effects within the CAA.

Off-highway vehicle use within the CAA would contribute to minor adverse cumulative effects related to water quality resulting from erosion and sediment loss.

Fencing of riparian sites, modification of grazing schedules and relocation of troughs for livestock grazing is expected to continue to occur to improve riparian habitats. Treatments for juniper control within riparian zones are expected to continue to improve the condition of these sites, with long term gains in vegetation composition and water holding capacity of riparian soils occurring. These positive effects and increased positive overall watershed health will benefit surrounding land and natural resources, therefore potential cumulative effects related to riparian/wetland sites resulting from implementation of the Proposed Action are anticipated to be negligible.

Construction activities associated with the Ruby Pipeline Project (completed summer 2011) would have been subject to compliance with the National Pollution Discharge Elimination System, and would be required to implement, monitor, and maintain effective Best Management Practices related to erosion and sediment control. It is therefore not anticipated that the Ruby Pipeline Project would contribute to cumulative adverse effects related to water quality.

It is anticipated that BLM will continue implementing land management practices in collaboration with surrounding land managers as part of the BLM TOC procedures, and as such would plan treatments and develop BMPs to address the potential for surrounding restoration treatments and other management practices to result in simultaneous effects related to erosion and sedimentation. Short-term increases in erosion and sedimentation would be resolved through BLM monitoring of BMPs. In addition, it is anticipated that increased ground cover will quickly colonize and spread on bare soils following proposed treatments. Implementation of the Proposed Action would result in long-term positive effects on watershed and ecosystem health related to improved hydrologic functions and the restoration of a stable and diverse assemblage of vegetative communities and increased ground cover. These positive effects and increased positive overall watershed health

will benefit surrounding land and natural resources, therefore potential cumulative effects related to water quality resulting from implementation of the Proposed Action are anticipated to be negligible.

3.17.4. Direct, Indirect and Cumulative Effects of No Action Alternative

Under the No Action Alternative, proposed restoration treatments would not be implemented and juniper encroachment would further contribute to an accumulation of fuel loads, increased expanses of bare soil where juniper canopy covers become dense, and a decline in existing sage-steppe vegetative communities and riparian vegetative communities. These circumstances would lead to conditions conducive to severe and intense wildfire, resulting in expanses of bare ground and increased erosion and sedimentation into riparian zones. In addition, areas of bare soil under juniper canopies would increasingly expose Project Area soils to natural processes conducive to erosion and sedimentation. It is anticipated that BLM would plan and implement restoration activities following wildfire, and timing of localized weather patterns would play a significant role in the potential for adverse effects to riparian zones and water quality resulting from these wildfires. However, the No Action alternative would facilitate increased risk of wildfire and increased exposure of soils through continuing expansion of juniper canopy densities. Riparian zones would continually become encroached by juniper and lack of treatments would facilitate changes in riparian plant community composition from riparian obligate plant species to riparian facultative plant species. Aquifer recharge in the watersheds within the project area would continue to decline, resulting in a declining condition of riparian/wetland sites. These effects, when considered with reasonably foreseeable past, present, and future activities may promote and overall decline within Project Area watersheds and surrounding lands.

Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project. It is not anticipated that recreational use within the CAA would substantially contribute to cumulative adverse effects related to riparian/wetlands and water quality.

BLM will continue to manage lands used for livestock grazing, wild horse grazing, and other rangeland management activities to minimize the potential for adverse effects related to soils. Surrounding lands within the CAA may be susceptible to adverse effects related to Water Quality due to a lack of proper management of soil resources and the subsequent effects of erosion and sediment loss. This lack of management on surrounding lands would contribute to cumulative effects within the CAA.

Off-highway vehicle use within the CAA would contribute to adverse cumulative effects related to water quality through erosion and sediment loss

Construction activities associated with the Ruby Pipeline Project would have been subject to compliance with the National Pollution Discharge Elimination System, and would be required to implement, monitor, and maintain effective Best Management Practices, including post-construction BMP implementation, monitoring and maintenance, related to erosion and sediment control. It is therefore not anticipated that the Ruby Pipeline Project would contribute to cumulative adverse effects related to water quality.

Potential direct, indirect and cumulative effects related to riparian/wetland sites and water quality resulting from the No Action alternative are considered moderate.

3.18. Wilderness Characteristics

3.18.1. Affected Environment

The Project Area is located in rugged, sparsely wooded, mountainous terrain. Land forms are generally rugged with moderate to steep slopes, mostly natural with some evidence of human-induced changes, primarily roads and fences. Evidence of disturbance throughout the Project Area is low. Past juniper treatments are visible along Barrel Springs Road. Piled boles and branches from harvested trees appear to have been left where they were felled.

Public Recreation activities within the Project Area include dispersed primitive camping, hiking, fishing, photography, rock hounding, fossil hunting, mountain biking, horseback riding, and sightseeing. Recreational values offered by the Project Area include quiet solitude, scenery, and the perception of rugged untamed country.

There are no WSAs or designated Wilderness Areas in the Project Area.

Wilderness characteristics are assessed using several screening criteria. Listed in order, they include: size, natural condition, outstanding opportunities for solitude or for primitive and unconfined recreation, and special or supplemental values.

All BLM lands, including those in the Project Area, were inventoried for wilderness characteristics in 1979 as required under the Federal Land Policy and Management Act of 1976 (FLPMA). Under section 603 of FLPMA, lands found to have wilderness characteristics in the original 1979 inventory were designated as Wilderness Study Areas (WSAs). Under section 201 of FLPMA, the BLM is required to maintain current inventories of all public land resources, including wilderness characteristics. The wilderness characteristics inventory for lands within the Project Area was updated in 2009 as required under section 201 of FLPMA.

Thirteen wilderness inventory units are within or partly within the Project Area. In the 1979 wilderness inventory, ten inventory units were found to not have wilderness characteristics (CA-020-904, CA-020-905, CA-020-906, CA-020-1004a, CA-020-1006, CA-020-1006b, CA-020-1007, CA-020-1008, CA-020-1009, CA-020-1015), and the decision on three units was deferred (CA-020-1004, CA-020-1005, CA-020-1010). In 2009, the inventory units for which decisions had previously been deferred were re-inventoried, and all three were found to not meet the criteria for wilderness characteristics due to a lack of solitude and primitive/unconfined recreation.

3.18.2. Direct and Indirect Effects of Proposed Action

The 1979 and 2009 BLM Wilderness Inventories determined that none of the lands within the project area meet the criteria for wilderness characteristics.

During proposed treatments, opportunity for solitude and primitive recreation may be adversely impacted for recreationists due to the sight and noise of equipment. This impact would only be temporary and of relatively short duration, as treatments in each project area would be completed

as quickly as possible. Hand treatments would have a very small effect on recreation within the Project Area due to the low number of affected acres. Mechanical treatments would have a slightly greater impact, including increased noise, traffic, and dust. Prescribed fire would result in visual effects, as well as possibly the smell of smoke. However, these effects would be short-term in nature. If treatments occur in areas where undesignated recreation sites occur, such as those associated with deer hunting, additional effects may include temporary loss of use for these types of recreational uses.

Habitat restoration would facilitate re-establishment of stands of grasses, forbs and shrubs in varying seral stages, more typical of the sagebrush steppe ecosystem, and would subsequently support more upland birds and ungulates. The process of ecosystem restoration would improve natural condition, enhance scenic quality, and provide recreational opportunities, including hiking, hunting, photography, and wildlife viewing opportunities.

Indirect effects for all alternatives would include changes in views from surrounding viewpoints. Effects to views from viewpoints would be both adverse (short-term) and beneficial (long-term). However, as discussed in detail in **Section 3.16**, with implementation of proposed mitigation measures, effects related to visual resource management would be minor.

Implementation of the Proposed Action would result in short-term effects to Project Area primitive recreation opportunities, ultimately leading to long-term ecosystem enhancement, promoting sustainable and viable biological communities as well as continued opportunity for experiencing desirable primitive natural settings. Although short-term impacts to wilderness characteristics would potentially be slightly negative, long-term impacts are expected to be positive. Overall, potential effects related to wilderness characteristics resulting from implementation of the Proposed Action are considered minor.

3.18.3. Cumulative Effects of Proposed Action

The Cumulative Assessment Area for Lands with Wilderness Characteristics is the thirteen wilderness inventory units that are within or partly within the Project Area. Past, present and future foreseeable effects include hand and mechanical juniper removal, fire suppression, domestic livestock grazing, wild horse grazing, range management, weed management, recreation, off-highway vehicle use, and operation of the Ruby Pipeline Project.

It is not anticipated that continued livestock grazing, rangeland management actions, wild horse grazing, or recreational use within the Project Area would substantially contribute to cumulative adverse effects related to wilderness characteristics. The construction of the Ruby Pipeline Project has been completed, and ongoing activities include restoration and mitigation efforts within the Project Area. It is not anticipated that the Ruby Pipeline Project would contribute to cumulative adverse effects related to wilderness characteristics.

Off-highway vehicle use within the Project Area would contribute to adverse cumulative effects related to ground disturbance and noise.

Habitat restoration and fuels reduction treatments proposed by BLM within the Project Area, in combination with past restoration treatments and integrated weed management, would have the potential to enhance natural resources and result in improved recreational opportunities provided by these resources. As a combined result of the Proposed Action and these continued

management actions, primitive recreational opportunities and the visual quality of the region would improve as ecosystems are restored.

The Proposed Action would also facilitate the restoration of fire as a natural ecological process, potentially resulting in the restoration of more diverse vegetative communities within the area and complementing prescribed fire and fuel reduction actions implemented within adjoining forests, refuges, and BLM field offices encompassing a vast area in northeast California and northwest Nevada. While prescribed fire may temporarily adversely affect the visual quality of the landscape, the post-fire landscape would provide opportunities for recreationists to view ecological processes as vegetative communities regenerate.

Overall, cumulative impacts of the Proposed Action on wilderness characteristics are expected to be insignificant or slightly positive.

3.18.4. Direct and Indirect Effects of No Action Alternative

Under the No Action alternative, juniper canopy cover would continue to increase in density across former sage-steppe ecosystems resulting in increased bare soils, declining soil, moisture and potential colonization of noxious or invasive weeds. Juniper would continue to encroach into adjacent habitats, displacing a diverse assemblage of vegetative species.

The direct effects of these changes in habitat would result in a decline in natural resources available to promote viable diverse populations of vegetation, as well as wildlife. These natural resources and associated ecosystems substantially contribute to wilderness characteristics within the Project Area. Hunting, fishing, sight-seeing, hiking and other primitive recreational opportunities within the Project Area depend on a successful and diverse ecosystem. The decline in vegetative diversity and wildlife populations would lead to a decline in primitive recreational appeal within the Project Area, although the basic physical qualities of solitude and primitive unconfined recreation would remain. The impact to supplemental values associated cultural resources and wildlife are discussed in those sections of the assessment. Potential effects related to wilderness characteristics resulting from the No Action alternative are therefore considered minor.

3.18.5. Cumulative Effects of No Action Alternative

Past, present and future foreseeable effects include hand and mechanical juniper removal, fire suppression, domestic livestock grazing, wild horse grazing, range management, weed management, recreation, off-highway vehicle use, and operation of the Ruby Pipeline Project.

It is not anticipated that rangeland management actions, off-highway vehicle use, or recreational use within the Project Area would substantially contribute to cumulative adverse effects related to wilderness characteristics when considered with the No Action Alternative. The construction of the Ruby Pipeline Project has been completed, and ongoing activities include restoration and mitigation efforts within the Project Area. It is not anticipated that the Ruby Pipeline Project would contribute to cumulative adverse effects related to wilderness characteristics.

Under the No Action Alternative, livestock and wild horse grazing, in combination with fire suppression, would have the potential to contribute to continued increased juniper canopy cover across former sage-steppe ecosystems. Juniper would continue to encroach into adjacent habitats, displacing a diverse assemblage of vegetative species. These processes may have a

negative impact to wilderness characteristics, including primitive recreation such as wildlife viewing and hunting.

Although increased juniper densities may result in cumulative adverse effects to other resource issue areas, wilderness characteristics would be mostly retained. Potential cumulative effects related to wilderness characteristics resulting from the No Action alternative are considered to be insignificant.

3.18.6. Mitigation Measures

No mitigation is proposed.

3.19. Wildlife; Migratory Birds; Special-Status Species (Federally-Listed, Proposed or Candidate Threatened and Endangered Species); State Protected Species; BLM Sensitive Species

3.19.1. Affected Environment

General Wildlife

The Project Area is inhabited by a variety of terrestrial and aquatic species including several important game species and BLM sensitive species. The following sections describe wildlife species present within the Project Area. Vegetative communities are discussed in greater detail in the vegetation resources section.

Sage-steppe communities make up a majority of the habitats with the Project Area. Common wildlife species that utilize big sagebrush habitat within the Project Area for foraging, dispersal, migration and nesting are mammals such as pronghorn antelope (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), California bighorn sheep(*Ovis canadensis californiana*), and occasionally Rocky mountain elk(*Cervus elaphus nelsoni*). Other common avian species include Greater sage-grouse (*Centrocercus urophasianus*), sage thrasher (*Oreoscoptes montanus*), sage sparrow (*Amphispiza belli*) and other species commonly seen in sage steppe environments. Preliminary surveys and GIS analysis of habitats along with known species occurrences were conducted throughout the Vya PMU in 2011 and 2012. Field surveys were conducted to observe habitat conditions/availability and to evaluate the potential presence of sensitive and non-sensitive species within the Project Area. The results of field surveys and office data analysis relevant to the habitat conditions within the Project Area are detailed below.

Federally-Listed Threatened and Endangered Species

There are no known federally-listed species present in the treatment areas. In March 2010, the U.S. Fish and Wildlife Service (FWS) published its decision on the petition to list the Greater sage-grouse as “warranted but precluded.” 75 Fed. Reg. 13910 (March 23, 2010). In its “warranted but precluded” listing decision, FWS concluded that existing regulatory mechanisms, defined as ‘specific direction regarding sage-grouse habitat, conservation, or management’ in the BLM’s Land Use Plans (LUPs), were inadequate to protect the species. The FWS is scheduled to make a new listing decision in Fiscal Year (FY) 2015. The Greater sage-grouse became a

candidate species in February of 2010 with the USFWS 12 month finding of "warranted but precluded". Candidates are those species which the USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list but issuance is precluded by higher priority listing actions. "Candidate species and their habitats are managed as Bureau sensitive species", (BLM Manual 6840, December 2008). See the BLM sensitive species section for a detailed account of this species.

Sage-Grouse

In 2011 the BLM initiated RMP Amendments for Greater sage-grouse across the range of sage-grouse habitat managed by the BLM (western states) to ensure the long term conservation of the species and to avoid the need of listing the species under the Endangered Species Act of 1973. The completion date for the RMP Amendments is in 2015. This date corresponds to the USFWS timeline to evaluate the need for listing the species in light of the new conservation direction brought forth for Greater sage-grouse under the BLM RMP Amendments. BLM policy and direction in the interim period are outlined in BLM Instruction Memorandum (IM) No. 2012-043. In addition to this policy, the BLM released the National Greater Sage-grouse Conservation Measures/Planning Strategy Technical Team Report released on December 21, 2011. This report describes recommended conservation measures for greater sage-grouse for each BLM land use or resource program area. The conservation measures relating to the Fuels Treatments and Habitat Restoration are described on pages 25-28.

BLM IM 2012-043 requires the BLM to designate Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH) boundaries. PPH comprises areas that have been identified as having the highest conservation value to maintaining sustainable greater sage-grouse populations. These areas would include breeding, late brood-rearing, and winter concentration areas. PGH comprises areas of occupied seasonal or year-round habitat outside of priority habitat. PPH and PGH boundaries within the Surprise Field office have been delineated by the BLM in coordination with respective state wildlife agencies (CDFW and NDOW). See Map XX for PPH and PGH habitats within the Action Area.

Greater Sage-Grouse

On BLM lands of the Surprise Field Office, historic and active sage-grouse (*Centrocercus urophasianus*) strutting grounds known as "leks" are located primarily in open, low sagebrush habitats. Leks are areas where males display for breeding females. Early work estimated that most females nested within 2 miles of leks; however recent studies indicate that females may nest up to 4 miles away or further depending on surrounding habitat conditions (Knick and Connelly 2011). At least one radio collared female sage-grouse on the Surprise Field Office successfully nested 9 miles from the lek she was captured on. A current ongoing telemetry study of sage-grouse within the Surprise Field Office indicates that many female sage-grouse disperse long distances (greater than 4 miles) before selecting a nest site. Although many nests have been found in lower quality habitats (i.e. rabbitbrush dominated habitats or habitats with lack of perennial grasses and nesting cover) these are almost always unsuccessful due to nest abandonment and predation.

Sage-grouse nest on the ground, most often under taller sagebrush cover (15-38% shrub canopy; 36 -79 cm shrub height) such as the "big" sagebrush types and Wyoming sagebrush (Connelly, 2000). Successful nesting habitat generally contains taller grass cover in association with this sagebrush (Connelly, 2000) although there is some variability across the range of sage-grouse. Sage-grouse utilize sagebrush stands as both winter and nesting habitat. Sage-grouse feed on sagebrush buds and forbs throughout much of the year, especially early spring through fall. Peak

egg-laying and incubation varies from late March through April, with re-nesting stretching into late June and early July however renesting hens are generally less successful in raising a brood. Brood-rearing habitats are wet meadow and riparian areas where the young can find abundant insects which are critical to their diets during the first few weeks of life. Estimated summer home range is 2.5 – 7 km2 (618-1,730 ac) (Connelly, 2000). Forbs and insects are important food sources for brood rearing and pre-nesting hens.

Sage-grouse populations are monitored and recovery efforts coordinated in geographic areas referred to as Population Management Units (PMU). The Vya Sage Grouse PMU encompasses 501,247 acres of sage grouse habitat in northwestern Washoe County and a small portion of northeastern Modoc County in California. The area is bounded on the west by Surprise Valley and the Warner Mountains in California, highway 8A to the south, the Oregon- Nevada Stateline to the north and Massacre Bench and the Sheldon National Wildlife Refuge boundary to the east. Elevations vary from approximately 4,000 feet on the valley floors to over 7,000 feet at Vya Peak. Yearly precipitation levels vary from 8 inches in the valley floors to over 18 inches at the higher elevations. Vegetation types range from salt desert shrub communities in the dryer valley floors to aspen and mountain mahogany in the upper elevations. Overall, sagebrush is a dominant vegetation type in this PMU with low sagebrush, Wyoming big sagebrush and mountain big sagebrush occurring in similar amounts. Large stands of juniper also occur within this PMU.

Within PMUs, leks are often grouped into complexes to estimate sage grouse trends within a geographic area. Consistent counts of bird attendance at leks have only occurred since 2002 on the Surprise Field Office and since about 1990 for the Sheldon National Wildlife Refuge (NWR). There are currently 20 active sage-grouse leks within the Vya PMU (NDOW and BLM unpublished reports). Precipitation receipts have a significant impact on sage-grouse production and during years of drought and below average precipitation, sage-grouse production generally declined. Survey numbers show that sage-grouse populations peaked between 2004-2007 for both the Surprise Field Office and the Sheldon NWR. Lek count numbers generally declined on both the Surprise Field Office and the Sheldon NWR in 2008, and then increased in 2009-2012 with near record high counts on some leks within the SFO in 2012. Recruitment of sage-grouse chicks into the breeding population in 2012 however was reduced as drought conditions began to impact sage-grouse broods. In 2013, sage-grouse lek attendance declined by as much as 50% on most leks. On one sage-grouse lek in the Vya PMU, 9 female sage-grouse were radio marked in 2013 with all 9 hens having failed or abandoned nest sites, indicating current conditions are negatively affecting sage-grouse fecundity. Data from the 2012 NDOW wing bee indicates that the Sheldon PMU has higher nest success than the Massacre PMU (66% compared to 53.7%) however Sheldon's chick/hen ratios was less than the Massacre PMU (.13 compared to 1.05). NDOW estimates a 1.5-2.0 chicks per hen ratio is needed to maintain a stable to slightly increasing population. The wing sample size for the Vya PMU was too small to make accurate estimates.

Sage-grouse in the Vya PMU occur over a large geographic area with little or no occurrence of habitat fragmentation. Over 80 percent of the land in this PMU are under federal ownership and are managed by the Bureau of Land Management. Population estimates based on lek counts over the last ten years indicate relatively stable bird numbers with a spring breeding population of 1,500 to 2,000 sage grouse (Vya PMU Conservation Strategy).

In the Vya PMU Sage-Grouse Conservation Plan, the interdisciplinary team of specialists identified juniper encroachment as Risk #4 with Conversion of sagebrush to juniper assigned a Risk Rating of High. The team identified all seasonal habitat types as affected and the

Contributing Management Action that has led to juniper encroachment in sage-steppe habitats contributed to lack of fire/disturbance in areas susceptible to juniper encroachment.

The increase in the distribution and density of pinyon-juniper woodlands has been identified as a threat to the sagebrush ecosystem (Miller and Wigand 1994, Miller and Tausch 2001). These woodlands have expanded greatly in the Great Basin when compared to their distribution >150 yrs ago. Trees in established woodlands have also increased in density. These ecological changes have been linked to a decrease in fire frequencies, changes in the climatic regime, historical patterns of livestock grazing, and increases in atmospheric CO2 (Miller and Rose 1999, Miller and Tausch 2001). The area of pinyon-juniper woodlands has increased approximately 10-fold since the late 1800's in the Great Basin (Miller and Tausch 2001). Moreover, these woodlands are capable of expanding over a far greater area (Betancourt 1987, West and Van Pelt 1987).

Sage grouse will use areas with some juniper during late brood rearing and wintering, so long as a healthy sagebrush understory remains. However, juniper trees are used by raptors for perch sites while they are hunting. As a result, sage grouse frequently abandon lek, nesting, and early brood rearing areas that are encroached upon by juniper long before the sagebrush understory is affected. Sage-grouse population trends generally show a marked decline as juniper encroachment increases however juniper reduction treatments have been demonstrated to increase male sage-grouse lek attendance and result in positive increases in population trends (Commons et al, 1999). GPS marked sage-grouse in Mono County, CA have been documented to completely avoid and migrate across juniper encroached sage-steppe habitats (Pete Coates, USGS, personal communication). At the time of completion of the Vya PMU Conservation Strategy, approximately 107,000 acres (22%) of the Vya PMU is classified as encroached upon by juniper (See Conservation Plan for definition). So long as fire suppression remains high in mountain big sagebrush communities, the risk of converting additional acres of sage grouse habitat to juniper sites will remain high.

Carson Wandering Skipper

Habitat in the Project Area is not suitable for Carson wandering skipper (*Pseudocopaeodes eunus obscurus*), a Federally listed endangered species, due to the lack of required saltgrass habitat and nectar sources. Carson wandering skipper potential habitat sites have been surveyed for in the Surprise Field Office but none have been found. Therefore, Carson wandering skipper will not be discussed further.

Warner Sucker

To date, Warner sucker (*Catostomus warnerensis*), a federally listed threatened fish, has not been found on public lands managed by the Surprise Field Office. Critical habitat identified in the federal register for the species is found downstream of the Nevada Cowhead Allotment, in Oregon. Waters within the allotment which feed into this habitat include Horse Creek (perennial) and Rock Creek (intermittent). During USGS surveys in the summer of 2001, a single Warner sucker was found on private lands on an adjacent allotment to the Nevada Cowhead Allotment. The 2001 USGS survey also included Rock Creek and Horse Creek. During spring flows, the small pools where the single Warner sucker was found can be connected to waters on private land within the Nevada Cowhead Allotment. In 2006, landowner permission allowed an additional

search to take place in the pool system where the single Warner sucker was found in 2001. No suckers were found during the second (2006) search. Critical habitat identified in the federal register for the species is also found downstream of the North Cowhead Allotment, in Oregon. Waters within the allotment which feed into this habitat include Cowhead Slough. Cowhead Slough is an intermittent stream and surveys have not detected Warner Sucker within the Slough. Within 25 feet of perennial stream systems that drain into the Twelve Mile watershed, no prescribed burning or mechanical treatment of juniper will occur, so there will be no increase in sediment input into perennial waterways which feed into designated critical habitat. Because there are no known Warner suckers inhabiting areas affected by the Proposed Action and the Proposed Action will have no effect on Warner Sucker or Warner Sucker critical habitat, Warner sucker will not be discussed further.

BLM Sensitive Species

Several BLM sensitive species have the potential to occur within the project boundaries, in addition to those described in the previous subsections. The potential presence of these species within proposed treatment areas is further discussed in the following subsections.

Pygmy Rabbit

Pygmy rabbit (*Brachylagus idahoensis*) exists within the SFO, primarily in the southern portion of the FO. The 2006 Larrucea survey detected pygmy rabbit (*Brachylagus idahoensis*) in ten locations within the Vya PMU, with only two locations within the areas proposed for juniper treatments, with both of those locations being on the extreme fringes of the area where juniper encroachment is just beginning to occur (Larrucea, 2006). Pygmy rabbit are dependent on sagebrush, primarily big sagebrush (*Artemisia tridentata*) located in deeper soils. Soil types where burrows are found can be loamy to ashy and burrows are generally found greater than 72 cm (20 in) deep. In Oregon, overall shrub cover at pygmy rabbit sites averaged 28.8% and ranged from 21.0-36.2%. According to the species field report for the Ruby Pipeline, 60.0 percent of sites in Nevada exhibited 26–50 percent canopy cover. Larrucea and Brussard (2008) surveyed the historic range of pygmy rabbits in Nevada and California, and found a greater probability of occupancy by pygmy rabbits at sites with low (or no) understory. Pygmy rabbit burrows are almost always under big sagebrush and only rarely in the open. The northern portion of the SFO is rocky with extensive lava flows and lava formations and there are few areas that have the combination of soils and vegetation that have previously been identified as suitable habitat for pygmy rabbits. No pygmy rabbit populations have been identified within the California side of the Surprise Field Office (Surprise Field Office files). No surveys within the SFO have detected pygmy rabbits within juniper encroached habitats; this is likely due to the increased predation risk from aerial predators, lack of a vigorous shrub communities in juniper encroached areas, and juniper typically not establishing in large quantities in basin big sagebrush sites.

California Bighorn Sheep

Data from the Nevada Department of Wildlife (NDOW) and BLM observations and unpublished records indicate that a portion of public land within the Project Area lies within the distribution of California bighorn sheep (*Ovis canadensis californiana*) habitat. Habitat for bighorn sheep includes steep rocky terrain for escape cover and bedding opportunities adjacent to open vegetation for foraging and water. Due to predation issues, higher quality bighorn sheep habitat (e.g. steep areas) generally contains drinking water within ¼ mile. This species can be found in diverse habitats including big and low sagebrush, juniper woodland edges, perennial grasslands and bitterbrush. This species prefers low growing vegetation to better spot predators. Portions of

the Project Area supports the suitable characteristics of California bighorn sheep habitat, most importantly, steep rocky terrain for escape cover. These types of habitats are generally associated with rock rims such as the Vya Rim and the Massacre Rim. Telemetry data from collared bighorn sheep in 2011, 2012 and 2013 have shown that bighorn sheep within the northern portion of the SFO often cover many miles and disperse long distances between suitable habitat types. In areas of heavy juniper encroachment, predation risk from mountain lions (*Puma concolor*) was evident with three marked bighorn sheep being predated in heavy juniper cover in 2011 and 2012 and 2013. Telemetry data indicates that to some extent, bighorn sheep avoid areas of heavier juniper cover when possible. Potential and occupied habitat constitutes approximately 80,000 acres of the Project Area that lies within Hunt unit 011.

Golden Eagle

Golden eagles (*Aquila chrysaetos*), a BLM sensitive species, forage throughout the Project Area with 12 documented nest territories within or immediately adjacent to the Project Area. Golden eagles locally utilize cliffs for nesting. An early study from central California showed that mammals made up 77 percent of golden eagle diets (specifically ground squirrels, jackrabbits, and black-tailed deer fawns), although there was also an assortment of birds (including turkey vulture), snakes, and a few fish (Carnie 1954).

Migratory Birds

Migratory birds are protected and managed under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 *et. seq.*) and Executive Order 13186. Under the MBTA nests (nests with eggs or young) of migratory birds may not be harmed, nor may migratory birds be killed. Executive Order 13186 directs federal agencies to promote the conservation of migratory bird populations.

Most of the vegetation communities within the Project Area are characterized by sagebrush species, primarily Wyoming sagebrush, mountain big sagebrush, basin big sagebrush, and low sagebrush, although other sagebrush species exist within the Project Area. Migratory birds associated with these vegetative communities may include:

- black-throated sparrow (*Amphispiza bilineata*),
- Brewer's blackbird (*Euphagus cyanocephalus*),
- Brewer's sparrow (*Spizella breweri*),
- Canyon wren (*Catherpes mexicanus*),
- gray flycatcher (*Empidonax wrightii*),
- green-tailed towhee (*Pipilo chlorurus*),
- loggerhead shrike (*Lanius ludovicianus*),
- rock wren (*Salpinctes obsoletus*),
- sage sparrow (*Amphispiza belli*),
- sage thrasher (*Oreoscoptes montanus*),

- western meadowlark (*Sturnella neglecta*), and
- vesper sparrow (*Pooecetes gramineus*).

Most of these species require a diversity of plant structure and herbaceous understory. High levels of plant species diversity provides habitat for nesting, foraging and cover for a variety of species. Woodland species such as juniper offer nesting and foraging opportunities for many of these species. Riparian areas with a woody riparian plant species component are important habitats for some migratory bird species as they provide important foraging and nesting habitats. Riparian areas also serve as important transition habitats for a variety of species between seasons and are often heavily used during summer months. Habitat components for many of these species are available in small habitat patches throughout the Project Area.

Migratory birds also often use reservoirs within the Project Area including Crooks Lake, Fee Reservoir, and Cowhead Lake, which are primarily in private ownership. Smaller pit reservoirs within BLM managed lands are also occasionally used by stopover migrants. Species that are often observed include:

- Canada geese (*Branta canadensis*),
- mallard (*Anas platyrhynchos*),
- gadwall (*Anas strepera*),
- American widgeon (*Anas americana*),
- common goldeneye (*Bucephala clangula*),
- Killdeer (*Charadrius vociferus*),
- Snipe (*Gallinago gallinago)* and
- Other migratory birds commonly seen in wetland-marsh environments.

Large riparian areas such as Crooks Meadow often serve as important habitats for migrating birds and are utilized as resting areas during the migratory season.

Big Game Species and Ungulates

Mule Deer

Mule deer (*Odocoileus hemionus*) use occurs throughout the year within the Project Area. Areas where the vegetation consists primarily of low sagebrush and associated grasses and forbs are often avoided because of the lack of hiding cover (e.g. big sagebrush spp.) and thermal cover. Within the Project Area however, there are interconnected expanses of heavier shrub cover and tree cover that are seasonally used by mule deer. Areas where a mixture of Wyoming, mountain, and big sagebrush exist are typically the areas where mule deer use is concentrated (although mule deer are observed in all sagebrush habitats), with most mule deer seeking higher elevation areas in the summer months. To aid in thermoregulation, deer utilize various topographic aspects, south slopes in the winter and north slopes in the summer. Heavy shrub and tree cover also aids in thermoregulation. Deer are generally classified as browsers, with shrubs and forbs making up the bulk of their annual diet. Grasses are generally only consumed early in the spring when they are still green and higher in total digestible nutrients. The diet of mule deer is quite varied

and the importance of various classes of forage plants varies by season; however sagebrush and bitterbrush are important components throughout the year.

The Project Area is located in the NDOW Hunt Units 011 and CDFW Hunt unit X3-B, with the Project Area situated in both Nevada and California. NDOW and CDFW collects data based on Hunt Units and reports pooled information for big game from several units together. Mule deer data (see link below) for Units 011-015 indicate that mule deer numbers vary from trending down to slightly increasing for the various mule deer populations in northwestern Nevada. The adjacent Unit 033, the Sheldon Refuge, is also experiencing continued low recruitment levels. According to NDOW, big game animals are experiencing declines due to drought condition (7 of the last 10 years) effects on vegetation and competition with wild horses for limited forage and water resources.

Within Hunt Unit 011, deer winter in lower elevation areas in Units 011 and Unit 012 and in California in X3-B. As snow begins to melt and spring green-up begins, mule deer begin a seasonal migration to higher elevation summer and fall habitats. Higher elevation mountains within the Project Area are important mule deer habitats during the summer and fall months. When winter storms begin to impact the region, mule deer migrate out of the high elevation mountains in search of lower elevation areas and southern slopes where snow accumulation levels are lower and browse species are present. During winters where snow levels are below average, mule deer locally do not migrate as far and will only move down to the foothills or to higher elevation south slopes.

Rocky Mountain Elk

Rocky Mountain Elk (*Cervus elaphus nelsoni*) are known to occur on the northern portion of the Project Area, in both California and Nevada. Elk within the northern portion of the SFO appear to utilize habitat seasonally with elevation, precipitation and the associated vegetation affecting habitat use in the area. Elk use the higher elevations of the Warner Mountains in California for summer and fall habitat, with elk migrating to the lower elevations around Surprise Valley, Lake Annie, Barrel Springs and Crooks Lake areas in the winter and spring. During winters where snowpack levels remain low, elk movements to lower elevations appear to be reduced. NDOW and BLM biologists have had reports of elk on multiple occasions in the northern portion of the SFO in and around Barrel Springs. Elk shed antlers found in the Barrel Springs areas indicate use of this area as a winter and spring habitat. In the future, as elk numbers expand, it is possible that seasonal migratory patterns of elk will change, and resident groups of elk will establish on the eastern portion of their range yearlong with some groups that do not seasonally migrate back to the Warner Mountains.

Pronghorn Antelope

Pronghorn antelope (*Antilocapra americana*), or pronghorn, can be found throughout the Project Area yearlong, and are known to kid in open expanses near playa lakes and in large low sagebrush flats (BLM Surprise Field Office). Low sagebrush habitats are the most frequented habitats throughout the year by pronghorn antelope. Most of the Project Area is occupied by pronghorn antelope seasonally. Pronghorn prefer open rangelands that support a variety of vegetative types. Predation issues are generally considered to be the reason why pronghorn are not typically found in heavier cover types. Areas with low shrubs typify summer habitat with a diversity of native grasses and forbs (Gregg *et. al.* 2001). Vegetative heights where pronghorn are found can vary; however 10-18 inches has been reported for pronghorn in grassland and shrub steppe communities (Yoakum 2004). Pronghorn do not appear to be dependent on open water if there is sufficient

moisture in the vegetation (Reynolds 1984, O"Gara 1978). Although forbs are an important component of pronghorn diet, browse is the dominant food ingested (Pyshora 1977). As for all big game species, forbs are preferred forage when they are green and palatable and contribute a high amount of protein and minerals to the diet of pronghorn antelope. Meadows are especially important summer habitats for pronghorn populations. Meadows provide succulent, high quality forage and water during the hot summer months.

Juniper encroachment within the Project Area impacts pronghorn distribution due to pronghorn avoiding areas of dense juniper encroachment. Habitats that are normally dominated by low sagebrush and bitterbrush but have become encroached by juniper are not as readily utilized by pronghorn compared to habitats that are not encroached by juniper. Pronghorn populations in Hunt Units 011 and 015 are expected to continue increasing trends while those populations within Hunt Units 012, 013, and 014 are expected to remain static.

Nesting Raptors

Nesting, roosting and foraging habitat for raptors was identified throughout the Project Area. While the sensitive raptor species are discussed above, all raptor species' nesting habitats are protected by the Migratory Bird Treaty Act and thus are considered for this analysis. Suitable foraging habitat for raptors is present within all proposed treatment areas in areas of open grassland, low sagebrush, and big sagebrush habitat that is not overly dense with juniper. While nesting habitat can be limited in some areas within the Project Area, cliffs and rock rims that run north-south that are associated with mountains and canyons that run in an east-west direction affords raptors adequate nesting habitat. Aspen stands that have not been encroached by juniper also offer nesting habitat for raptors with a number of nest sites located in the Barrel Springs area within aspen stands as noted in field surveys.

Other Native Wildlife Species

Other species known to occupy within the Project Area include black-tailed jackrabbit, ground squirrel, badger, lizards, coyote, raven, northern harrier and various songbirds. Data points from survey blocks conducted by the Great Basin Bird Observatory within the SFO indicate that several sage-steppe obligate birds besides Greater sage-grouse are likely to be found within the Project Area. These include Brewers sparrow, sage thrasher, and sage sparrow. These birds require a mix of open, patchy sagebrush, tall sagebrush, and grass cover for nesting and foraging. Active rodent burrows and ant hills were found during field tours, indicating a diversity of non-game species.

Sage sparrows (*Amphispiza belli*) are often associated with big sagebrush, but other shrublands are also regularly used with bare ground preferred over grass cover between shrubs. Their nest is a cup of dry twigs and herbaceous stems located on the ground beneath a shrub; or in a shrub usually 0.15 to 0.45 m (6-18 in) above ground, but up to 1 m (39 in). Their known breeding in Nevada is from early April to early August, with a few remaining to winter in the Great Basin each year. Sage sparrows tend to abandon sites that lose sagebrush cover or sites with a substantial cheatgrass component. This species feeds mostly on insects, spiders, and seeds while breeding, and mostly on seeds in winter; they also consume green foliage. Although sage sparrows drink regularly, a portion of their water needs are supplied by consumption of invertebrates. Sage thrashers occupy similar habitats as the sage sparrow and avoid cheatgrass infested areas. Sage thrashers often are found along riparian drainages and corridors after the breeding season. Sage sparrows prefer sage-steppe habitats that have a large grass component and are often found at higher elevation sagebrush sites, although they can occur throughout sage-steppe habitats. The

range for many non-game wildlife and bird species overlap due to the heterogeneity of habitats that are found within the area.

Known aquatic species that exist within the Project Area include speckled dace, rainbow trout, and various aquatic insects. Many naturally occurring wetlands and riparian areas within the Project Area only have seasonal flows and are incapable of supporting cold water fish species e.g. salmonids. Temperatures and total dissolved solids in many bodies of water within the Project Area are above the upper limit for most fresh water teleost fish.

3.19.2. Direct and Indirect Effects of Proposed Action

BLM Sensitive Species

Pygmy Rabbit

Implementation of the Proposed Action is expected to have little direct effects to pygmy rabbits in the short term due to very few pygmy rabbits currently existing in juniper encroached habitats and the lack of suitable habitat throughout most of the Project Area. If pygmy rabbits did exist in a treatment site, effects could include temporary displacement due to noise and activity associated with the treatment. This is expected to be short (generally less than 2 weeks) and disturbance of burrow systems during the treatment period. In the long term, as juniper treatments are implemented and sage-steppe communities recover, it is possible that pygmy rabbits will move into and colonize treated areas that contain the necessary habitat components for pygmy rabbit. Prescribed fire treatments would lengthen the period of time necessary for pygmy rabbit habitat to recover and provide adequate shrub cover due to sagebrush cover that would be lost during prescribed burning operations. Hand treatments would decrease the time for habitats to recover but slash left over from treatments could reduce habitat use by pygmy rabbits. Mechanical biomass treatments would improve habitat components for pygmy rabbits the most by releasing the understory vegetation that provides hiding cover, screening cover, forage and removing biomass that would improve the vegetative response and improve suitability of habitat.

Greater Sage-Grouse

The Proposed Action would improve sage-grouse habitat over approximately 100,000 acres within a ten year time frame by reducing juniper encroachment and facilitating plant community succession, increasing vigor of sage-steppe habitats and increasing sagebrush cover. Benefits to sage-grouse would be most pronounced in areas immediately adjacent to active sage-grouse leks and in mountain shrub nesting habitats where sage-grouse use is highest. Low sagebrush habitats adjacent to leks would benefit from reductions in juniper cover that would reduce predation risk and improve perennial grass cover and forb composition. In the long term, reductions in juniper around sage-grouse leks would reduce the possibility of lek abandonment and local extirpation of smaller lek sites that are currently encroached by juniper. In mountain sagebrush sites, juniper reduction treatments would increase shrub and perennial grass cover, benefiting sage-grouse by increasing the amount of mountain brush communities available for nesting, increasing nesting cover, reducing predator effectiveness at detecting and predating nest sites and increasing nest success in the long term.

Juniper treatments would increase connectivity of habitat across the Vya PMU and reduce the impacts of habitat fragmentation that juniper encroachment has caused by connecting sagebrush communities across the landscape. In the long term, sage-grouse habitats would become more

resilient to disturbances such as fire and would maintain sagebrush communities across the PMU with increased perennial grass, forb and shrub composition for forage and hiding cover for sage-grouse. Riparian sites would also benefit from the proposed action by reducing juniper encroachment adjacent and within riparian sites. Benefits would include reduced vertical vegetation structure and reduced predation risk, increased riparian brood rearing habitat, increased water within the riparian zone and increases in riparian obligate plant species that are used for forage and hiding cover.

Some short term displacement of sage-grouse would occur as a result of the proposed action due to noise and human traffic associated with juniper treatments. This impact is expected to be slight due to implementation of SOP's and Limited Operating Periods(LOP's) during sage-grouse breeding season and the short time period it generally takes to implement treatments. Sage-grouse are expected to move back into treatment areas shortly after completion of treatments. Impacts from construction of temporary fences to exclude grazing use for two seasons in treatment areas could result in increased fence strikes. This impact would be reduced by installing fence markers in areas where a high probability exists for fence strikes(see Appendix F). Fencelines where juniper is currently encroached along would have juniper cut in some areas, increasing the possibility of fence strikes and perch sites for predators. This impact is expected to be slight due to implementation of SOP's including marking fences. As sage-grouse began nesting in habitats where juniper has been removed, predation of nests in proximity to fencelines could be slightly increased but would be offset by the overall increases in nesting habitat available for sage-grouse in the long term.

Prescribed burning would result in the short term removal of shrub cover that is important nesting and summer habitat for sage-grouse. In most mountain sagebrush communities that are proposed for burning it would take 20+ years for shrub composition to reach levels that were similar to pre-burning levels and to reestablish shrubs at desired levels for nesting sage-grouse. Habitat within burned sites in the long term however would be vigorous compared to pre-burning conditions due to juniper loss from fire. Since no prescribed fire treatments would take place within 2 miles of an active sage-grouse lek (high use areas) or in habitats where nesting conditions are ideal for sage-grouse (lack of juniper), impacts to sage-grouse population trends within the Project Area would be slight. Prescribed fire could increase the presence of noxious weed species, especially cheatgrass. This impact is expected to be slight due to prescribed fire areas being focused on higher elevation mountain sagebrush sites with a diverse vegetation understory. Juniper treatments could increase the risk of noxious weed invasion in sage-grouse habitat due to weed seeds or plant materials being transported on equipment used for treatments and soil disturbance associated with treatments. This risk is expected to be slight due to implementation of SOP's and the current low weed population in the project area. Overall, the proposed action is expected to have positive impacts to sage-grouse habitat in the Project Area.

California Bighorn Sheep

Prescribed fire treatments and hand treatments would be the two selected treatment types for steep, rocky terrain that is typical of bighorn sheep habitat, bighorn sheep habitat is generally too rocky and steep for mechanical treatments. Under the Proposed Action, habitat for bighorn sheep is expected to improve by removing invasive juniper within bighorn sheep habitats. Implementation of the proposed action would reduce juniper cover along rock rims and in steep rocky terrain where bighorn sheep frequent, resulting in decreased predation risk from mountain lions and increased habitat suitability and habitat use. In the long term, perennial bunchgrasses would improve in amount and composition, resulting in increased forage for bighorn sheep. Juniper reduction

treatments would also result in increased habitat connectivity across the landscape as habitats that are currently separated by juniper were treated and juniper densities were reduced. This would connect smaller sub-populations in the Project Area in the long term. Some disturbance to bighorn sheep would occur under the proposed action as a result of noise and human traffic associated with implementation of treatments. This effect is expected to be short and limited to the period of time when treatments would occur. Prescribed fire treatments would remove the understory vegetation in bighorn sheep habitat resulting in increased forage but decreased thermal cover for bighorn sheep. The loss of thermal cover is expected to be slight due to implementation of SOP's that leave some juniper standing and treatments not occurring in all juniper encroached area . Overall, the proposed action would have positive effects to bighorn sheep in the Project Area.

Golden Eagle

Under the proposed action, golden eagles would benefit from reductions in juniper cover that would increase prey population densities by improving the shrub and herbaceous understory that many prey species such as jackrabbits depend upon. Improvements in prey population densities could result in increased survival and fledging of young and increased body condition going into nesting. Removal of juniper would reduce raptors perches, therefore golden eagles would likely have to spend more time and energy searching for prey using dynamic soaring rather than searching for prey from perches. This would slightly increase energy expended for golden eagles compared to current conditions. This effect would likely be negligible in the long term due to increased prey population densities offsetting increased energy expended searching for prey. Some disturbance to golden eagles would occur under the proposed action as a result of noise and human traffic associated with implementation of treatments. This effect is expected to be short and limited to the period of time when treatments would occur. Implementation of SOP's would reduce or eliminate impacts to nesting golden eagles in the areas where nests occur. Overall, the proposed action would have positive effects to golden eagles in the Project Area.

Migratory Birds

Under the proposed action, migratory birds would benefit from increased shrub and perennial grass cover that would occur when juniper removal is completed and understory vegetation is released. This would result in increased hiding and nesting cover for a myriad of migratory bird species. Treatments around riparian sites would also benefit migratory birds by increasing the volume of riparian vegetation within the riparian zone, increasing the amount of water available within the riparian zone and increasing the extent of riparian habitats. Removal of juniper would also decrease aerial predator effectiveness, benefiting many neo-tropical migratory birds but negatively impacting species such as predatory raptors. Removal of juniper would positively affect species that prefer open areas devoid of juniper to nest but would negatively affect species that prefer nesting in juniper. This impact is expected to be slight due to most species that prefer nesting in wooded areas shifting habitat use into untreated areas within the Project Area. Some disturbance to migratory birds would occur under the proposed action as a result of noise and human traffic associated with implementation of treatments. This effect is expected to be slight due to implementation of SOP's and the short time period it generally takes to complete treatments. Impacts as a result of implementation include habitat shifts out of the treatment area and nest abandonment. These impacts are expected to be slight due to implementation of LOP's and SOP's in areas where nesting birds are located. Overall, the proposed action is expected to have positive effects for the majority of migratory birds.

Big Game Species and Ungulates

Mule Deer

Under the Proposed Action, mule deer would benefit from rapid increases in shrub and browse species as juniper treatments were completed and understory vegetation began to dominate ecological processes. Improvements in browse communities would be most pronounced in mountain big sagebrush communities but improvements in lower elevation communities would increase browse species in important mule deer winter ranges. In the long term, as treatment were implemented across the landscape, large blocks of habitat would become connected across the Project Area, resulting in less habitat fragmentation across the landscape. As habitat quality increased, body condition and fecundity of mule deer populations within the 011 Hunt Unit would be expected to increase. Some loss of thermal cover and screening cover would occur under the proposed action due to loss of juniper cover. This impact is expected to be slight due to some juniper trees being retained within treatment units to provide thermal cover for a myriad of species, including mule deer. Prescribed burning would have the greatest impact on mule deer, with prescribed fire removing important browse species including sagebrush and bitterbrush. Immediately following fire, mule deer use is expected to increase as mule deer forage on newly emerging vegetation that is high in Total Digestible Nutrients (TDN). After a few years however mule deer use in burned areas is expected to decline until shrub species reestablish and resemble pre-burned levels. The impact of fire on mule deer is expected to be slight due to implementation of Mitigation Measures and SOP's and prescribed burning treatments being no larger than 200 acres in size and not interconnected. Some disturbance to mule deer would also occur under the proposed action as a result of noise and human traffic associated with implementation of treatments. This effect is expected to be slight due to implementation of SOP's and the short time period it generally takes to complete treatments. Impacts as a result of noise and human traffic would largely include habitat shifts out of the treatment area. Overall, the proposed action is expected to have positive effects to mule deer in the project area.

Rocky Mountain Elk

Under the proposed action, elk would benefit from rapid increases in shrub and browse species as juniper treatments were completed and understory vegetation began to dominate ecological processes. Improvements in browse communities would be most pronounced in mountain big sagebrush communities but improvements in lower elevation communities would increase browse species. Since elk generally winter in high elevation areas than mule deer, positive effects for elk will be more evident in mountain brush communities. Elk readily adapt and thrive in juniper woodland areas where a mosaic of shrub communities and juniper exist for foraging and hiding cover. Some loss of thermal cover and screening cover would occur under the proposed action due to loss of juniper cover. This impact is expected to result in elk not using some areas that are currently suitable habitat due to loss of hiding cover. This impact would be most pronounced in areas where topography is relatively flat and juniper provides the only cover that can conceal elk (low sagebrush flats).

Prescribed burning would have a positive impact on elk, with prescribed fire resulting in increased grass composition that is preferred by elk. A loss of shrub cover could affect elk when they switch to foraging on shrub species in the fall however this impact is expected to be slight due to the small amount of prescribed burning in comparison to the Project Area. Some disturbance to elk would also occur under the proposed action as a result of noise and human traffic associated with implementation of treatments. This effect is expected to be slight due to implementation of SOP's and the short time period it generally takes to complete treatments and the low elk densities that currently exist in the SFO. Impacts as a result of noise and human traffic would

largely include habitat shifts out of the treatment area. Overall, the proposed action is expected to have positive effects to elk in the project area.

Pronghorn Antelope

Under the Proposed Action, direct effects to pronghorn would likely be minimal, as open bitterbrush and sagebrush is the preferred habitat for this species and treatment will primarily occur in habitats where juniper has encroached and pronghorn use in not high. Prescribed burning would increase local foraging opportunities for this species and reductions in juniper would promote preferred habitat conditions across the project area. In the long term, as treatment were implemented across the landscape, large blocks of habitat would become connected across the Project Area, resulting in less habitat fragmentation across the landscape and an increase in available habitat for pronghorn. Some loss of thermal cover and screening cover would occur under the proposed action due to loss of juniper cover. Antelope generally avoid areas of dense juniper but will locally use juniper for thermal cover if juniper densities are relatively low (phase 1 and early phase 2 areas). Impacts due to loss of juniper cover is expected to be slight due to some juniper trees being retained within treatment units to provide thermal cover for a myriad of species, including antelope. Overall, the proposed action is expected to have positive effects to pronghorn antelope in the project area.

Nesting Raptors

Under the proposed action, juniper reduction treatments would improve habitat quality for prey species that raptors commonly predate on, benefiting raptors within the project area. In the long term, an increased prey population could result in increased recruitment into the local populations. Improvements in prey population densities could result in increased survival and fledging of young and improved body condition going into nesting. Removal of juniper would reduce raptors perches, therefore raptors would likely have to spend more time and energy searching for prey using dynamic soaring rather than searching for prey from perches. This would slightly increase energy expended for raptors compared to current conditions. This effect would likely be negligible in the long term due to increased prey population densities offsetting increased energy expenditures searching for prey. Some disturbance to raptors would occur under the proposed action as a result of noise and human traffic associated with implementation of treatments. This effect is expected to be short and limited to the period of time when treatments would occur. Implementation of SOP's would reduce or eliminate impacts to nesting raptors in the areas where nests occur. Overall, the proposed action would have positive effects to raptors in the Project Area.

Other Native Wildlife Species

Implementation of the proposed action would facilitate improved sage steppe habitat, while resulting in a decline in juniper woodland habitats. Project activities associated with the Proposed Action would result in both temporary and long-term effects to wildlife habitat and individuals, and would include both beneficial (habitat changes) and adverse (primarily related to disturbance) effects.

Long-term effects related to prescribed burning are expected to be positive. Positive restoration effects resulting in the initial restoration of diverse assemblages of forbs and grasses would likely result from proposed prescribed burning, although species composition and trends would likely change as the ecosystem transitions to later seral stages. These shifts in seral stages and vegetative community composition are anticipated to result in overall increased habitat quality. Short-term effects may include a reduction in fall forage opportunities, as well as direct deaths of

individuals. Prescribed burning would also cause some direct deaths to smaller animals unable to move sufficient distances away from burn areas.

Both hand treatment and mechanical treatments would cause some short-term disturbances to wildlife but would have less long-term negative effects to small mammals by retaining understory vegetation. Long-term negative effects would be minimal to local tree nesting/roosting species which rely partially on juniper. Mechanical treatment is expected to have reduced direct effects due to its speed of operation compared to hand treatments. Like fire, long-term beneficial effects are expected to understory plant species however understory changes would be more gradual with this treatment.

Short-term disturbance would probably last no more than three years after which all wood is removed from a site. Mechanical operations would take place over a much shorter period of time and would kill some additional small animals in the vicinity of these operations. Both mechanical and hand treatments would remove habitat for tree nesting species and reduce thermal cover for larger animals, although these effects are not anticipated to result in widespread or major adverse effects, as these resource are not lacking within the Project Area. An undetermined amount of shrubs would likely be crushed or removed during mechanical operations however shrubs, including valuable forage species such as bitterbrush, may respond positively to proposed treatments, resulting in increased foraging opportunities, as well as cover for smaller animals.

Juniper titmouse and bats, which prefer larger trees for roosting, are not expected to be affected by any treatment method mainly due to the fact that large mature trees are not targeted for removal and older juniper are generally not killed by burning. If larger mature trees are targeted or prescribed fire affects larger timber unexpectedly, direct impacts to juniper titmouse and bats may occur.

Implementation of the Proposed Action would result in short-term effects to habitat for some sage steppe obligate species. However, long-term habitat productivity for sage steppe obligate species would improve following restoration. Juniper-dependent species would experience short-term and long-term effects resulting from proposed treatments and resulting restoration activities. It is anticipated that implementation of the Standard Operating Procedures identified in **Appendix F** would minimize potential adverse effects. Effects associated with implementation of the Proposed Action are therefore considered minor.

3.19.3. Cumulative Effects of Proposed Action

The Cumulative Assessment Area for Wildlife, T&E species, and migratory birds is the entire Vya Sage-grouse PMU. The use of temporary roads could result in increased future use by hunters, fire wood collectors and to some degree campers. Future use could be expected to directly negatively affect wildlife within the Project Area. When temporary roads are decommissioned, additional potential effects would be greatly reduced.

An unknown amount of juniper reduction has occurred on private lands within the project area and would continue to occur in the foreseeable future, resulting in continued positive effects on sage steppe obligate species as well as potential negative effects on juniper woodland species.

Livestock grazing by cattle would continue throughout the planning area and would cause direct (competition for food and water, potential for increased erosion and sediment along drainages,

etc) and indirect (loss of cover) effects to wildlife. Similarly, continued use by wild horse herds will provide additional competition for food and water and loss of cover for wildlife species.

Continued practices of fencing riparian, and wetland sites and marking fences would most likely have positive effects on the habitat and the wildlife in the area. These practices would also decrease the potential for erosion and sediment input into aquatic habitats.

Continuing Integrated Weed Management will result in additional native habitat and thus improved wildlife habitat conditions. Wildlife in the treatment areas would benefit from these practices and few adverse effects would occur as a result.

Continued recreation in the form of hunting, camping, and hiking, and to a lesser extent wildlife observation, nature study and archaeological sightseeing would result in potential impacts to wildlife populations, as human presence is usually a nuisance to wildlife, especially during the breeding/rearing seasons. The project is not expected to result in increased recreation over the long-term. Unauthorized off-highway vehicle use may increase due to more open habitat conditions, but restricting all vehicles to designated trails would reduce long-term cumulative effects from these activities to a negligible level.

Continued juniper woodland thinning and removal would result in impacts similar to those outlined in the direct and indirect effects section above. Short-term impacts to wildlife would transition to long-term benefits for most sensitive and non-sensitive species that inhabit the treatment areas. Continued treatment would result in long-term cumulative benefits resulting from increased acreage of productive ecosystems characterized by diverse vegetative communities optimizing habitat values for wildlife within the Project Area. Cumulative effects resulting from implementation of the Proposed Action are considered minor.

3.19.4. Direct and Indirect Effects of No Action Alternative

Pygmy Rabbit

The No Action Alternative is expected to have few effects to pygmy rabbits in the short term due to very few pygmy rabbits currently existing in juniper encroached habitats and the lack of suitable habitat throughout most of the Project Area. In the long term, if juniper treatments were not implemented and sage-steppe communities continue to become invaded by juniper, it is possible that pygmy rabbits will move out of areas that are currently occupied due to juniper encroachment and colonize new areas that contain the necessary habitat components for pygmy rabbit. Areas that are encroached by juniper in the long term would decline in vigor and if a disturbance such as fire occurred, the habitat could potentially cross an ecological threshold and transition into an annual grassland that no longer can support sagebrush communities and therefore would not contain the necessary habitat components for pygmy rabbits. The No Action Alternative would have a slight negative impact to pygmy rabbits.

Greater Sage-Grouse

The No Action Alternative would result in a continued decline in sage-grouse habitat over the entire project area and juniper encroachment into sage-grouse habitats within the Vya PMU would continue unabated. Negative impacts to sage-grouse from continue juniper encroachment would be most pronounced in areas immediately adjacent to active sage-grouse leks and in mountain shrub nesting habitats where sage-grouse use is the highest. Low sagebrush habitats adjacent to leks would continue to increase in juniper cover and predation risk would increase in the long

term with sage-grouse potentially abandoning lek sites and smaller . In encroached sagebrush sites, juniper would continue to increase in extent with continued declines in shrub and perennial grass cover, negatively impacting sage-grouse by decreasing nesting cover and decreasing nest success in the long term. Juniper expansion would continue to decrease connectivity of habitat across the Vya PMU and the impacts of habitat fragmentation that juniper encroachment has caused would continue across the landscape. In the long term, sage-grouse habitats would become less resilient to disturbances such as fire and maintaining sagebrush communities across the PMU with increased perennial grass and shrub composition for forage and hiding cover for sage-grouse would become increasingly difficult. Riparian sites would continue to decline as juniper encroachment adjacent and within riparian sites continued unabated. Negative impacts include increased vertical vegetation structure and increased predation risk, decreased riparian brood rearing habitat, decreased water within the riparian zone and decreases in riparian obligate plant species. Under the No Action Alternative, no juniper treatments would be implemented and therefore no impacts relating to noise and human traffic to sage-grouse would occur. Overall, the proposed action is expected to have moderate negative impacts to sage-grouse habitat in the Project Area.

California Bighorn Sheep

Under the No Action Alternative, habitat for bighorn sheep is expected to decline as invasive juniper continues to expand within bighorn sheep habitats. Juniper cover along rock rims and in steep rocky terrain where bighorn sheep frequent would continue to be left untreated, resulting in increased predation risk and decreased habitat suitability and habitat use. In the long term, perennial bunchgrasses would decline in amount and composition, resulting in decreased forage for bighorn sheep. Under the No Action Alternative, Juniper reduction treatments would not occur and habitats across the landscape would remain disconnected due to juniper encroachment. This would result in decreased gene flow and mingling of smaller sub-populations in the 011 Hunt Unit in the long term. Under the No Action Alternative, disturbance to bighorn sheep as a result of noise and human traffic associated with implementation of treatments would not occur. Overall, the No Action Alternative would have slight negative effects to bighorn sheep in the Project Area.

Golden Eagle

Under the No Action Alternative, golden eagles would not benefit due to reductions in juniper cover not occurring and prey population densities not improving due to the shrub and herbaceous understory that many prey species such as jackrabbits depend upon not improving. Removal of juniper would not occur and raptors perches would not be reduced, therefore golden eagles would likely spend more time searching for prey from perches rather than expending energy flying and searching for prey. This would slightly decrease energy expended for golden eagles compared to the proposed action. This effect would likely be negligible in the long term due to decreased prey population densities offsetting decreased energy expended searching for prey. No disturbance to golden eagles would occur under the No Action Alternative as a result of noise and human traffic associated with implementation of treatments not occurring. Overall, the proposed action would have slightly negative effects to golden eagles in the Project Area related to overall long term prey abundance.

Migratory Birds

Under the No Action Alternative, juniper treatments would not occur and migratory birds would not benefit from increased shrub and perennial grass cover that would occur when juniper removal is completed and understory vegetation is released. This would result in decreased hiding and

nesting cover for a myriad of migratory bird species. Treatments around riparian sites would also not occur and migratory birds would have decreased riparian vegetation within the riparian zone, decreased amounts of water available within the riparian zone and decreased extent of riparian habitats in the long term. Under the No Action Alternative, juniper would not removed and aerial predator effectiveness would remain at current levels, negatively impacting many neo-tropical migratory birds. Removal of juniper would not occur and would negatively affect species that prefer open areas devoid of juniper to nest but would positively affect species that prefer nesting in juniper compared to the Proposed Action. No disturbance to migratory birds would occur under the No Action Alternative as a result of noise and human traffic associated with implementation of treatments due to no treatments occurring. Overall, the No Action Alternative is expected to have slightly negative effects for the majority of migratory birds.

Big Game Species and Ungulates

Mule Deer

Under the No Action Alternative, mule deer would not benefit from rapid increases in shrub and browse species as juniper treatments would not be completed and the juniper canopy would continue to dominate ecological processes. Declines in browse communities would be most pronounced in mountain big sagebrush communities as juniper continued to expand unabated however lower elevation browse communities would continue to decline in vigor and production. In the long term, if treatments were not implemented across the landscape, large blocks of intact habitat would become invaded by juniper and disconnected across the Project Area, resulting in more habitat fragmentation across the landscape. As habitat quality continued to decline, body condition and fecundity of mule deer populations within the 011 Hunt Unit would be expected to decrease with populations eventually stabilizing at a lower carrying capacity than current levels. No loss of thermal cover and screening cover would occur under the No Action Alternative due to no juniper treatments occurring. Prescribed burning would not occur and important browse species including sagebrush and bitterbrush would not be removed within the project area from prescribed fire operations. Disturbance to mule deer as a result of noise and human traffic associated with implementation of treatments would not occur under the No Action Alternative. Overall, the No Action Alternative is expected to have negative effects to mule deer in the project area primarily related to browse plants conditions and habitat conditions.

Rocky Mountain Elk

Under the No Action Alternative, elk would not benefit from rapid increases in shrub and browse species due to juniper treatments not being completed and the juniper canopy continuing to dominate ecological processes. Declines in browse communities would be most pronounced in mountain big sagebrush communities. Under the No Action Alternative, no loss of thermal cover and screening cover would occur due to no loss of juniper cover. This is expected to be result in elk using some areas that are currently suitable habitat but are relatively flat and juniper provides the only hiding cover for concealment. These areas, if treated as described in the proposed action, would likely no longer be suitable elk habitat due to lack of hiding cover.

Prescribed burning would not occur under this alternative and increased in grass composition would not occur under the No Action Alternative, slightly negatively affecting elk foraging habitat. No disturbance to elk would occur under the No Action Alternative as a result of noise and human traffic associated with implementation of treatments due to no treatment occurring. Overall, the No Action Alternative is expected to have neutral effects to elk in the project area.

Pronghorn Antelope

Under the No Action Alternative, prescribed burning would not occur and localized increased foraging opportunities for this species and reductions in juniper that would promote preferred habitat conditions across the project area would not occur. In the long term, if treatments were not implemented across the landscape, large blocks of habitat would become disconnected across the Project Area, resulting in more habitat fragmentation across the landscape and a decrease in available habitat for pronghorn. No loss of thermal cover and screening cover would occur under the No Action Alternative due to no loss of juniper cover. This impact is expected to be slight since antelope generally avoid areas of dense juniper. Overall, the No Action Alternative is expected to have moderately negative effects to pronghorn antelope in the project area.

Nesting Raptors

Under the No Action Alternative, juniper reduction treatments would not occur and improvements in habitat quality for prey species that raptors commonly predate on would not occur. In the long term, as habitat quality continued to decline, a decreased prey population could result in decrease in the overall local population of raptors within the project area. More juniper would be available for nesting under the No Action Alternative but other nesting habitats such as aspen would continue to decline as juniper encroachment continued unabated. No disturbance to raptors would occur under the No Action Alternative as a result of noise and human traffic associated with implementation of treatments due to treatments not occurring. Overall, the No Action would have slightly negative effects to raptors in the Project Area.

Other Native Wildlife Species

Under the No Action Alternative, distribution, viability, and diversity of wildlife species and wildlife habitats would reflect increased juniper densities. Overall range health and ecological potential in the area would continue to decline, and native sage steppe vegetation would continue to be reduced in extent, as well as vigor. Juniper encroachment would continue to negatively affect suitable habitat for sagebrush obligate species. Woodland and/or juniper-associated species would likely experience benefits from the increased number of trees available for shelter and cover. However, according to USFS (2008), “The more tree dominated piñyon and juniper woodlands become, the less likely they are to burn under moderate conditions, resulting in infrequent high intensity fires.” Over time more extreme fire behavior could result from the No Action Alternative, resulting in potentially widespread and unpredictable modifications to habitats within the Project Area. Potential effects are considered moderate.

Cumulative Effects of No Active Alternative

Past, present and future foreseeable effects include hand and mechanical vegetative treatments, prescribed fire, continued livestock grazing, wild horse grazing, recreational use, off-highway vehicle use, range management throughout the CAA, as well as construction of the Ruby Pipeline Project (completed summer 2011). As described in detail above, these activities may have the potential to result in adverse effects to wildlife.

The distribution, viability, and diversity of wildlife species and wildlife habitats within the Project Area would reflect increased juniper densities. Overall range health and ecological potential in the Project Area would continue to decline, and native sage steppe vegetation would continue to be reduced in extent, as well as vigor. Juniper encroachment would continue to negatively affect suitable habitat for sagebrush obligate species. Woodland and/or juniper-associated species would

likely experience benefits from the increased number of trees available for shelter and cover. However, according to USFS (2008), "The more tree dominated piñyon and juniper woodlands become, the less likely they are to burn under moderate conditions, resulting in infrequent high intensity fires." Over time more extreme fire behavior could result from the No Action Alternative, resulting in potentially widespread and unpredictable modifications to habitats throughout the CAA. Cumulative effects under the No Action Alternative are considered moderate.

3.20. Wild Horses

3.20.1. Affected Environment

Specific information for the one Herd Management Area within the project area is shown in Table 3.11-1.

3.20.2. Direct and Indirect Effects of Proposed Action

The direct and indirect, long-term impacts are related to the wild horse population sizes and growth rates. As wild horse numbers increase, utilization of forage and water increases. There is greater likelihood horses would be present in the treatment units on year-round basis. Since permanent new fencing is not proposed, wild horses would continue to have free access to the treatment units. Wild horse impacts on the rate of recovery of a treatment would be greatest where wild horses tend to congregate; such as around water sources and trails. However, as population increases the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When the population is at AML, wild horses are not expected to affect vegetation and soils recovery in the treatment units.

BLM would manage wild horse grazing to achieve restoration objectives by keeping populations within established appropriate management levels (AML) for individual herds or complexes. Implementation of the Proposed Action is not expected to change the AML and with implementation of the Standard Operating Procedures as described in **Appendix F**, there are no anticipated direct impacts to wild horses within the Carter Reservoir HMA. Potential effects related to wild horse management resulting from implementation of the Proposed Action would be a slight forage increase for wild horses.

Table 3.8. Wild Horse Herd Management Areas

	Herd Number	Acres of BLM-Managed Lands (Other Lands)	Appropriate Management Levels (No. of Animals)	Estimated Population (May 2013)
Carter Reservoir	CA-269	23,423 (2,349)	25–35	66

3.20.3. Cumulative Effects of Proposed Action

The Cumulative Assessment Area for wild horses is the entire Carter Reservoir HMA. Wild horses and cattle compete directly for available forage and water; therefore the cumulative impacts of the proposed action would be similar to cattle. Ensuring the protection of treatment units requires that wild horse populations are maintained AML. This would mitigate impacts to vegetation, soils and water relationships by improving the health, vigor and recruitment of perennial grasses, forbs and shrubs. While increasing ground cover to improve soil stability,

reduce erosion potential and improving water quality, and increasing the quantity and quality of forage for wild horse use which would promote herd health.

In the long term additional forage and habitat structure should benefit wild horse populations. Currently, wild horses use junipers to some extent for shade during summer and thermal cover during the winter. The impact of the Proposed Action is expected to minimal, since the treatment acreage is small in comparison with the total area occupied with juniper woodland. The Proposed Action should result in a subsequent increase of perennial, herbaceous plants which are important for the maintenance of wild horses, rangeland health and multiple other watershed values.

3.20.4. Direct, Indirect and Cumulative Effects of the No Action Alternative

Horses tend to prefer open landscapes for predator detection and escape. Continued juniper expansion would adversely affect existing wild horse habitat and consequently the population. Cumulative impacts on wild horses within the project area include past vegetation treatments and water developments. Human activities are expected to continue to same degree in the future and would continue to impact wild horses and wildlife in a similar fashion. However, as the forage based decreases, competition for resources and habitat would increase, providing long-term cumulative conflicts to wild horses. BLM policy and guidance on wild horses and the implementation of appropriate management levels (AML) changes would help to reduce overall impacts.

3.20.5. Mitigation Measures

No mitigation is proposed.

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Chapter 4. Agencies, Tribes, Organizations, and Individuals Consulted:

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4.1. History of the Planning and Scoping Process

April 2008 Sage Steppe Ecosystem Restoration Strategy Final Environmental Impact Statement. Programmatic analysis of fuel reduction and habitat restoration activities proposed by USFS and BLM on public lands within Modoc County.

March 1, 2011-Nov 30, 2012 Interdisciplinary team field tours and preliminary assessments of affected resources.

January 1, 2011– Internal BLM review and development of Proposed Action.

November 10, 2011 First public scoping of the Proposed Action via mailings to interested members of the public (**Appendix A**). A complete list of agencies, tribes, organizations and individuals is attached as **Appendix B**.

March 6, 2013– Second public scoping of the Proposed Action via mailings to interested members of the public (**Appendix A**). A complete list of agencies, tribes, organizations and individuals is attached as **Appendix B**.

June 26th, 2013– Draft Environmental Assessment and FONSI sent out for public comment and review.

4.2. External Scoping Results

March 12, 2013- Bill Phillips Scoping Letter- Interested Public

March 29, 2013- Paul and Marilyn Davis Scoping Letter- Interested Public

April 4, 2013- Nevada Department of Wildlife Scoping Letter- NV State Wildlife Agency

April 5, 2013- Western Watersheds Project Scoping Letter- Interested Public

April 8, 2013- State Land Use Planning Agency- Interested Public

May 1, 2013- California Department of Fish & Wildlife Phone Conversation- CA State Wildlife Agency

4.3. Tribal Consultation

November 14, 2012– Tim Burke, Acting Field Manager, Bureau of Land Management, formally consulted with the Fort Bidwell Indian Community.

February 28, 2013– Tim Burke, Acting Field Manager, Bureau of Land Management, formally consulted with the Cedarville Rancheria.

March 9, 2013– Tim Burke, Acting Field Manager, Bureau of Land Management, formally consulted with the Fort Bidwell Indian Community.

March 16, 2013– Tim Burke, Acting Field Manager, Bureau of Land Management, formally consulted with the Summit Lake Paiute Tribe.

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Chapter 5. Document Preparation:

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5.1. List of Preparers

Table 5.1. List of Preparers

Name	Title	Resource/Activities
Tim Burke	Acting Field Office Manager	Authorizing Officer
Casey Boespflug	Fire/Fuels Specialist	Fire and Fuels Management, Fuel Wood Utilization, Air Quality
Elias Flores	Supervisory Natural Resource Specialist	EA Review
Scott Soletti	Wildlife Biologist/Noxious Weed Coordinator	Wildlife, T&E Fauna, Migratory Birds, Riparian/Water Quality, Noxious Weeds, Global Climate Change
Steve Surian	Supervisory Rangeland Management Specialist	Wild Horses, Soils, Livestock Management
Steve Mathews	Rangeland Management Specialist	Livestock Management
Alexandra Urza	Natural Resource Specialist	Vegetation, Wilderness, T&E Flora
Jennifer Rovanpera	Archaeologist	Cultural Resources, Paleontology, Native American Religious Concerns
Dan Ryan	Lands/Realty/Recreation Specialist	Recreation, VRM, Socioeconomics
Roger Farschon	Ecologist	EA Review
Shawn Thornton	GIS Specialist	GIS, Maps

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Chapter 6. References

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