Decision Record

Elk Springs ACEC Restoration

Bureau of Land Management
Albuquerque Field Office
435 Montano NE, Albuquerque, NM
Phone: (505) 761-8700

EA Log No. **DOI-BLM- NM- A010- 2015- 32 - EA**

Project Location(s): Sandoval County
Township 18 and 19 North
Range 1 West
Sections: 1, 2, 3, 4, 5, 10, 11, 14, 16, 20, 21, 22, 23, 26, 27, 28, 29, 32, 33, 34, 35

Decision Record

It is my decision to implement the proposed action based on the FONSI signed on 4/21/15 for the attached Environmental Analysis (EA). The proposed action was analyzed in the Elk Springs Restoration EA (DOI-BLM-NM-A010-2015-32-EA); to allow the use of herbicide, mechanical hand thinning, mastication, and prescribed fire for vegetative restoration of sagebrush valleys and bottoms, pinon/juniper woodlands, and mixed conifer stands on public land administered by the Rio Puerco Field Office within the Elk Springs ACEC. Additionally, similar alternatives that help supplement this analysis can be found in the following Environmental Assessments:

SPIKE 20P Sagebrush Treatments	EA NM-110-2006-015	12/13/2006
Final PEIS for Veg Treatments using Herbicides	FES 07-21	06/01/2007
Treatment of Noxious and Invasive plants	EA NM-010-2010-022	07/01/2012

My rationale for this action includes the following:

1. This action conforms to the Rio Puerco RMP (1986) reprinted (1992).
2. Herbicide is a cost effective tool for restoring vegetative communities to historic densities and reducing hazardous fuel levels.
3. Mechanical hand thinning is an effective way to treat small areas that require special care and attention to mitigate potential adverse effects to other resources.
4. Mastication is a good way to treat areas that may need more ground cover and soil moisture to fully recover in the future.
5. Prescribed fire is necessary for long term maintenance of landscapes prone to periodic low-intensity ground fires.

6. Use of these management practices will help restore natural levels of vegetation within the ACEC and create better habitat for deer and elk due to the expected increase in herbaceous material for elk and more vigorous browse spp. for deer.
7. Environmental consequences have been considered.
8. Environmental Justice has been considered; disproportionate negative impacts will not be borne by these people.
9. Cultural resource inventory and consultation with the State Historic Preservation Officer is not required for Herbicide treatment (Protocol V.A.3. Appendix 11-- Other #2), may be required for prescribed fire, and will be required for mechanical hand thinning and mastication prior to treatment.

The following stipulations will apply to these treatments

1. A BLM Certified Pesticide Applicator will supervise these herbicide applications.
2. Procedures for herbicide application in BLM Manual Handbook H-9011-1 will be followed.
3. Tebuthiuron treatments will be conducted in the fall of the year.
4. Mechanical hand thinning will require a site specific Class II cultural resource inventory.
5. Mastication will require a site specific Class III cultural resource inventory and would not be allowed in paleontological areas identified as Class 4 or 5 and possibly Class 3 depending upon a site specific survey and determination.
6. Any additional vegetative treatments to these areas will be applied using an Integrated Vegetation Management (IVM) approach. Grazing management and prescribed fire will be the principal disturbances under IVM for maintenance of the desired plant community.
7. Monitoring would comply with section 2.2.4 of EA DOI-BLM-NM-A010-2015-32.

Approved by: _____ 4/21/15.

John R. Brenna
Acting Field Office Manager

Date

Finding Of No Significant Impact - FONSI

Elk Springs ACEC Restoration

DOI-BLM- NM- A010- 2015- 32 - EA

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BACKGROUND

The need for the proposed action is based on a wide recognition that a combination of treatments including: herbicide, mechanical, and fire are necessary and appropriate tools used to restore and maintain sustainable forest and range ecosystems into the future. However, given the undesirable condition of many fuel complexes as described in studies and planning documents, a prudent program of prescribed fire in combination with non-fire treatments is required to reduce fuel hazards to more manageable levels and help restore historic levels of shrub densities within valley bottoms. An interdisciplinary, interagency team of specialists identified policy-driven strategies with which to address an array of integrated land management objectives and constraints. Consensus was reached on a preferred alternative to restore the ELK Springs ACEC through a combination of herbicide treatments for sagebrush, pinon, and juniper; mastication of the same species on slopes less than 20% where access is available and the area is not too rocky or rough; hand mechanical thinning of pinon/juniper woodlands and mixed conifer stands; (and) prescribed fire for continued maintenance and clean-up of treated areas.

FINDING OF NO SIGNIFICANT IMPACT

Based upon a review of EA No. DOI-BLM- NM- A010- 2015- 32 - EA and the supporting documents, I have determined that the project is not a major federal action and will not have a significant effect on the quality of the human environment, individually or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity, as defined at 40 CFR 1508.27 and do not exceed those effects as described in the Rio Puerco Field Office RMP/FEIS (1992). Therefore, an environmental impact statement is not required. This finding is based on the context and intensity of the project as described below.

Context:
The proposed action is to manage vegetation within the Elk Springs ACEC (10,334 acres) using a combination of herbicide treatments for sagebrush, pinon, and juniper; mastication of the same species on slopes less than 20% where access is available and the area is not too rocky or rough; hand mechanical thinning of pinon/juniper woodlands and mixed conifer stands; (and) prescribed fire for continued maintenance and clean-up of treated areas. Any identified riparian areas

would be excluded and any areas identified as having the potential for habitat for Threatened and Endangered, Sensitive, or Candidate Species would be mitigated or all together avoided. Additionally, any cultural resources identified through surveys would be mitigated or all together avoided.

Intensity:
The following discussion is organized around the 10 Significance Criteria described at 40 CFR 1508.27. The following have been considered in evaluating intensity for this proposal:

1. Impacts that may be both beneficial and adverse:
Beneficial impacts to wildlife, forestry, range, visual, fuels, soil and water are expected within 2-3 years post treatment due to an increase in sunlight and precipitation leading to an increase in herbaceous material within the interspaces of the remaining trees and shrubs. This is expected to reduce hazardous fuel levels, erosion and will also create more forage for livestock and wildlife and allow remaining trees and shrubs to gain vigor making them more resilient to drought.
In the short term (<3 years), adverse impacts are expected to range, visual, soil and water but are expected to recover quickly without lasting negative effects as long as grazing deferments are implemented and the treatment area is re-seeded if the existing native seed in the seedbank does not substantially re-vegetate the site.

2. Degree of effect on public health and safety:
Any herbicide treatment will conform to the Standard Operating Procedures and Mitigation Measures disclosed in the Final Programmatic Environmental Impact Statement for herbicide use on public lands in the 17 western states. This Final PEIS has determined that the approved chemicals within the analysis do not have a significant Impact on the human environment. Prescribed fires will conform to the burn plan which conforms to NWCG Guidelines and Policies for Prescribed Burns, NM Air Quality Bureau smoke regulations.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas:
The treatment area is exclusively within an Area of Critical Environmental Concern which was designated for its cultural and paleontological resources and its habitat values for wintering elk and deer. Herbicide and mechanical hand thinning are not expected to affect cultural or paleontological resources and would create better habitat for the wintering elk and deer herds. Mastication and prescribed fire would not occur in areas identified as having a potential for adverse effects to cultural or paleontological resources.

4. Degree to which the possible effects on the quality of the human environment are likely to be highly controversial:
Low because the Final Programmatic Environmental Impact Statement for herbicide use on public lands in the 17 western states determined that the approved chemicals within the analysis did not have a significant Impact on the human environment. Also, because the area is 10 miles from the nearest settlement, any adverse effects from prescribed fire activities (direct flame and/or smoke) are expected to be non-controversial and low.

5. Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risk.
Low because of the relative remoteness of the treatment area and mitigation measures, Standard Operating Procedures, and Best Management Practices that will be followed for the use of herbicide, prescribed fire, and thinning.

6. Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration:
The degree to which this action may establish precedence for future actions with significant effects is low because any future action of this size and complexity would avoid areas of significant concern including riparian, wilderness or other special designations, and populated areas unless detailed site-specific analysis occurs.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts:
The action would add to vegetative treatments that have occurred in the upper Rio Puerco Watershed for the last 50 years; mechanical hand thinning that has occurred for over 150 years; and fire that has occurred since ….a very long time.

8. Degree to which the action may adversely affect district, sites, highways, structures, or objects listed on the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources:
There is the potential to disrupt traffic along US 550 during prescribed fire activities as this is the western boundary of the ACEC. However, signs will be posted along the highway notifying motorists of the burn and the public would be notified through local new and radio channels.

9. Degree to which the action may adversely affect an endangered or threatened species or its critical habitat:
Low, any potential T&E species occurring in this planning area are outside of the potential treatment areas.

10. Whether the action threatens a violation of federal, state, or local environmental protection law:
This action is in conformance with federal, state, and local laws.

The preferred alternative violates no federal, state, or local environmental protection laws.

John R. Brenna
Acting Field Manager Rio Puerco Field Office

4/21/15
Date

Elk Springs Restoration

DOI-BLM- NM- A010- 2015- 32 - EA

February 10, 2015

Prepared by:

U.S. Bureau of Land Management
Rio Puerco Field Office
Albuquerque District
435 Montano Dr. Albuquerque, NM 87112

Signature of Project Lead _____ Date Apr. 20, 2015

Signature of NEPA Coordinator _____ Date April 17, 2015

BLM

Rio Puerco Field Office

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1.0 INTRODUCTION

The Elk Springs Area of Critical Environmental Concern is located in Sandoval County approximately 65 miles northwest of Albuquerque, New Mexico. The nearest population center is Cuba, located 12 miles north of the ACEC. Access to the ACEC is available from New Mexico State Highway 44 and several dirt roads leading to northern, central, and southern portions of the area. Several miles of road leading to the northern and central parts of Elk Springs cross private land.

1.1 Elk Springs Goals and Objectives

BLM developed goals and objectives based on interdisciplinary team input and public input received from meetings and field inspections, visits and data.

Goal: Increase quality and quantity of key forage species for wildlife and livestock through seeding, burning, cutting, thinning, herbicide and mechanical treatments of sagebrush and piñon/juniper trees in areas that the native and invasive species are out of proportion with the desired plant community.

Design Features:

- Improve or restore vegetation communities, habitats, and rangeland.
- Match vegetative treatments with ecological conditions of the treatment areas and that are compatible with sagebrush obligate species.
- Design treatments that are compatible with livestock grazing.
- Ensure vegetative treatments are compatible with existing plans.
- Where practicable, design treatments to blend with the natural topography and create a natural mosaic within sagebrush communities allowing for regeneration of sage and an increase in desirable forbs and grasses within the treatment area.
- Consider cumulative effects to vegetation and habitats when developing restoration treatments.
- Protect Threatened and Endangered, candidate and sensitive species habitat.
- Provide long term maintenance and effectiveness of treatments for maximized longevity of the project.
- Implement monitoring to ensure treatment effectiveness, maintenance of ecosystem health, in addition to achieving goals and objectives.
- Design and implement site-specific treatments that incorporate best management practices (BMP's) that include, but are not limited to, those illustrated in *Table 2.7: Vegetation Treatment Methods Best Management Practices* in the Fire and Fuels Management Plan Amendment and Environmental Assessment for Public Land in New Mexico and Texas. (USDI BLM, 2004).

1.2 Purpose and Need

Purpose

- Reduce the density of piñon and juniper trees which have encroached upon historically open grasslands and meadows.
- Limit the potential spread of wildfire by removing hazardous fuels through mechanical, herbicide thinning, prescribed fire, and seeding treatments.
- Protect, improve, or rehabilitate vegetation and wildlife habitat.
- Provide for public safety, protection of property and infrastructure.
- Maintain existing road infrastructure to minimize erosion and provide safe access to all users.
- Provide for healthy forest landscapes.

Need

According to the Healthy Forest Restoration Act of 2003 the BLM has a responsibility to conduct restoration projects to protect watersheds, wildlife habitats and address threats to rangeland health across the landscape. This plan is being developed to maintain and improve vegetation communities, improve Fire Regime Condition Classes (FRCC), and maintain or improve wildlife habitat and rangeland The Elk Springs ACEC Planning area vegetation has become decadent and altered by the establishment of invasive annual species, or has been affected by fire, drought, or disease.

1.3 Decisions to Be Made

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

1.4 Land Use Plan Conformance

The proposed action and alternatives described are in conformance with the Elk Springs ACEC Protection Plan, the Rio Puerco Field Office 1986 RMP as amended, the 2015 proposed RMP, the Fire and Fuels Management Plan Amendment and Environmental Assessment for Public Land in New Mexico and Texas (USDI BLM, 2004), and the 2010 Rio Puerco Field Office Fire Management Plan. Although not specifically addressed, the proposed treatments conform to wildlife objectives, fire and management decisions, or standard operating procedures, and BMP's in *Table 2.7: Vegetation Treatment Methods Best Management Practices* in the Fire and Fuels Management Plan Amendment and Environmental Assessment for Public Land in New Mexico and Texas (USDI BLM, 2004).

1.5 Relationship to Laws, Regulations, and other Plans

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

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

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

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

- Elk Springs ACEC Protection Plan, Record of Decision September 16, 1987
- Environmental Assessment for the Treatment of Noxious and Invasive Plants in the Albuquerque District, Decision Record June 5, 2012
- Vegetation Treatment Using Herbicide on Bureau of Land Management Lands in Seventeen Western States Programmatic EIS, Record of Decision September 29, 2007.
- IM No. 2008-030 Vegetation Treatments, Fire and Hazardous Fuels Reduction, Emergency Stabilization and Restoration, Threatened and Endangered Species, Wildlife Habitat and Noxious Weeds/Invasive Species.
- Fire and Fuels Management Plan Amendment and Environmental Assessment for Public Land in New Mexico and Texas (USDI BLM, 2004).

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

1.6 Tiering and Incorporating by Reference

The Council of Environmental Quality regulations at 40 CFR 1508.28, provides for tiering this EA to a broader Environmental Impact Statement (EIS). This EA tiers to the "Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States, Final Programmatic Environmental Impact Statement and Record of Decision (September 2007)." This EA also incorporates by reference, the environmental analysis with respect to herbicides as presented in Chapter 4, pages 4-1 to 4-253. This EA also incorporates by reference the environmental analysis and best management practices (*Table 2.7: Vegetation Treatment Methods Best Management Practices*) in the Fire and Fuels Management Plan Amendment and Environmental Assessment for Public Land in New Mexico and Texas (USDI BLM, 2004).

1.7 Potential Issues

The BLM has also held Interdisciplinary Team (ID Team) meetings. Issues identified from ID Team meetings are;

- What can be done to maintain, protect and improve wildlife habitat?
- What are the potential public safety and health concerns from use of herbicides?
- What are possible affects to wildlife habitat by mechanical fuels treatments?

- Can the potential for wildfire to spread from the valley floors, up drainages into upper elevations containing important habitat be mitigated?
- What are erosion and sedimentation impacts to resources from road maintenance and vegetation treatments?
- Protection, improvement, and restoration of soil and water resources.
- Need for important habitat enhancement and rehabilitation.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Location of Proposed Action

The Elk Springs Special Management Area / Area of Critical Environmental Concern is located in Sandoval County approximately 65 miles northwest of Albuquerque, New Mexico (See Map 1: Project Area and Proposed Areas to be treated).

2.2 Proposed Action-Vegetation Management and Habitat Rehabilitation

The BLM RPFO is proposing a number of restoration treatments to reduce stand densities to reduce the crown fire potential, improve wildlife habitat, improve overall ecological health and watershed restoration within the Elk Springs ACEC (see Map 1). Treatments would occur within defined treatment zones. Actual treatments within these zones would vary in widths and treatment types based on fuel types and topography. Habitat improvement and rehabilitation actions would enhance and rehabilitate rangeland and wildlife habitat. These management actions would be phased in over time depending on available funding. Treatment techniques (see list below) would be used individually or collectively to achieve desired conditions consistent with all applicable plans mentioned in Section 1.5 of this EA.

Mechanical Treatment
Planned mechanical treatment actions include hand thinning with chainsaws and or mastication equipment attached to rubber tired/tracked farm type tractors or a dozer.

Herbicide Treatment
Only herbicides approved through the 2007 EIS or more recently added herbicides approved for use on BLM administered public lands would be used in an integrated management approach to treat undesirable vegetation and hazardous fuels and control the growth of annual invasive species.

Herbicides would be applied in the spring or fall by aircraft, or ground application; herbicide may also be applied with crews utilizing backpack pumps to spray noxious weeds or annual invasive species. Besides the spot treatment of noxious weeds, any use of herbicide to reduce vegetation such as sagebrush or piñon/juniper would be closely collaborated with the affected permittee and a Cooperative Agreement or other Decision would be issued to establish grazing deferments post treatment in the affected area. This agreement or decision must be signed by the AO prior to treatment.

Seeding Treatment
In areas where the native seeds within the seedbank do not substantially re-vegetate the treated site, portions of treated areas would be seeded or planted at the optimal time depending on plant species after mechanical treatments and/or herbicide treatments are completed, depending on degree of surface disturbance and type of understory vegetation. Where possible, seeding would occur in areas where there is no spring grazing, where rest rotation grazing occurs to allow for seedlings to establish. This would be achieved by working closely with affected permittees to agree upon grazing deferments post treatment of chemical and prescribed fire.

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

Prescribed Fire
Prescribed fire fuels treatments would be utilized to reduce fuel loadings and stand densities that contribute to high intensity crown fires. The use of prescribed fire will require continuous fine fuels to be established and maintained through proper grazing use of the area prior to ignition. Prescribed fire treatments would adhere to BLM policy and guidance. Prior to implementing burning, a prescribed fire burn plan would be prepared, which addresses burn complexity, appropriate personnel and suppression equipment, fire weather, permits and contingency planning. Any prescribed fire would be closely collaborated with the affected permittee and a Cooperative Agreement or other Decision would be issued to establish grazing deferments post treatment in the affected area. Fine fuels may be necessary to support prescribed fire operations, therefore a grazing deferment pre-treatment may also be implemented. This agreement or decision must be signed by the AO prior to treatment.

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

Approximate acreage to be impacted by proposed actions would be about 5000 acres of which about 1082 acres would be located within existing disturbed areas (roads, previously burned, previously seeded). About 4000 acres would be new disturbance.

2.2.1 Mechanical Treatments on Hazardous Fuels
Proposed treatments would be constructed and maintained using a combination of methods including; mechanical, herbicides, prescribed fire, hand thinning, and seeding. Treatments would range from 50-2500 acres in size, depending on fuel types and location. Where possible, treatments would be constructed in a mosaic pattern to blend with existing vegetation and topography.

These treatments are needed due to the encroachment of piñon and juniper trees on historically open grasslands and meadows. Historic uses and active fire suppression have interrupted the natural fire regime in this fire dependent ecosystem. This has resulted in a reduction in the natural vegetative production and has degraded the community structure

normally found in this ecosystem, and the piñon, juniper invasion will continue to expand and displace the understory vegetation.
Herbicide treatments would be used to control invasive annual species, when deemed necessary through monitoring.

2.2.2 Road Maintenance and Improvement

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

2.2.3 Rangeland and Habitat Improvement and Restoration

Habitat restoration projects would include manipulation of large stands of vegetation with poor age class distribution to create a multiple age class stand which would increase the health and vigor of the stand. Mechanical treatments would be applied in a mosaic pattern to change the age class and stand structure. Prior to treatment the block would be monitored to determine what plant species are present in the area, and their average density and cover across the vegetation block. After treatment the block would be monitored (in treated areas) to determine changes in plant species density and cover. Treated areas could be seeded during or after mechanical treatments with a mixture of native grasses and forbs if deemed necessary (see Appendix I-Seeding Species and Rates). Treated areas may be sprayed with herbicide where necessary. These treated areas would have reduced fuel loadings, ladder fuels, and stand densities which, under the right conditions may have contributed to high intensity crown fires.

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

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

Habitat improvement projects include installing, modifying, and/or maintaining livestock exclosure fencing at riparian habitats identified in 2000 Environmental Impact Statement. Installing permanent fencing around portions of the meadows and springs would allow natural processes to restore soil, hydrologic, and vegetative functionality by improving water retention, reducing excess erosion/deposition, and decreasing impacts to vegetation from cattle. Properly treating riparian areas and the vegetation around them with the proper fuels removal/reduction techniques will aid in the natural functions of the riparian area and reduce the threat of devastating effects during a catastrophic wildfire.

Once enclosed riparian areas have reached Proper Functioning Condition (PFC) in accordance with the 2000 Riparian EIS, and have expanded to their potential extent, at the BLM's discretion these areas would be considered for prescriptive grazing if determined necessary to meet resource objectives.

Woodland / Vegetative Restoration

Piñon / Juniper Woodlands would be thinned to reduce the current average crown/canopy cover of 45% to 85% down to 15% to 30%. This would be done utilizing chainsaws, a masticator, broadcast burning, and fuelwood removal. The use of the masticator would be limited to slopes less than 20% and would not be utilized in rocky areas. Primary access to fuelwood cutting units will be on existing roads. Thinning that generates fuelwood is intended to be primarily done by a single operator. However, limited personal use fuelwood harvest may be appropriate in some areas. Slash from brush will be scattered into adjacent or nearby gullies, rills, arroyos or areas of bare ground to reduce erosion and provide cover to encourage regeneration or grasses and forbs.

2.2.4 Maintenance and Monitoring

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

Monitoring would be implemented to ensure goals and objectives are achieved. In addition, monitoring would establish baseline data, gauge the effectiveness of treatments and mitigation measures, and would be used to determine the need for treatment maintenance. The methods used to monitor vegetation treatments may include a combination of photo point, paced and permanent density, line-point intercept, gap intercept, belt transects, production plots, and Rangeland Health Assessments. Monitoring for riparian restoration will follow the Properly Functioning Condition Assessment. Monitoring for invasive species would also include infestation size, density and damage potential. Monitoring would also include fire regime condition class evaluation and vegetation displacement or "die off" monitoring.

2.3 Proposed Environmental Protection Measures and Design Features

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

1. Herbicide application rates (range of rates) and application would be subject to label restrictions and standard operating procedures (SOPs) (See Appendix II). A Pesticide Use Proposal (PUP) will be implemented prior to any treatment of herbicides and a Pesticide Application Record (PAR) will be filed within 24 hours of treatment. Herbicides would be applied according to BLM regulation and herbicide labels. Often times below suggested labeled rates for native species thinning, and following NMSU and /or USDA publications where applicable. Mitigation measures for the use of herbicide will be followed according to Appendix III.

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

3. Adverse effects to NRHP eligible or unevaluated sites would be resolved through avoidance, mitigation, or minimization during the course of this project. An archaeologist would be involved as detailed plans are developed for each phase of the implementation to ensure resolution of adverse effects is factored into the detailed project designs. An archaeologist would review plans for each phase of the project's implementation to ensure adverse effects to NRHP eligible or unevaluated sites are avoided, minimized or mitigated

4. Any unanticipated archeological discovery on BLM lands will be reported to a BLM archeologist and work in the immediate vicinity will stop until SHPO, or if appropriate, affected Tribes are consulted.

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

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

8. Protective temporary fences would be constructed to BLM specifications for wildlife. Fences requiring four wires would be built with a smooth bottom wire if wildlife surveys have determined that the area is utilized by antelope. Wood posts are often a much more economical permanent fence than Easy-Fence panels, however for areas subject to fire or wet soils a painted metal pipe or angle iron brace set in concrete is the best choice.

Permanent fences would be built to BLM specification in coordination with affected grazing allottee(s) and interested user groups. Temporary fences (<3 yrs) used for livestock deferments of treatment areas would be maintained by the BLM, while permanent fences, when deemed necessary and in close collaboration with the affected allottee, would be maintained by the allottee through the issuance of a Cooperative Agreement.

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

11. For projects involving ground disturbance, historic properties (i.e. archaeological sites listed unevaluated or eligible for inclusion on the National Register of Historic Places) could be avoided during project implementation. Avoidance buffers of at least 30 meters from National Register sites would be observed during project implementation.

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

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

14. Any construction or any alteration of the land itself would comply with VRM Class II standards in order to The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. (BLM Manual H-8410-1)

2.4 Alternatives

The following alternatives were developed based on discussion with ID Team Members.

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

Alternative B is identical to the proposed road maintenance habitat improvement and restoration projects as described in the Proposed Action.

No habitat restoration described in 2.2.3 would occur. Depending on the Travel Management Plan, any roads identified as open or restricted would be maintained and/or improved. The maintenance and road design features would adhere to the BLM Gold Book standards for roads. Important design considerations include drainage, waterbars, turnouts, and proper compaction and surfacing.

2.4.2 Alternative C – Enhanced Vegetation Management Including Site Specific

Prescribed Grazing

Alternative C is identical to the proposed action with the some exceptions. This alternative would include expansion of the mechanical or prescribed fire treatments which would increase the acreage of that treatment. The area would be mechanically treated, fenced and seeded with a mixture of native and introduced grasses. After seeding, the area would be closed to grazing for a minimum of two growing seasons. This area would provide forage for wildlife and livestock. Once vegetation objectives are met, these treatments would be maintained using a combination of mechanical, herbicide, and prescribed grazing actions.

Under this alternative prescribed grazing would be implemented as needed to meet resource objectives on the proposed Elk Springs Restoration and ACEC protection plan area. Approximately 10,334 acres could be impacted by this alternative.

2.5 No Action Alternative

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

3.0 AFFECTED ENVIRONMENT

The ACEC has a semi-arid climate with pleasant summers and fairly long, dry, cold winters. Growing season moisture accounts for 60 percent of the annual precipitation and occurs in high intensity short duration thunderstorms. Average precipitation is about 12 inches. The average annual snowfall is nearly 40 inches in the higher elevations.

3.1 Supplemental Authorities

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

Table 4. Supplemental Authorities

Critical Element	*Present*		*Affected*		*Rationale*
	Yes	No	Yes	No	
Air Quality	Present		Affected		See Section 4
ACEC's	Present		Affected		
Cultural Resources	Present			Not Affected	See Section 4
Environmental Justice		Not Present		Not Affected	
Floodplains		Not Present		Not Affected	No FEMA mapped floodplains are present within the planning area.
Invasive, Non-native Species	Present		Affected		See Section 4
Migratory Birds	Present		Affected		See Section 4
Native American Religious Concerns	Present		Affected		See Section 4.

Prime or Unique Farmlands		Not Present		Not Affected	
Threatened and Endangered Species		Not Present			
Visual Resources	Present		Affected		Project area is a VRM Class II and projects approved must match the objectives lined out in BLM Manual H-8410-1 for the assigned VRM class.
Wastes, Hazardous or Solid		Not Present		Not Affected	
Water Quality (Surface and Ground)	Present		Affected		Effects to surface water quality and quantity are expected to occur from restoration of and exclusion of cattle grazing from meadow/ spring habitats. (See section 4)
Wilderness		Not Present		Not Affected	

3.1.1 Air Quality

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

3.1.2 Cultural Resources

The Elk Springs ACEC falls within the northern Rio Puerco drainage, which has seen occupation from 12,000 years ago to the present. While evidence of Paleoindian occupation has not been found within the ACEC, it lies between the Valles Caldera and the Rio Puerco, both of which have evidence of Paleoindian and Archaic use. Much of the known archaeological record of the Elk Springs ACEC pertains to the period between AD 1100 to AD 1300. Sites include habitation sites with burned jacal, and ceramic and lithic scatters. The historic occupation ranged from the late 1800s coal and metal mining activities to homesteading and coal mining activities during the first half of the twentieth century. Sites of these periods include cabins, mines, adits, and homesteads, all with associated refuse scatters. The sites from the historic period are likely to contain combustible resources.

In accordance with BLM policy, the Rio Puerco Field Office complies with the National Historical Preservation Act (NHPA) hand in hand with the NEPA process. In New Mexico, BLM carries out many of its NHPA Section 106 responsibilities under a protocol agreement with the New Mexico State Historic Preservation Officer (SHPO), which is authorized by the

National Programmatic Agreement among the BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers. Any actions tiered to this EA would constitute a separate undertaking under the NHPA, and would require additional Section 106 compliance.

3.1.3 Invasive Non-native Species and Noxious Weeds

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

Noxious weeds, native and non-native invasive species generally occupy areas of disturbance, such as along commonly used travel routes. Native and non-native invasive species known in the planning area include those identified as Class A, Class B and Class C Noxious Weeds in accordance with the NMDA Troublesome Weeds of New Mexico.

Cheatgrass is found interspersed throughout the ACEC and has been observed in dense concentrations in the late spring. Due to its relative coverage within the ACEC, there is a high probability that a large amount of seed exists in the seedbank.

Saltcedar is also present within the arroyos and drainages within the ACEC but large, dense, continuous strands are non-existent. Furthermore, the saltcedar beetle is present within the site.

3.1.4 Migratory Birds

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

Treatment areas are dominated by sagebrush/grass and piñon/juniper vegetative communities intermixed with small isolated pockets of mixed conifer. Migratory birds commonly associated with these vegetative communities include: black- throated sparrow (*Amphispiza bilineata*), Brewer's blackbird (*Euphagus cyanocephalus*), Brewer's sparrow (*Spizella breweri*), burrowing owl (*Athene cunicularia*), canyon wren (*Catherpes mexicanus*), gray flycatcher (*Empidonax wrightii*), green-tailed towhee (*Pipilo chlorurus*), loggerhead shrike (*Lanius ludovicianus*), rock wren (*Salpinctes obsoletus*), sage sparrow (*Amphispiza belli*), sage thrasher (*Oreoscoptes montanus*), western meadowlark (*Sturnella neglecta*), and vesper sparrow (*Pooecetes gramineus*) (Great Basin Bird

Observatory, 2003). The burrowing owl are BLM designated sensitive species and are discussed in section 3.1.20.

3.1.5 Native American Religious Concerns

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

A diversity of deeply rooted cultural traditions is one of the special characteristics New Mexico offers. Many Native American tribes and pueblos continue traditional cultural connections with lands within the project area. Some areas of traditional cultural concern to tribes are known to the RPFO, although none are specifically known to the BLM within the Elk Springs ACEC. To identify other areas of concern for this action, consultation with the appropriate tribes was initiated by mail on February 27, 2015 (see list of Tribes consulted in Section 7.0)

3.1.6 Threatened and Endangered Species

No known listed species or critical habitat are known to occur within the project area. A list of special status species identified as having the potential to exist within Sandoval County can be found in Appendix IV.

3.1.7 Water Resources

The project area is dissected and drained by ephemeral, intermittent, and perennial sources of water. Precipitation over the area consists of summer convective storms (aka monsoon season) and frontal precipitation over the fall-winter-spring period. Winter period precipitation commonly occurs as snow, which accumulates enough in most years to produce some degree of snowmelt runoff. Monsoon rains typically produce the larger flow events that are seen in the area.

3.1.8 Fire and Fuels Management

The majority of the Planning Area and all proposed actions of this project are located within the Albuquerque District Fire Management Unit (FMU). Wildfire Management priorities for this FMU are:

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

Albuquerque District Fire Regimes

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

Table 17. Fire Regime Description

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

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

Data extracted from Albuquerque District GIS shows the following FRCC types and acreages for the planning area:

Table 18. Planning Area Fire Regime and Fire Regime Condition Class (FRCC)

Fire Regime	Acres	Percent of Planning Area
I	694	16
II	2,728	63
III	910	21
IV	0	0
V	0	0
Condition Class		
1	1,428	
2	6,193	
3	860	
Other*	126	

*Other includes Non-Classified lands..

3.1.9 Geology and Minerals

The Mancos Shale in Elks Spring is characterized by numerous thin, slabby to platy resistant

calcarenite beds separated by varying amounts of dark gray clay shale and containing a diverse array of fossils. The Mesita Juana Lopez Grant area is made up of approximatlely 10 feet of very calcareous sandstone outcropping. The Elk Springs (San Juan Basin reference section is 106 feet and 11 inches thick and consists predominately of black shale with thin, slabby calcarenite interbeds. The thickness of the reference section is typical of the eatern side of the San Juan Basin, but to northwest it thins to about 50 feet.

Several areas within Elks Springs contains moss rock that is utilized for landscaping and construction projects.

3.1.10 Public Health and Safety

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

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

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

3.1.11 Rangeland Management

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

Table 19 Allotment Acres

ALLOTMENT	PUBLIC	PRIVATE	STATE AC.	TOTAL AC
Coal Creek	5277	1567	610	7454
Los Pinos Arroyo	3990	320	0	4310
Totals				

Livestock grazing operations in the project area can be impacted by wildfires and the

subsequent recovery and rehabilitation efforts. In most cases wildfires would require temporarily closing the burned portions of the allotments to livestock grazing. Wildfires can also result in the loss of native perennial forage, followed by an increase of piñon-juniper and other non-native annual species.

3.1.12 Recreation

Recreation opportunities in the Elk Springs ACEC include hiking, camping, horseback riding, sightseeing, photography, and hunting. Recreation use in the area is low, but is expected to increase given current and future recreation trends. Population increases within the two highest population centers in New Mexico (Albuquerque and Santa Fe) are projected. BLM public lands within the Rio Puerco Resource Area are within an hour and a half drive of these two cities. BLM lands provide uniquely different recreational opportunities because of the lower relative elevation and predominately arid nature. Also, recreational opportunities on BLM lands are frequently available during seasons when higher elevation public lands are not accessible.

3.1.13 Special Status Species

Both Threatened and Endangered Species (addressed in 3.2.4) and BLM designated Sensitive Species (addressed below) are considered Special Status Species. BLM policy is to provide these species with the same level of protection as provided for candidate species in BLM Manual 6840.06C, that is to "ensure that actions authorized, funded, or carried out do not contribute to the need for the species to become listed".

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

Migratory Birds
Lewis's woodpecker inhabits open woodlands and is most often found in riparian woodlands. Habitat requirements include abundant flying insects, open space for foraging, and dead tree cavities for nesting (Floyd et al. 2007).

Loggerhead shrikes tend to favor arid open country with just a few perches or lookouts. Nesting occurs in isolated trees and large shrubs. Loggerhead shrikes forage mainly on small vertebrates and insects, and benefit from habitat with a diverse structure and species composition. Healthy sagebrush communities provide ideal habitat for these birds.

The sage thrasher is considered a sagebrush obligate. Habitat requirements include large expanses of tall, dense, intact sagebrush. Typically associated with big sagebrush, but may sometimes occur in shrublands dominated by greasewood or bitterbrush (Floyd et al. 2007).

Brewer's sparrow is also considered a sagebrush obligate, but may use other shrubland habitat types such as salt desert scrub. Brewer's sparrow is described by Floyd et al. (2007) as one of the most common birds found in northern Nevada shrublands, however, populations may be declining due to loss and degradation of sagebrush habitat.

3.1.14 Vegetation

Vegetation is characterized by types typical of piñon-juniper woodlands and sagebrush-dominated valleys. Key forage species for livestock and wildlife include mountain mahogany, Gabel's oak, four wing saltbush, bottlebrush squirrel tail, and Indian rice grass. Besides providing crucial wintering habitat for deer and elk, the ACEC is also home to various species of game and non-game animals including mourning doves, coyotes, cottontail rabbits, songbirds, birds of prey, and numerous species of small rodents, lizards, and snakes.

3.1.15 Visual Resource Management

Visual Resource Management (VRM) is a process to manage the quality of the landscape and minimize potential impacts to the visual setting resulting from development activities. The BLM has defined management classes to identify permissible levels of landscape alteration while protecting the overall visual quality of an area. VRM classes are assigned to public land units through the use of visual resource inventory during the BLM's land use process. Overall the existing landscape within the Elks Spring ACEC has been altered due to wildfires, installation of range improvements (fences and seedings), and restoration treatments, roads, and mineral exploration. However, areas within the upper elevations of the range retain many characteristics of the natural landscape. The 'wide open' vistas in the project area contrasts sharply with the typical Jemez Mountain view shed of mountains and valleys.

The majority of the project area is located within the Elk Springs ACEC which is a VRM Class II. The objective for Class II is to retain the existing character of the landscape. The level of change should be characteristic to the landscape and must not attract attention. The project area also consists of lands surrounding the Elk Springs ACEC and are classified as VRM Class IV. The objective of a Class IV designation is to provide for management activities that require major modifications of the existing character of the landscape. Management activities may dominate the view or be the major focus of the viewers' attention. The level of change to characteristic landscape could be high; however every attempt should be made to minimize the impact of these activities.

Overall the existing landscape within the Elk Spring ACEC has been altered due to the lack of wildfires, restoration treatments, roads, and mineral exploration. However, areas within the upper elevations of the range retain many characteristics of the natural landscape. The

'wide open' vistas in the project area contrasts sharply with the typical Jemez Mountain view shed of mountains and valleys.

3.1.16 Soils

Soil types present on the landscape include those formed in-place weathered from bedrock, and soils formed in deposited alluvium. The over-riding importance of soils is to support vegetative communities, which in turn provide soil and watershed stability. Soils on the project area are described by Cabezon Area (NM) Soil survey; dominant soils types are sandy loams on ridges and mesas, clay loams on knolls and hills, and clay loams on alluvial fans and floodplains. Erodibility of the various soils from water ranges from low to high.

Ecological site classifications in the project area, which help describe soil properties, include shale hills, loamy, clayey, shallow loam, salty bottomland, loamy upland, swales, and salt flats.

3.1.17 Wildlife

Big Game

Deer were probably never uniformly abundant over the Southwest, but the species occupied a wide variety of habitats. In New Mexico, the population reached a low at about the turn of the century and a high in the 1950,s and early 1960,s. In accordance with game statistics the general population trend of the Jemez deer herd is stable to declining.

The NMDG&F Terrestrial Wildlife Operation Plan set population goals for the Jemez deer herd (unit 6) at 5,600 with 4,200 deer on USFS lands and 280 on BLM lands in 1995. Recent data suggests that the population has declined. The decline is believed to be due primarily to the increase in the size of the wintering elk herd.

Elk, like other species of wildlife, were completely eliminated from New Mexico by the early 1900,s. Through the efforts of wildlife managers, elk were reintroduced into New Mexico beginning in 1910, from the Yellowstone National Park herds (Gates 1967). By 1957 elk could commonly be found in the Jemez Mountain range.

The general population trend of the Jemez elk herd is steadily increasing. This increasing population trend is evident in many areas of the Southwest for various reasons. Specific evidence related to the Jemez elk herd indicates that vast areas of habitat conversion from piñon-juniper woodland to grass rich mesas and valleys through vegetation projects have allowed for expansion and population growth.

Vegetation monitoring studies conducted since 1970 by BLM indicate a stable to downward trend in forage browse, and grass species. The vegetation treatment areas treated in past decades have begun to revert to the piñon-juniper sagebrush community types. As these community types become reestablished, understory vegetation is crowded out and the areas lose their forage value for deer and elk.

3.1.18 Paleontological

Within the Elk Springs ACEC is a 40 acre Research Natural Area containing the San Juan Basin Reference Section for the Juana Lopez Member of the Mancos Formation. The Juana Lopez is a member of the Mancos Shale in northwestern New Mexico and southwestern Colorado and a member of the Carlisle Shale in central and southeastern Colorado and northeastern New Mexico. It is characterized by numerous thin, slabby to platy resistant calcarenite beds separated by varying amounts of dark gray clay shale and containing a diverse array of fossils. A reference section of this type is important from a paleontological perspective and represents a unique resource. This rock exposure in the ACEC serves as a standard for correlation of the Juana Lopez Member throughout its area of deposition and provides a standard for paleontological correlation worldwide. Because this local is highly significant and has been used for the scientific study of Upper Cretaceous New Mexico faunal assemblages, the area is to be preserve without change for future reference and study.

Throughout the San Juan Basin, calcarenite, shale, and concretions in the Juana Lopez Member are fossiliferous. Severn genera of mollusks dominate the invertebrate fauna almost to the exclusion of others. These are the ammonites Prionocyclus, Scaphites, Baculites, and Coilopoceras, and the pelecypods (clams) Inoceramus, Lopha, and Lucina. Many of the species are widely distributed in time-equivalent strata in the western interior and thus form a good basis for faunal zonation and correlation. Good faunal zoning ca be recognized in the thick Juana Lopes section in the San Juan Basin.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Proposed Actions and Alternatives

4.1.1 Air Quality

Proposed Action

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

The result of construction of proposed restoration treatments would reduce potential environmental impacts to air quality from wildfires as these treatments would limit the size and spread of a catastrophic wildfire.

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

Alternative C
Impacts would be somewhat greater compared to those described in the Proposed Action Section. Under this alternative, the restoration treatments would leave a larger footprint of disturbance and would create more dust, vehicle emissions, etc., during construction. These impacts would be expected to remain localized to the area and be short term.

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

4.1.2 Cultural Resources

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

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

Under the proposed action a mixture of re-seeding and other re-vegetation projects would be implemented. A variety of methods would be used, including a rubber tired tractor and drill seeder. Additionally, a harrow or rotary mower or other mastication equipment would be used to remove native vegetation and other vegetation from the proposed treatment

locations. Seeding may also be done using a rangeland drill seeder or broadcasted utilizing (ATV or tractor) or by aircraft. Re-vegetation actions that involve impacts to any eligible site would not proceed. Planting within eligible or unevaluated sites would involve hand planting seedlings with minimal ground disturbance or broadcast seeding in order to avoid cultural site impacts.

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

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

Alternative B
Planned road maintenance under Alternative B would include using heavy equipment to blade or grade existing roadways to remove vegetation and improve access. Grading of road surfaces would be limited to existing road width footprints and would allow for maintenance of ditches and shoulders. Maintenance and improvement actions that involve a road that affect an eligible site will not proceed without resolution of adverse effects through avoidance, minimization or mitigation; likely to involve data recovery and/or monitoring. Data recovery or monitoring, if needed, would be conducted by a qualified BLM- permitted archaeologist.

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

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

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

4.1.3 Invasive Non-Native Species and Noxious Weeds

Proposed Action
There is a potential for noxious weeds and invasive, non-native species to invade project areas following treatment, especially by cheatgrass due to the high probability of seeds

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

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

Alternative B

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

Alternative C

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

No Action Alternative

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

4.1.4 Migratory Birds

Proposed Action

Impacts to migratory birds may include temporary displacement of short duration from foraging habitats during construction of treatment areas, road maintenance, and restoration activities (including upland and riparian restoration, construction of exclosure fencing, and potential relocation or addition of troughs). No displacement from active nests would be expected, since a nesting survey would be conducted for any

disturbance activities conducted during the breeding season (March 1st – August 31st) and protective buffers around active nests established. Migratory bird species that nest or forage in dense sagebrush habitats may lose a small percentage of suitable habitat to restoration treatments; however, treatments would mostly occur in areas which were historically more open and composed of lesser amounts of sagebrush or piñon and juniper. Migratory bird species that prefer lower shrub densities and more open areas for foraging and nesting may gain a small percentage of suitable habitat from treated areas.

Treatments would reduce sagebrush and piñon-juniper canopy cover and density in strategic areas, which would help to slow the spread of wildfire, reducing the risk of damage to or loss of sagebrush and piñon-juniper habitats for migratory birds. Treatments would protect existing sagebrush and piñon – juniper habitats, which often convert to less desirable habitats composed of invasive plant species after wildfire. Where possible, treatments would be established in areas that are being encroached upon and overcrowded by either or both, invasive native species or non-native noxious weed species, thereby reducing the amount of existing habitat impacted.

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

Alternative C
Impacts to migratory birds would be identical to those described in the Proposed Action Section above.

No Action Alternative
Without protection provided by restoration treatments, large areas of migratory bird habitat would continue to be threatened by catastrophic wildfire. Existing sagebrush and piñon /juniper habitats would likely convert to less desirable habitats after wildfire, making them less suitable for many species of migratory birds. Not implementing habitat restoration activities would allow continuing degradation of sagebrush, woodland type habitats and riparian areas in the planning area, making them less suitable habitat for migratory birds.

4.1.5 Native American Religious Concerns

Proposed Action
No adverse impacts are expected to Native American religious concerns from implementation of the proposed action because no specific concerns are known within the treatment area.

Alternative B
Same as the proposed action.

Alternative C

Same as the proposed action.

No Action Alternative
Same as the proposed action.

4.1.6 Water Resources

Proposed Action
Under the proposed action, treatments would minimize impacts to water quality by including best management practices (BMP's) to protect against soil erosion and water quality degradation in both the short and long term. The over-riding water quality concern is sediment delivery to streams resulting from soil-disturbing activities or treatments that remove soil cover. Short term impacts may include increased sediment loading after activities that cause soil disturbance or soil cover removal. Road maintenance may lead to increased sediment loading in streams during or immediately after improvement work, however proper maintenance of roads will decrease long term sediment loading. The amount of upland and channel erosion and sediment introduced to surface waters after vegetation treatment activities would depend on the time of year and climate variations. These impacts would be most likely result from summer convective storm season and persist until vegetation stabilizes the treated areas - likely at least one growing season with climatological factors determining the regrowth of these plants.

Over the long term, however, these improvements and natural processes would help improve the watershed (soil and water) condition which would aid in decreasing seasonal erosion during rainstorms, snowmelt periods, and streamflow events. Areas with improved riparian habitat functionality may also result in improved water temperatures regimes during the summer.

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

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

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

4.1.7 Fire and Fuels Management

Proposed Action
The proposed action would help to prevent the spread, size, and intensity of future

wildfires from burning the remaining sensitive species habitat and vegetation within the Elk Springs ACEC. Fire size and intensity would be reduced by providing effective barriers to slow or stop large wildfires and provide anchor points and safety zones for suppression resources. The areas in general would become more accessible due to the proposed road improvements, allowing suppression resources to have a quicker response time. Maintenance of the existing treatments (several mechanical hand thinning's, old chaining's and prescribed burns) would ensure their continued effectiveness of fuels reduction to stop or slow the spread of future fire events. Changes in fire regimes and condition classes should stabilize as remaining native vegetation would be protected over time. Areas where restoration efforts take place would help to restore the natural Fire Regime and Condition Class to the Elk Springs ACEC.

Alternative B

This alternative would help to prevent future wildfires from burning on such a large scale. Suppression resources would have more access which would quicken response times to fire events. Under this alternative the potential for larger, more catastrophic wildfires would decrease, as more areas would be treated overall.

Alternative C

This alternative would have the same impacts as those described under the Proposed Action Section.

No Action Alternative

If the no action alternative is selected, the potential for a large wildfire to burn into the Jemez Mountains is highly likely. Fire history demonstrates there have been multiple wildfires in New Mexico that have threatened the range from the valley floors or the foothills. Sensitive resource values would remain at high risk for large wildfire. The potential of fire to run up drainages to important habitat areas in the higher elevations would persist. Large areas of important wildlife habitat would remain vulnerable to loss from catastrophic wildfire.

4.1.8 Geology and Minerals

Proposed Action

If on the ground activities are appropriately planned and coordinated with operators of mineral activities, there would be no negative effects on mineral resources from the proposed action. Also, improving roads would likely increase interest in the area for mineral materials, such as "moss rock". Improvements to access would benefit those potential operators engaged in exploration or development for mineral resources in the project area. Those operators would be expected to maintain the roads they use to the standard set in their plan of operations.

The proposed action would result in an improved vegetative environment which would have the effect of reducing the fire exposure to the moss found on the "character rock" or future mineral operations to catastrophic wildfire.

Alternative B

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

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

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

4.1.9 Public Health and Safety

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

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

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

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

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

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

4.1.10 Rangeland Management

Proposed Action
The proposed action would have both direct and indirect impacts to livestock grazing operations. Direct impacts are expected to be minimal and would include temporary

short term displacement of livestock during treatment and potential closure of some project areas to grazing until the treatment objectives have been achieved.

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

Indirect impact from treatments within shrub areas would be the subsequent increase in the amount of perennial grasses and forbs resulting in improved forage quality and quantity for grazing animals. The proposed treatments would reduce the potential for increased fire cycles and reduce the threat of large-scale wildfires which would lessen the need to temporarily close areas to grazing in the future. Additional impacts may include concentrated livestock grazing within seeded areas once they are established. There would be a benefit to grazing allotments and rangeland improvements since they would potentially be protected from wildfire.

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

Alternative B

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

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

Alternative C

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

No Action Alternative

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

4.1.11 Recreation

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

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

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

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

4.1.12 Special Status Species

Proposed Action
Impacts to special status species may include temporary displacement of short duration from foraging habitats during construction treatments, road maintenance, and restoration activities (including upland and riparian restoration, construction of exclosure fencing, and potential relocation or addition of troughs). Impacts to special status species may also include loss of a small percentage of suitable habitats for some species, gain of a small percentage of suitable habitats for some species, and improvement in the quality and diversity of upland and riparian habitats. Proposed treatments may protect large areas of existing Special Status Species habitat from wildfire.

Raptors
Impacts may include temporary displacement from foraging habitats, gain of a small percentage of suitable foraging habitats, loss of a small percentage of foraging habitats, and an increase in the available prey base through an increase in the quality of habitat for small mammals.

Migratory Birds
Impacts may include temporary displacement of short duration from foraging habitats during construction of treatments, road maintenance, and restoration activities (including upland and riparian restoration, construction of exclosure fencing, and potential relocation or addition of troughs) No displacement from active nests would be expected, since a nesting survey would be conducted for any disturbance activities conducted during the

breeding season (March 1st– August 31st) and protective buffers around active nests established. Impacts may also include loss of a small percentage of suitable habitat consisting of dense sagebrush cover. Restoration of sagebrush stands to promote multiple age class stands and restoration of vegetation displacement areas would likely improve habitat quality for these species.

The planned treatments would reduce sagebrush and piñon juniper canopy cover and density in strategic areas, which would help to slow the spread of wildfire, decrease soil loss/erosion and encourage the re-establishment of native grasses and forbs. Thereby reducing the risk of damage or loss of sagebrush, piñon/juniper and the mixed conifer habitats for some migratory birds. Vegetative restoration treatments would protect and enhance existing habitats, which often convert to less desirable habitats composed of invasive plant species after wildfire. Restoration treatments would be established in areas where fuel loadings and stand densities could contribute to high intensity crown fires and or areas where grasses and forbs are being reduced or are lacking due to the encroachment and overcrowding by sagebrush or piñon /juniper

4.1.13 Vegetation

Proposed Action

Approximately 10334 acres of vegetation could be altered by the proposed actions. The proposed action includes seeding with approved species to ensure re-establishment of less flammable perennial vegetation within the treatment zone. The proposed action also includes the application of herbicide to control invasive annual vegetating while promoting the release of native species and the successful establishment of seeded species.

Species composition of vegetation would change within treated areas due to these seedings. Construction of the treatment areas would protect and enhance existing habitat in the Elk Springs ACEC from loss due to catastrophic wildfire.

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

Treatments within even aged, late seral, sagebrush and or piñon -juniper stands would promote species diversity and a variety of age classes. The areas treated would break up fuel continuity and reduce overall fuel loading creating breaks within the vegetation that will slow or stop an advancing wildfire. These breaks would help to create a more balanced age-class mosaic within these even aged sagebrush and piñon/juniper communities as well those areas where ponderosa pine and Douglas fire are present. Reducing tree and shrub competition should release and allow for increase of forbs and native grasses within the treatment area. Remnant grass patches show site potential and would expand if sagebrush and piñon/juniper was reduced. The reduction of both sagebrush

and piñon/juniper dominance would improve the watershed conditions; improve the plant diversity and production of forage for wildlife, expanding habitat complexity along with edge effect, ecotone, development.

Alternative B
If this alternative is chosen there would be very minor impacts to vegetation. Minimal disturbance to vegetation would take place along existing roads and during restoration activities. Restoration of vegetation through seeding, seedling/plant plugging activities would stabilize or increase plants species abundance and diversity.

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

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

4.1.14 Visual Resource Management

Proposed Action
The VRM Class II lands could potentially be detrimentally impacted by activities presented in this Proposed Action. In order to mitigate these negative impacts, the BLM Manual H-8410-1 objectives should be followed in order to reduce the visual impact of activities. The VRM Standard Environmental Colors chart should be utilizied to reduce any additional construction in the area. The project purpose is to rehabilitate naturally occurring vegetation in the area, and if mitigation is followed appropriately, the project will lead to an increase in visual quality of the area over time.
The Visual Resource Management Class IV is the most liberal of all the management classes, and allows for extensive modification to the existing landscape. Impacts to visual resources would be low as fuels reduction and restoration treatments would be blended with the surrounding topography (see proposed action), repeating basic elements of line, form, color, and texture. Casual observers would see few intrusions to the view shed. Fencing springs and meadow areas would create linear intrusions to the viewshed. These intrusions would be localized to small areas and would not dominate the setting.

Alternative B
There would be no direct or indirect impacts to visual resources beyond what is present.

Alternative C
Impacts would be the same as those described in the Proposed Action Section with larger areas being treated, thus being more noticeable in the in the viewshed leaving a more natural look on the landscape.

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

4.1.15 Soils

Proposed Action
The environmental impacts on soils could include disturbance up to 10,334 acres. When specific project areas are specified, site-specific BMP's, including but not limited to those listed in the State Fire Plan Amendment (USDI BLM, 2004), will be developed and employed for the protection of soil resources.

Mechanical treatments (hand thinning with chainsaws) would scarify the soil surface to a depth of approximately two inches only when dragging heavy logs for a short distance. Remaining slash and debris would be scattered in areas of bare ground, arroyos, gullies and/or rills to protect the soil from wind and water erosion and also to provide a microclimate and protection for the re-establishment of grasses and shrubs. Mastication and other mechanical treatments on the soil surface may compact soils when moist, but would not disturb soil horizon layers. These impacts should be minimal as there would be little back and forth travel along the same route. The application of herbicide would not disturb surface soils or alter existing soil structure. Prescribed burning would not disturb surface soils, however it would remove vegetation and surface litter therefore increasing the potential for water and wind erosion; burning on soils with high erosion potential will be minimized (USDI BLM, 2004).

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

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

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

Alternative B
Under this alternative approximately 217 acres of soils would be disturbed through road maintenance and improvement actions in areas previously disturbed. This disturbance is subject to change once the Travel Management Plan has been implemented for the RPFO. Restoration of vegetation through seeding, seedling/plant plugging activities once they take place along with removal of grazing pressure, could potentially stabilize sheet, rill, and gully erosion.

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

No Action Alternative
Under the no action alternative there would be no new disturbance or exposure of soils as

fuels reduction treatments would not be implemented. However, in the event of a catastrophic wildfire, wind and water erosion caused by loss of vegetation in burned areas would occur. Impacts from erosion could range from low to high depending on the size of the fire, soil types impacted and whether emergency stabilization and rehabilitation treatments are implemented.

4.1.16 Wildlife

Proposed Action
Impacts to wildlife species from the proposed treatments may include temporary displacement from suitable habitats, loss of a small percentage of suitable habitats for some species, and gain of a small percentage of suitable habitats for some species. Impacts from restoration activities may include temporary displacement of short duration from implementation areas and improvement in the quality and diversity of sagebrush and woodland type (piñon/juniper and mixed conifer) habitats. Restoration of vegetation displacement areas would likely improve habitat quality for many wildlife species. Proposed treatments and road maintenance may protect large areas of existing wildlife habitat. Some small rodents and/or reptiles may be lost from the treatments requiring mechanical vegetation removal or prescribed fire; however, the equipment travels slow enough that most would be able to avoid harm.

Crucial winter and year-round elk and deer habitat would be improved with any one type of treatment. Improved road conditions from road maintenance may increase hunting pressure on elk and deer in this area. Any increase in hunting pressure is likely to be small since road maintenance would be performed only on existing roads that already provide access for hunters.

Alternative B

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

Alternative C
Impacts to wildlife would be identical to those described in the Proposed Action Section above.

No Action Alternative
Without protection provided by the treatments, and improved roads, large areas of wildlife habitat would continue to be threatened by catastrophic wildfire and erosion. Existing habitats would likely convert to less desirable habitats after wildfire and continued erosion, making them less suitable for many wildlife species. Not implementing habitat restoration activities would allow continuing degradation of existing habitats in the planning area, making them less suitable for wildlife species.

4.1.17 Paleontological

Proposed Action
Under the proposed action paleontological resources would be at a high risk for adverse effects from the use of heavy equipment including dozers, tractors, and masticators within the Juana Lopez Area. Prescribed fire, the use of herbicide, and hand thinning to remove undesirable vegetation has a low potential for adverse effects but surveys should be conducted prior to treatment to verify.

Alternative B
Same as the proposed action.

Alternative C
Same as the proposed action.

No Action Alternative
Under the no action alternative, no adverse effects would occur to paleontological resources.

5.0 CUMULATIVE IMPACT ANALYSIS

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

Past, Present, and Reasonably Foreseeable Future Actions
On the basis of agency records and GIS analysis and interdisciplinary team discussion the following past and present range, fire and fuels actions (chaining, disking, seeding, hand thinning with chainsaw and prescribed fire), have been identified:

Livestock Grazing

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

Mineral Resources

The level of future mining activity in the assessment area is dependent on public and industries' interest, as well as whether the Agency develops a Common Use Area(s) within the Elk Springs area. There are currently no pending applications for development and the Agency does not anticipate development of mineral resources in the area in the foreseeable future with the exception of a Common Use Area(s) for the public to purchase over the counter rock collection permits. The over the counter permits generally allow the holder of the permit to remove up to two tons of rock ("moss rock, character rock", flagstone, cinders, etc.) from a Common Use Area(s) through surface collection.

Wildfire/Fuels Management

Emergency Stabilization and Rehabilitation treatments have been implemented on a case by case basis in these areas where seedings would be most successful based on soils and site potential. It is anticipated that fire would continue to increase in frequency and spread in areas characterized as having vegetation mono-cultures. Future fires would be subject to Emergency Stabilization and Rehabilitation treatments on a case by case basis.

Vegetative restoration treatments have occurred within the Planning Area (as described in Section 3.1.10) in the past. Due to the importance in enhancing critical wintering habitat for elk, it is anticipated that intensified fuels management and vegetative treatments would increase in the form of herbicide application for sagebrush, mastication for low-level flat removal of piñon/juniper, hand cutting of piñon/juniper on slopes, and prescribed fire as a maintenance tool over the treated areas to reduce saplings, slash, and hazardous fuel loadings.

Recreation

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

5.1 Cumulative Impacts

5.1.1 Air Quality

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

Reasonably Foreseeable Future Actions
Impacts to air quality from reasonably foreseeable future actions would remain similar to those analyzed under past and present actions for livestock grazing. There is potential for increased ground-disturbing activities from mineral exploration which would temporarily increase dust and vehicle emissions into the air. These impacts would be localized and

short term. Impacts from recreation use would be similar to past and present actions. Impacts to air quality from future prescribed burns or wildfires should be reduced as implementation of fuel treatments would result in smaller less intense wildfire activity.

Cumulative Impact

Proposed Action

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

No Action Alternative

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

5.1.2 Cultural Resources

Past and Present Actions

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

Past vegetation treatment actions (e.g.,chaining) undertaken prior to the passage of the NHPA have impacted archaeological sites with surface architecture. This activity impacted cultural sites in the areas directly affected by the treatment. Despite local displacement of rubble, many sites maintain integrity, and their information potential. After passage of the NHPA, cultural sites have been avoided by ground-disturbing activity related to vegetation treatments, and some have seen erosion reduced through lop and scatter projects that increase grass and forb cover. Localized grazing, road construction/maintenance, and camping (including that associated with hunting) are likely to have had minor to negligible effects on cultural resources. Large-scale commercial mining has not been a major factor in the human use of the Elks Springs ACEC. However, a small coal mine was in operation during the first half of the twentieth century (Schlanger 1992), and there is evidence for small-scale exploration for copper and uranium throughout the ACEC.

Looting sometimes occurs, but more frequently, unauthorized collection of surface artifacts ancillary to recreation, rock hounding and other off- road activities have affected cultural resources as well. The project area has been subjected to wildfires throughout its entire history, and there is some debate whether the evidence that many prehistoric structures were abandoned and destroyed by fire points to catastrophic wildfire, or to deliberate burning by the ancient inhabitants or their adversaries. Under a fire regime historically typical of the environment of the Elk Springs ACEC, fires would have burned at relatively low intensity, having relatively minor effects.

Reasonably Foreseeable Future Actions
Due to weather patterns common to Central New Mexico and the encroachment of sagebrush, piñon/juniper and cheatgrass, it is reasonable to expect that future wildfires would occur in the Elks Spring ACEC range. These potential wildfires may be higher intensity due to changes in historically present fuel types and fuel loadings, and may impact sites through the burning of structures, the melting or fracturing of lithic tools and debris and other destructive processes associated with catastrophic wildfire .

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

Cumulative Impact
Proposed Action
Previous and present land management practices and other human activities (such as OHV and other recreational use) as well as reasonably foreseeable future actions as described above have contributed to the overall condition of cultural resources in the project area. However, the proposed action, if successful, would result in improved native vegetation. Since there may be a substantial improvement to the ecological condition over time, the health and vigor of certain other plants might also improve accordingly. Site vandalism and looting may be somewhat muted if the native vegetation planting under the proposed action is successful by reducing ground, and therefore artifact, visibility as well as erosion.

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

5.1.3 Invasive Non-native Species

Past and Present Action
Past and present actions from livestock grazing, road maintenance, wildfire and recreation have promoted the spread of noxious weeds and invasive, non-native species within areas disturbed from these actions. In particular areas where recent road maintenance has occurred, areas of overgrazing and more intensive implementation of mitigation measures that include fire rehabilitation and mineral related reclamation has

reduced the potential for establishment and spread of invasive species.

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

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

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

No Action Alternative
Incremental impacts would remain low. There would be less disturbance generated from development of vegetation treatments. Should large fires occur, potential for spread of noxious weeds and invasive, non-native species would be greater.

5.1.4 Migratory Birds

Refer to Section 5.1.13 (Special Status Species).

5.1.5 Native American Religious Concerns

Past and Present Actions
The historical and current uses identified within the past and present actions such as grazing, transportation and access, and wildfire have had an impact on the traditional uses of the Tribes. Grazing has likely had some impact on the distribution and number of native species used for food, medicinal, and ceremonial purposes by Tribes.
There has been historical mineral exploration within the assessment area; however it was generally small scale exploration and did not disrupt large portions of the assessment area. Recreation has caused no known impacts to traditional uses.

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

Cumulative Impact
Proposed Action
There would be impacts from the proposed action on vegetation (sagebrush) used by Tribal members. These impacts would occur on a small scale across the entire assessment area. The remainder of the assessment area would have no other impacts due to the proposed action than the benefit of enhanced wildfire protection. The cumulative impacts discussed in the past, present and reasonably foreseeable future would continue at similar rates as at present. It seems unlikely, with current information, that the collective impacts combined with the proposed action would cause additional impacts to resources used by Native Americans.

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

5.1.6 Water Resources

Past and Present Actions

The lack of fires, wild and prescribed, have allowed for large areas of vegetative encroachment by sagebrush and piñon/juniper, exposing some interspace soils to increased wind and water erosion. The potential impacts from uncontrolled fire include increases in surface water temperature from stream-side shade removal, and increases in ash, nutrient, and sediment loading from runoff. These impacts have been partially mitigated through past prescribed fire and fuels reduction treatments. Implementation of vegetation treatments will reduce potential for wildfire severity and spread, erosion, sediment delivery to streams, and large scale consumption or monocultures of vegetation.

Historically, cattle grazing occurred over the entire planning area. Measureable impacts to water quality are variable in time (both seasonally and over the long term) and space.

Impacts include increases of bacteria to water sources, increased sediment loading where upland and riparian vegetation has been over utilized, and potential increases in surface water temperatures where riparian vegetation has been over utilized or where ground and surface water interactions have been disrupted due to erosion. Currently, grazing is managed by the RPFO on 7,134 acres of the assessment area.

Reasonably Foreseeable Future Actions

If wildfire frequency increases but severity and extent decreases as expected, impacts to water quality would decrease proportionately. Types of impacts would remain the same as those that have occurred in the past – erosion and sediment transport resulting mostly from higher-intensity rainfalls; however, runoff magnitudes would be less severe and occurrences less frequent due to improved watershed cover. With increased emphasis on protection and restoration of wildlife habitat, restoration activities in the planning area will likely decrease sediment loading impacts to water quality through expedited vegetation reestablishment. There is potential for these impacts to occur throughout the entire planning area.

There is no reasonably foreseeable change in impacts from cattle grazing based on changes in permits. Conversely, water shortages may lead to a greater than normal concentration of cattle around water sources which may decrease water quality. This change in impact would likely only persist for one grazing season, depending on successive water availability.

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

Cumulative Impact

Proposed Action

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

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

No Action Alternative

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

5.1.7 Fire and Fuels Management

Past and Present Actions
Past grazing practices have reduced native perennial grasses which served to increase other vegetation establishment through competition. The reduction of most native perennial grasses increased sagebrush and piñon/juniper encroachment and soil erosion. Present grazing systems and treatments have allowed for an increase in perennial and annual grasses which are helping to reduce erosion potential and make it easier to manage wildland or prescribed fire practices. Recreational use may increase the potential for human caused fire within the area.

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

Cumulative Impact
Proposed Action
Effects from past, present, and RFFAs combined with the proposed action would reduce the size of wildfires.

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

5.1.8 Public Health and Safety

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

Reasonably Foreseeable Future Actions
Wildfires would continue to burn within the assessment area due to human and natural causes. Construction of future vegetative restoration treatments would serve as more effective deterrents to slow or stop wildfire and improve public safety. An increase in recreation use could increase emergency responses necessary to retrieve recreationists. This potential impact is expected to be low due to the number of people using the area. Few safety issues are caused by livestock management.

Cumulative Impact
Proposed Action
It is anticipated that past, present and reasonably foreseeable future actions when combined with the proposed action would improve safety to the public along highways and to residents in the area. Wildfires would still occur within the assessment area however fire

size and intensity would decrease due to more intensive efforts to construct and maintain vegetative restoration treatments. More recreation use would create additional impacts from human uses including increased potential for injuries. Impacts from livestock grazing are expected to be similar to those described under past and present actions.

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

5.1.9 Rangeland Management

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

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

Cumulative Impacts

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

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

5.1.10 Recreation

Past and Present Actions
Habitat improvement within the ACEC would likely increase the number of big game

species that utilize this area which may increase the number of hunters in the area. However, the number of hunters within the larger hunting unit, 6A, is restricted by the NMDGF and is unlikely to increase.

Reasonably Foreseeable Future Actions
Depending upon the acquisition of private land inholdings, motor vehicle use within the ACEC would be restricted. This would occur during the big game wintering season from December 15 to May 14. This would reduce recreational opportunities in the area due to the difficulty of accessing the ACEC. However, the quality of recreational opportunities would increase for those individuals seeking solitude.

Cumulative Impact

Proposed Action
As the number of vegetative treatments increases within the area so will the improvement of wildlife habitat. By increasing the quality of habitat for wildlife we would be increasing the quality of recreational opportunities by opening up thick, dense areas that are hard to navigate through, helping to reduce erosion and silt in current gullies that are difficult to cross, and create an area that is more resilient to drought, wildfire, or other natural disturbances.

No Action Alternative
Recreation would continue at the current rate but the quality of those opportunities would be at risk due to the natural encroachment of trees into the valley bottoms, the continual downcutting of gullies and arroyos, and the increased potential for wildfire.

5.1.11 Vegetation

Past and Present Actions
Past livestock grazing has resulted in impacts to the vegetation communities within the assessment area by eliminating or greatly reducing the native, perennial understory vegetation. The mid to late seral understory plants species are slowly recovering, improving vegetation community conditions However, these communities may never be able to return to their historical values. Impacts to vegetation have also occurred from mineral exploration, removing vegetation through the construction of exploration access roads, creation of trenches and similar type disturbance. Vegetation has also been impacted by OHV use along travel routes throughout the project area.

The lack of fires, wild and prescribed, have allowed for large areas of vegetative encroachment by sagebrush and piñon/juniper, exposing soils to wind and water erosion. These disturbances have altered plant communities and species composition in the short term and sometimes for the long term, due to exposure to vegetation monocultures and other invasive non-native annuals encroachment. These impacts have been partially mitigated through past prescribed fire and fuels reduction treatments. Placement of these treatments will reduce potential for wildfire spread, erosion and large scale consumption or monocultures of vegetation.

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

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

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

Alternative C
Similar to those described under the proposed action. Larger treatment areas proposed for the Elk Springs ACEC area would provide some protection for at risk vegetation communities against wildfire spread in the project area. Habitat restoration would stabilize and re-vegetate degraded areas improving diversity and resiliency to disturbance.

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

5.1.12 Visual Resource Management

Past and Present Actions
Past treatments within the area include chaining, burning, and thinning. The historic treatments (chaining and burning) completely removed all of the trees from the mesa tops.

Those areas can still be identified by their stark contrast to the non-treated areas due to the lack of mature trees. Those areas are beginning to be re-invaded by pinyon/juniper and will soon blend in with the natural landscape. Recent treatments like mechanical hand thinning have been much less noticeable and any debris (slash) left on the ground has been placed in gullies and rills to mitigate erosion.

Reasonably Foreseeable Future Actions
There are no reasonably foreseeable future actions that have the potential to affect the visual resources within the ACEC.

Cumulative Impact
Proposed Action
The proposed action would reduce the dense brush within the valley bottoms and thin dense stands of trees. This would create a more open look to the area which would allow the viewer to see farther. All attempts would be made to retain the natural effect of the contrast between grassland bottoms to wooded hills even though the overall number of bushes and trees would be reduced. The opportunity to see wildlife would increase while the potential for catastrophic wildfire and its negative visual effects would decrease.

No Action Alternative
The area would continue to become overgrown with dense stands of sagebrush, pinyon/juniper, and large timber. The casual viewer would be limited to short windows of visibility up canyons and draws; (and) thick and busy hillsides with little opportunity for wildlife viewing.

5.1.13 Wildlife

Past and Present Actions
Over the years multiple treatments have occurred within the ACEC that have targeted habitat improvement for big game to help create a low stress wintering area for deer and elk. These treatments include thinning, chaining, and burning. So far about 750 acres have been treated within the ACEC. The majority of this area has been farther to the south on the mesa tops.

Reasonably Foreseeable Future Actions
The BLM would seek to acquire the private land inholdings in an effort to block up the public land. This will aid in the management objectives of the ACEC plan to create an area that is low stress for wintering big game. This will be done by closing the area to motor vehicle use from December 15 to May 14.

Cumulative Impact
Proposed Action
The new treatments would add to the approximately 750 acres of previously treated areas. By treating more acres within the ACEC, more wildlife habitat would be improved to help draw deer and elk off of private land to the north onto public land. More quality habitat would have the potential to draw more wildlife to the area because they would be more dispersed throughout the ACEC.

No Action Alternative
Big game would continue to over winter on the ACEC but may be limited to a smaller number of animals due to a conflict in resources in the previously treated areas.

6.0 MITIGATION AND MONITORING

6.1 Mitigation and Monitoring During and After Treatment

Monitoring of significant cultural resources would be conducted by the BLM if determined necessary to ensure the integrity of sites eligible or unevaluated for the National Register remain intact.
The cultural resources in this area are monitored for evidence of looting or other adverse conditions by BLM cultural resources staff or by BLM cultural resources volunteers.

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

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

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

Monitoring would be implemented to ensure goals and objectives are achieved. In addition, monitoring would establish baseline data, gauge the effectiveness of treatments and mitigation measures, and would be used to determine the need for treatment maintenance. The methods used to monitor vegetation treatments may include a combination of photo point, paced and permanent density, line-point intercept, gap intercept, belt transects, production plots, and Rangeland Health.

7.0 CONSULTATION AND COORDINATION

Agency Coordination
NM Department of Game and Fish
NM ENMRD (State Forestry)
Rocky Mountain Elk Foundation

Permittee and Landowner Consultation
Aparcio Herrera
Leslie Reed
Padilla Brothers
Duran Cattle
Manual Montoya

Brian Sandoval

Native American Consultation
Navajo Nation
Jicarilla Apache Tribe
Pueblo of Jemez
Pueblo of Zia

8.0 LIST OF PREPARERS

Bureau of Land Management

Angel Martinez	Planning / Environmental Specialist
Zach Saavedra	Prescribed Fire/ Fuels, Project Lead
Jaime Garcia	Recreation
Jennifer Merino	Visual Resources
Connie Maestas	Lands and Realty
Josh Freeman	Wildlife, Special Status, T&E Species, Riparian
Cynthia Herhann	Native American Consultation
Adam Lujan	Noxious/Invasive Spp., Rangeland Management
Sean Dougherty	Paleontology
Calvin Parson	Geology and Mineral Resources
David Mattern	Hydrologist / Soil, Water, and Air

9.0 REFERENCES

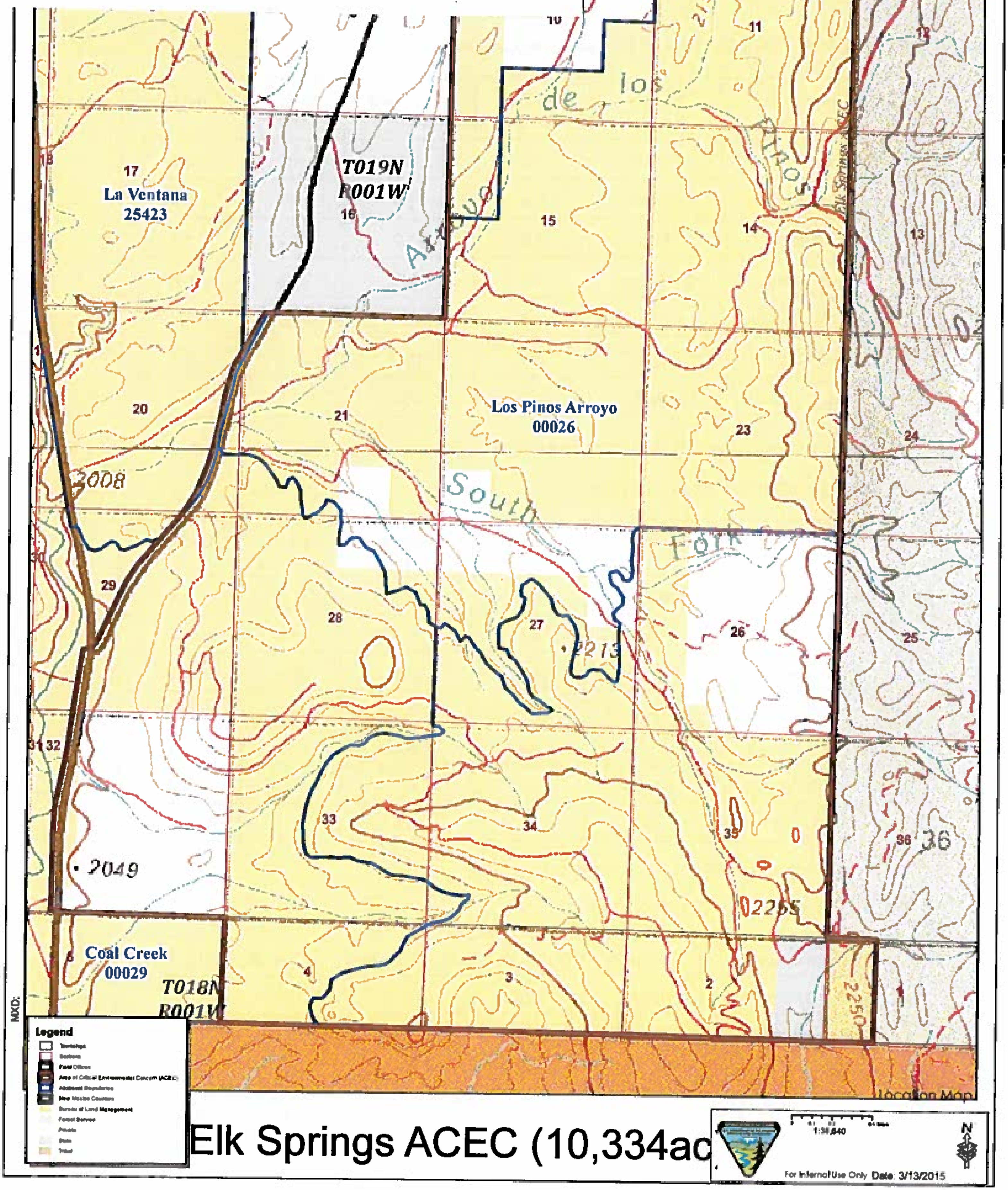
1998 Programmatic Environmental Assessment of Integrated Weed Management on Bureau of Land Management Lands

2003 Healthy Forest Restoration Act of 2003

USDI, Bureau of Land Management. 2004. Fire and Fuels Management Plan Amendment and Environmental Assessment for Public Land in New Mexico and Texas. BLM-NM-PL-008-2824. New Mexico State Office.

EXTOXNET, Extension Toxicology Network.
1996 Tebuthiuron – Pesticide Information Profiles. A pesticide information project of Cooperative Extension Offices of Cornell University, Oregon State University, the University of Idaho, and the University of California at Davis and the Institute for Environmental Toxicology, Michigan State University. EXTOXNET primary files maintained and archived at Oregon State University.
(http://extoxnet.orst.edu/pips/tebuthiu.htm)

10.0 MAPS


Elk Springs ACEC (10,334ac
La Ventana
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T019N
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Los Pinos Arroyo
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Coal Creek
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R001W
Arroyo de los Pinos
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2150
2250
Legend
Location Map
1:38,640
For Internal Use Only Date: 3/13/2015
MXD:

APPENDIX I - ALBUQUERQUE FIELD OFFICE SEED MIXTURES

GRASSLAND VEGETATION TYPE (Sagebrush Draws)

Common Name	Variety	Drilled Rate	Broadcast Rate	% for Mix	Lbs/Acre
Alkali Sacaton	Salado	0.5	1.0	15%	0.2
Western Wheatgrass	Arriba	8.0	17.0	25%	4.3
Galleta	Viva	6.0	11.0	20%	2.2
Blue Grama	Lovington	1.5	2.5	25%	0.6
Scarlet Globemallow		4.0	8.0	5%	0.4
Blue Flax	Appar	8.0	16.0	10%	1.6
Annual Rye	Gulf	4.0	8.0		8.0

Annual Rye Grass is included as a 1st year cover crop.

PINYON - JUNIPER VEGETATION TYPE

Common Name	Variety	Drilled Rate	Broadcast Rate	% for Mix	Lbs/Acre
Mountain Brome	Bromar	11.0	25.0	15%	3.8
Western Wheatgrass	Arriba	8.0	17.0	25%	4.3
Galleta	Viva	6.0	11.0	20%	2.2
Blue Grama	Lovington	1.5	2.5	25%	0.6
American Vetch		4.0	8.0	5%	0.4
Rocky Mtn Penstemon	Bandera	3.0	6.0	10%	0.6
Annual Rye	Gulf	4.0	8.0		8.0

Annual Rye Grass is included as a 1st year cover crop.

HIGH ELEVATION VEGETATION TYPE

Common Name	Variety	Drilled Rate	Broadcast Rate	% for Mix	Lbs/Acre
Mountain Brome	Bromar	11.0	25.0	15%	3.8
Western Wheatgrass	Arriba	8.0	17.0	25%	4.3

Arizona Fescue	**Redondo**	**2.0**	**3.0**	**20%**	**2.2**
June Grass		**0.5**	**1.0**	**25%**	**0.3**
American Vetch		**4.0**	**8.0**	**5%**	**0.4**
Scarlet Penstemon		**3.0**	**6.0**	**10%**	**0.6**
Annual Rye	**Gulf**	**4.0**	**8.0**		**8.0**

Annual Rye Grass is included as a 1st year cover crop.

ALTERNATIVE SPECIES FOR CONSIDERATION:

Grass: Sand Dropseed, *Sporobolus cryptandrus* for sandy sites
Indian Ricegrass for sandy sites
Black Grama may be substituted for Blue Grama on southern areas

Forbs: Desert Marigold, *Baileya multiradiata*
Rocky Mountain Beeplant, *Cleome serrulata*
Purple Coneflower, *Echinacea purpurea*
California Poppy, *Eschscholtzia californica*
Annual Sunflower, *Helianthus annuus*
Yellow Evening Primrose, *Oenothera biennis*
Purple Prairie Clover, *Petalostemum prupureum*
Prairie Coneflower, *Ratibida columnaris*
Desert Globemallow, *Sphaeralcea ambigua*
Purple Verbena, *Verbena stricta*

*All seed (mixes) shall be certified weed free by the NMDA State Seed Lab http://www.nmda.nmsu.edu/state-seed-lab-2/ and proof will be sent to the Rio Puerco Field Office prior to any planting or reclamation work.

Rio Puerco Field Office
Attn: Rangeland Resources
435 Montano Rd NE
Albuquerque, NM 87107-4935

APPENDIX II – STANDARD OPERATING PROCEDURES FOR HERBICIDE USE

Resource Element	Standard Operating Procedure
Guidance Documents	BLM Handbook H-9011-1 (*Chemical Pest Control*); and manuals 1112 (*Safety*), 9011 (*Chemical Pest Control*), 9012 (*Expenditure of Rangeland Insect Pest Control Funds*), 9015 (*Integrated Weed Management*), and 9220 (*Integrated Pest Management*)
General	• Prepare spill contingency plan in advance of treatment. • Conduct a pretreatment survey before applying herbicides. • Select herbicide that is least damaging to environment while providing the desired results. • Select herbicide products carefully to minimize additional impacts from degradates, adjuvants, inert ingredients, and tank mixtures. • Apply the least amount of herbicide needed to achieve the desired result. • Follow product label for use and storage. • Have licensed applicators apply herbicides. • Use only USEPA-approved herbicides and follow product label directions and "advisory" statements. • Review, understand, and conform to the "Environmental Hazards" section on the herbicide label. This section warns of known pesticide risks to the environment and provides practical ways to avoid harm to organisms or to the environment. • Consider surrounding land use before assigning aerial spraying as a treatment method and avoid aerial spraying near agricultural or densely populated areas. • Minimize the size of application areas, when feasible. • Comply with herbicide-free buffer zones to ensure that drift will not affect crops or nearby residents/landowners. • Post treated areas and specify reentry or rest times, if appropriate. • Notify adjacent landowners prior to treatment. • Keep copy of Material Safety Data Sheets (MSDSs) at work sites. MSDSs available for review at http://www.cdms.net/. • Keep records of each application, including the active ingredient, formulation, application rate, date, time, and location. • Avoid accidental direct spray and spill conditions to minimize risks to resources. • Consider surrounding land uses before aerial spraying. • Avoid aerial spraying during periods of adverse weather conditions (snow or rain imminent, fog, or air turbulence). • Make helicopter applications at a target airspeed of 40 to 50 miles per hour (mph), and at about 30 to 45 feet above ground. • Take precautions to minimize drift by not applying herbicides when winds exceed >10 mph (>6 mph for aerial applications) or a serious rainfall event is imminent. • Use drift control agents and low volatile formulations. • Conduct pre-treatment surveys for sensitive habitat and special status species within or adjacent to proposed treatment areas. • Consider site characteristics, environmental conditions, and application equipment in order to minimize damage to non-target vegetation. • Use drift reduction agents, as appropriate, to reduce the drift hazard to non-target species. • Turn off applied treatments at the completion of spray runs and during turns to start another spray run. • Refer to the herbicide label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Clean OHVs to remove seeds.

Standard Operating Procedures for Applying Pesticides

Resource Element	Standard Operating Procedure
Air Quality See Manual 7000 (*Soil, Water and Air Management*)	• Consider the effects of wind, humidity, temperature inversions, and heavy rainfall on herbicide effectiveness and risks. • Apply herbicides in favorable weather conditions to minimize drift. For example, do not treat when winds exceed 10 mph (6 mph for aerial applications) or rainfall is imminent. • Use drift reduction agents, as appropriate, to reduce the drift hazard. • Select proper application equipment (e.g., spray equipment that produces 200- to 800-micron diameter droplets [spray droplets of 100 microns and less are most prone to drift]). • Select proper application methods (e.g., set maximum spray heights, use appropriate buffer distances between spray sites and non-target resources).
Soil See Manual 7000 (*Soil, Water, and Air Management*)	• Minimize treatments in areas where herbicide runoff is likely, such as steep slopes when heavy rainfall is expected. • Minimize use of herbicides that have high soil mobility, particularly in areas where soil properties increase the potential for mobility. • Do not apply granular herbicides on slopes of more than 15% where there is the possibility of runoff carrying the granules into non-target areas.
Water Resources See Manual 7000 (*Soil, Water, and Air Management*)	• Consider climate, soil type, slope, and vegetation type when developing herbicide treatment programs. • Select herbicide products to minimize impacts to water. This is especially important for application scenarios that involve risk from active ingredients in a particular herbicide, as predicted by risk assessments. • Use local historical weather data to choose the month of treatment. Considering the phenology of the target species, schedule treatments based on the condition of the water body and existing water quality conditions. • Plan to treat between weather fronts (calms) and at appropriate time of day to avoid high winds that increase water movements, and to avoid potential stormwater runoff and water turbidity. • Review hydrogeologic maps of proposed treatment areas .Note depths to groundwater and areas of shallow groundwater and areas of surface water and groundwater interaction. Minimize treating areas with high risk for groundwater contamination.. • Conduct mixing and loading operations in an area where an accidental spill would not contaminate an aquatic body. • Do not rinse spray tanks in or near water bodies. Do not broadcast pellets where there is danger of contaminating water supplies. • Maintain buffers between treatment areas and water bodies. Buffer widths should be developed based on herbicide- and site-specific criteria to minimize impacts to water bodies. • Minimize the potential effects to surface water quality and quantity by stabilizing terrestrial areas as quickly as possible following treatment.
Wetlands and Riparian Areas	• Use a selective herbicide and a wick or backpack sprayer. • Use appropriate herbicide-free buffer zones for herbicides not labeled for aquatic use based on risk assessment guidance, with minimum widths of 100 feet for aerial, 25 feet for vehicle, and 10 feet for hand spray applications.
Vegetation See Handbook 11-4410-1 (*National Range Handbook*), and manuals 5000 (*Forest Management*) and 9015 (*Integrated Weed Management*)	• Refer to the herbicide label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Use native or sterile species for revegetation and restoration projects to compete with invasive species until desired vegetation establishes • Use weed-free feed for horses and pack animals. Use weed-free straw and mulch for revegetation and other activities • Identify and implement any temporary domestic livestock grazing and/or supplemental feeding restrictions needed to enhance desirable vegetation recovery following treatment. Consider adjustments in the existing grazing permit, needed to maintain desirable vegetation on the treatment site.

Standard Operating Procedures for Applying Pesticides

Resource Element	Standard Operating Procedure
Pollinators	• Complete vegetation treatments seasonally before pollinator foraging plants bloom. • Time vegetation treatments to take place when foraging pollinators are least active both seasonally and daily. • Design vegetation treatment projects so that nectar and pollen sources for important pollinators and resources are treated in patches rather than in one single treatment. • Minimize herbicide application rates. Use typical rather than maximum rates where there are important pollinator resources. • Maintain herbicide free buffer zones around patches of important pollinator nectar and pollen sources. • Maintain herbicide free buffer zones around patches of important pollinator nesting habitat and hibernacula. • Make special note of pollinators that have single host plant species, and minimize herbicide spraying on those plants (if invasive species) and in their habitats.
Fish and Other Aquatic Organisms See manuals 6500 (*Wildlife and Fisheries Management*) and 6780 (*Habitat Management Plans*)	• Use appropriate buffer zones based on label and risk assessment guidance. • Minimize treatments near fish-bearing water bodies during periods when fish are in life stages most sensitive to the herbicide(s) used, and use spot rather than broadcast or aerial treatments. • Use appropriate application equipment/method near water bodies if the potential for off-site drift exists. • For treatment of aquatic vegetation, 1) treat only that portion of the aquatic system necessary to achieve acceptable vegetation management; 2) use the appropriate application method to minimize the potential for injury to desirable vegetation and aquatic organisms; and 3) follow water use restrictions presented on the herbicide label.
Wildlife See manuals 6500 (*Wildlife and Fisheries Management*) and 6780 (*Habitat Management Plans*)	• Use herbicides of low toxicity to wildlife, where feasible. • Use spot applications or low-boom broadcast operations where possible to limit the probability of contaminating non-target food and water sources, especially non-target vegetation over areas larger than the treatment area. • Use timing restrictions (e.g., do not treat during critical wildlife breeding or staging periods) to minimize impacts to wildlife. • Avoid using glyphosate formulations that include R-11 in the future, and either avoid using any formulations with POEA, or seek to use the formulation with the lowest amount of POEA available, to reduce risks to amphibians.
Threatened, Endangered, and Sensitive Species See Manual 6840 (*Special Status Species*)	• Survey for special status species before treating an area. Consider effects to special status species when designing herbicide treatment programs. • Use a selective herbicide and a wick or backpack sprayer to minimize risks to special status plants. • Avoid treating vegetation during time-sensitive periods (e.g., nesting and migration, sensitive life stages) for special status species in area to be treated.
Livestock See Handbook H-4120-1 (*Grazing Management*)	• Whenever possible and whenever needed, schedule treatments when livestock are not present in the treatment area. Design treatments to take advantage of normal livestock grazing rest periods, when possible. • As directed by the herbicide label, remove livestock from treatment sites prior to herbicide application, where applicable. • Use herbicides of low toxicity to livestock, where feasible. • Take into account the different types of application equipment and methods, where possible, to reduce the probability of contamination of non-target food and water sources. • Avoid use of diquat in riparian pasture while pasture is being used by livestock. • Notify permittees of the project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment. • Notify permittees of livestock grazing, feeding, or slaughter restrictions, if necessary. • Provide alternative forage sites for livestock, if possible.

Standard Operating Procedures for Applying Pesticides

Resource Element	Standard Operating Procedure
Wild Horses and Burros	• Minimize using herbicides in areas grazed by wild horses and burros. • Use herbicides of low toxicity to wild horses and burros, where feasible. • Remove wild horses and burros from identified treatment areas prior to herbicide application, in accordance with label directions for livestock. • Take into account the different types of application equipment and methods, where possible, to reduce the probability of contaminating non-target food and water sources.
Cultural Resources and Paleontological Resources See handbooks H-8120-1 (*Guidelines for Conducting Tribal Consultation*) and H-8270-1 (*General Procedural Guidance for Paleontological Resource Management*), and manuals 8100 (*The Foundations for ManagingCultural Resources*), 8120 (*Tribal Consultation Under Cultural Resource Authorities*), and 8270 (*Paleontological Resource Management*). See also: *Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act.*	• Follow standard procedures for compliance with Section 106 of the National Historic Preservation Act as implemented through the *Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act* and state protocols or 36 CFR Part 800, including necessary consultations with State Historic Preservation Officers and interested tribes. • Follow BLM Handbook H-8270-1 (*General Procedural Guidance for Paleontological Resource Management*) to determine known Condition 1 and Condition 2 paleontological areas, or collect information through inventory to establish Condition 1 and Condition 2 areas, determine resource types at risk from the proposed treatment, and develop appropriate measures to minimize or mitigate adverse impacts. • Consult with tribes to locate any areas of vegetation that are of significance to the tribe and that might be affected by herbicide treatments. • Work with tribes to minimize impacts to these resources. • Follow guidance under Human Health and Safety in areas that may be visited by Native peoples after treatments.
Visual Resources See handbooks H-8410-1 (*Visual Resource Inventory*) and H-8431-1 (*Visual Resource Contrast Rating*), and manual 8400 (*Visual Resource Management*)	• Minimize the use of broadcast foliar applications in sensitive watersheds to avoid creating large areas of browned vegetation. • Consider the surrounding land use before assigning aerial spraying as an application method. • Minimize off-site drift and mobility of herbicides (e.g., do not treat when winds exceed 10 mph; minimize treatment in areas where herbicide runoff is likely; establish appropriate buffer widths between treatment areas and residences) to contain visual changes to the intended treatment area. • If the area is a Class I or II visual resource, ensure that the change to the characteristic landscape is low and does not attract attention (Class I), or if seen, does not attract the attention of the casual viewer (Class II). • Lessen visual impacts by: 1) designing projects to blend in with topographic forms, 2) leaving some low-growing trees or planting some low-growing tree seedlings adjacent to the treatment area to screen short-term effects; and 3) revegetating the site following treatment. • When restoring treated areas, design activities to repeat the form, line, color, and texture of the natural landscape character conditions to meet established Visual Resource Management (VRM) objectives.

Standard Operating Procedures for Applying Pesticides

Resource Element	Standard Operating Procedure
Wilderness and Other Special Areas See handbooks H-8550-1 (*Management of Wilderness Study Areas (WSAs)*), and H-8560-1 (*Management of Designated Wilderness Stud. Areas*), and Manual 8351 (*Wild and Scenic Rivers*)	• Encourage backcountry pack and saddle stock users to feed their livestock only weed-free feed for several days before entering a wilderness area. • Encourage stock users to tie and/or hold stock in such a way as to minimize soil disturbance and loss of native vegetation. • Revegetate disturbed sites with native species if there is no reasonable expectation of natural regeneration. • Provide educational materials at trailheads and other wilderness entry points to educate the public on the need to prevent the spread of weeds. • Use the "minimum tool" to treat noxious and invasive vegetation, relying primarily on use of ground-based tools, including backpack pumps, hand sprayers, and pumps mounted on pack and saddle stock. • Use chemicals only when they are the minimum method necessary to control weeds that are spreading within the wilderness or threaten lands outside the wilderness. • Give preference to herbicides that have the least impact on non-target species and the wilderness environment. • Implement herbicide treatments during periods of low human use, where feasible. • Address wilderness and special areas in management plans. • Maintain adequate buffers for Wild and Scenic Rivers (¼ mile on either side of river, ½ mile in Alaska).
Recreation See Handbook H-1601-1 (*Land Use Planning Handbook, Appendix C*)	• Schedule treatments to avoid peak recreational use times, while taking into account the optimum management period for the targeted species. • Notify the public of treatment methods, hazards, times, and nearby alternative recreation areas • Adhere to entry restrictions identified on the herbicide label for public and worker access. • Post signs noting exclusion areas and the duration of exclusion, if necessary. • Use herbicides during periods of low human use, where feasible.
Social and Economic Values	• Consider surrounding land use before selecting aerial spraying as a method, and avoid aerial spraying near agricultural or densely-populated areas • Post treated areas and specify reentry or rest times, if appropriate • Notify grazing permittees of livestock feeding restrictions in treated areas, if necessary, as per label instructions. • Notify the public of the project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment. • Control public access until potential treatment hazards no longer exist, per label instructions. • Observe restricted entry intervals specified by the herbicide label. • Notify local emergency personnel of proposed treatments. • Use spot applications or low-boom broadcast applications where possible to limit the probability of contaminating non-target food and water sources, especially vegetation over areas larger than the treatment area. • Consult with Native American tribes and Alaska Native groups to locate any areas of vegetation that are of significance to the tribe and that might be affected by herbicide treatments • To the degree possible within the law, hire local contractors and workers to assist with herbicide application projects and purchase materials and supplies, including chemicals for herbicide treatment projects through local suppliers. • To minimize fears based on lack of information, provide public educational information on the need for vegetation treatments and the use of herbicides in an Integrated Pest Management program for projects proposing local use of herbicides.

Standard Operating Procedures for Applying Pesticides

Resource Element	Standard Operating Procedure
Rights-of-way	• Coordinate vegetation management activities where joint or multiple use of a ROW exists. • Notify other public land users within or adjacent to the ROW proposed for treatment. • Use only herbicides that are approved for use in ROW areas.
Human Health and Safety	• Establish a buffer between treatment areas and human residences based on guidance given in the HHRA, with a minimum buffer of ¼ mile for aerial applications and 100 feet for ground applications, unless a written waiver is granted. • Use protective equipment as directed by the herbicide label. • Post treated areas with appropriate signs at common public access areas. • Observe restricted entry intervals specified by the herbicide label. • Provide public notification in newspapers or other media where the potential exists for public exposure. • Have a copy of MSDSs at work site. • Notify local emergency personnel of proposed treatments. • Contain and clean up spills and request help as needed. • Secure containers during transport. • Follow label directions for use and storage. • Dispose of unwanted herbicides promptly and correctly.

APPENDIX III – MITIGATION MEASURES FOR THE USE OF HERBICIDE

Resource	Mitigation Measures
Air Quality	None proposed.
Soil Resources	None proposed.
Water Resources and Quality	• Establish appropriate (herbicide specific) buffer zones to downstream water bodies, habitats, and species/populations of interest (see Appendix C, Table C-16).
Wetland and Riparian Areas	• See mitigation for Water Resources and Quality and Vegetation.
Vegetation	• Minimize the use of terrestrial herbicides (especially bromacil, diuron, and sulfometuron methyl) in watersheds with downgradient ponds and streams if potential impacts to aquatic plants are of concern. • Establish appropriate (herbicide specific) buffer zones around downstream water bodies, habitats, and species/populations of interest. Consult the ERAs for more specific information on appropriate buffer distances under different soil, moisture, vegetation, and application scenarios • To protect special status plant species, implement all conservation measures for plants presented in the *Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment.*
Fish and Other Aquatic Organisms	• Limit the use of diquat in water bodies that have native fish and aquatic resources. • Limit the use of terrestrial herbicides in watersheds with characteristics suitable for potential surface runoff, that have fish-bearing streams, during periods when fish are in life stages most sensitive to the herbicide(s) used. • To protect special status fish and other aquatic organisms, implement all conservation measures for aquatic animals presented in the *Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment.* • Establish appropriate herbicide-specific buffer zones for water bodies, habitats, or fish or other aquatic species of interest (see Appendix C, Table C-16, and recommendations in individual ERAs) • Avoid using the adjuvant R-11® in aquatic environments, and either avoid using glyphosate formulations containing POEA, or seek to use formulations with the least amount of POEA, to reduce risks to aquatic organisms.
Wildlife	• To minimize risks to terrestrial wildlife, do not exceed the typical application rate for applications of dicamba, diuron, glyphosate, hexazinone, tebuthiuron, or triclopyr, where feasible. • Minimize the size of application areas, where practical, when applying 2,4-D, bromacil, diuron, and Overdrive® to limit impacts to wildlife, particularly through contamination of food items • Where practical, limit glyphosate and hexazinone to spot applications in rangeland and wildlife habitat areas to avoid contamination of wildlife food items. • Avoid using the adjuvant R-11® in aquatic environments, and either avoid using glyphosate formulations containing POEA, or seek to use formulations with the least amount of POEA, to reduce risks to amphibians. • Do not apply bromacil or diuron in rangelands, and use appropriate buffer zones (see Vegetation section in Chapter 4) to limit contamination of off-site vegetation, which may serve as forage for wildlife. • Do not aerially apply diquat directly to wetlands or riparian areas. • To protect special status wildlife species, implement all conservation measures for terrestrial animals presented in the *Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment.* Apply these measures to special status species (refer to conservation measures for a similar size and type of species, of the same trophic guild).

Mitigation Measures (Cont.)

Resource	Mitigation Measures
Livestock	• Minimize potential risks to livestock by applying diuron, glyphosate, hexazinone, tebuthiuron, and triclopyr at the typical application rate, where feasible. • Do not apply 2,4-D, bromacil, dicamba, diuron, Overdrive®, picloram, or triclopyr across large application areas where feasible, to limit impacts to livestock, particularly through the contamination of food items. • Where feasible, limit glyphosate and hexazinone to spot applications in rangeland. • Do not aerially apply diquat directly to wetlands or riparian areas used by livestock. • Do not apply bromacil or diuron in rangelands, and use appropriate buffer zones (see Vegetation section in Chapter 4) to limit contamination of off-site rangeland vegetation.
Wild Horses and Burros	• Minimize potential risks to wild horses and burros by applying diuron, glyphosate, hexazinone, tebuthiuron, and triclopyr at the typical application rate, where feasible. • Consider the size of the application area when making applications of 2,4-D, bromacil, dicamba, diuron, Overdrive®, picloram, and triclopyr in order to reduce potential impacts to livestock. • Apply herbicide label grazing restrictions for livestock to herbicide treatment areas that support populations of wild horses and burros • Where feasible, limit glyphosate and hexazinone to spot applications in rangeland. • Do not apply bromacil or diuron in grazing lands within herd management areas, and use appropriate buffer zones (see Vegetation section in Chapter 4) to limit contamination of vegetation in off-site foraging areas • Do not apply 2,4-D, bromacil, or diuron in herd management areas during the peak foaling season (March through June, and especially in May and June), and do not exceed the typical application rate of Overdrive® or hexazinone in HMAs during the peak foaling season.
Paleontological and Cultural Resources	• Do not exceed the typical application rate when applying 2,4-D, bromacil, diquat, diuron, fluridone, hexazinone, tebuthiuron, and triclopyr in known traditional use areas. • Avoid applying bromacil or tebuthiuron aerially in known traditional use areas. • Limit diquat applications to areas away from high residential and traditional use areas to reduce risks to Native Americans and Alaska Natives.
Visual Resources	None proposed
Wilderness and Other Special Areas	Mitigation measures that may apply to wilderness and other special area resources are associated with human and ecological health and recreation. Please refer to the Vegetation, Fish and Other Aquatic Resources, Wildlife Resources, Recreation, and Human Health and Safety sections of Chapter 4.
Recreation	Mitigation measures that may apply to recreational resources are associated with human and ecological health. Please refer to the Vegetation, Fish and Other Aquatic Resources, Wildlife Resources, and Human Health and Safety sections of Chapter 4.
Social and Economic Values	None proposed.
Human Health and Safety	• Use the typical application rate, where feasible, when applying 2,4-D, 2,4-DP, atrazine, bromacil, diquat, diuron, fluridone, fosamine, hexazinone, tebuthiuron, and triclopyr to reduce risk to occupational and public receptors. • Avoid applying atrazine, bromacil, diuron, or simazine aerially. • Limit application of chlorsulfuron via ground broadcast applications at the maximum application rate. • Limit diquat application to ATV, truck spraying, and boat applications to reduce risks to occupational receptors, limit diquat applications to areas away from high residential and subsistence use to reduce risks to public receptors. • Evaluate diuron applications on a site-by-site basis to avoid risks to humans. There appear to be few scenarios where diuron can be applied without risk to occupational receptors. • Do not apply hexazinone with an over-the-shoulder broadcast applicator.

APPENDIX IV - FEDERAL AND STATE LISTED SPECIES IN SANDOVAL COUNTY

Common Name	Scientific Name	County	Federal Status
Yellow billed cuckoo	*Coccyzus americanus*	Sandoval	Federal Candidate
Rio Grande cutthroat trout	*Oncorhynchus clarki virginalis*	Sandoval	Federal Candidate
New Mexico meadow jumping mouse	*Zapus hudsonius luteus*	Sandoval	Federal Candidate, RPFO Sensitive
Black-footed ferret	*Mustela nigripes*	Sandoval	Federal Endangered
Southwestern willow flycatcher	*Empidonax traillii extimus*	Sandoval,	Federal Endangered
Rio Grande silvery minnow	*Hybognathus amarus*	Sandoval	Federal Endangered
Mountain plover	*Charadrius montanus*	Sandoval	Federal Proposed, RPFO Sensitive
American peregrine falcon	*Falco peregrinus anatum*	Sandoval	Federal Species of Concern
Arctic peregrine falcon	*Falco peregrinus tundrius*	Sandoval	Federal Species of Concern
Townsend's big-eared bat	*Corynorhinus townsendii*	Sandoval	Federal Species of Concern
New Mexico silverspot butterfly	*Speyeria nokomis nitocris*	Sandoval	Federal Species of Concern
Rio Grande sucker	*Catostomus plebeius*	Sandoval	Federal Species of Concern
Gypsum phacelia	*Phacelia sp. nov.*	Sandoval	Federal Species of Concern
Parish's alkali grass	*Puccinellia parishii*	Sandoval	Federal Species of Concern
Goat Peak pika	*Ochotona princeps nigrescens*	Sandoval	Federal Species of Concern
Jemez Mountain salamander	*Plethodon neomexicanus*	Sandoval	Federal Species of Concern
Northern goshawk	*Accipiter gentilis*	Sandoval	Federal Species of Concern, RPFO Sensitive
Baird's sparrow	*Ammodramus baridii*	Sandoval	Federal Species of Concern, RPFO Sensitive

Common Name	Scientific Name	County	Federal Status
Knight's milkvetch	*Astragalus knightii*	Sandoval	Federal Species of Concern, RPFO Sensitive
Gypsum townsendia	*Townsendia gypsophila*	Sandoval	Federal Species of Concern, RPFO Sensitive
Western Burrowing Owl	*Athene cunicularia hypugea*	Areawide	Federal Species of Concern, RPFO Sensitive
Mexican spotted owl	*Strix occidentalis lucida*	Sandoval	Federal Threatened
Ferruginous Hawk	*Buteo regalis*	Areawide	RPFO Sensitive
Pale Townsend's big-eared bat	*Corynorhinus townsendii pallescens*	Areawide	RPFO Sensitive
Spotted bat	*Euderma maculatum*	Areawide	RPFO Sensitive
Loggerhead Shrike	*Lanius ludovicianus*	Areawide	RPFO Sensitive
Wright's nipple cactus	*Mammillaria wrightii*	Sandoval	RPFO Sensitive
Tufted evening primrose	*Oenothera caespitosa*	Sandoval	RPFO Sensitive
Grama grass cactus	*Pediocactus papyracanthus*	Sandoval	RPFO Sensitive
Santa Fe milk-vetch	*Astragalus feensis*	Sandoval	RPFO Sensitive
New Mexico spiny milk-vetch	*Astragalus kentrophyta var. neomexicana*	Sandoval	RPFO Sensitive
Sand-tufted verbena	*Abronia bigelovii*	Sandoval	RPFO Sensitive
Small-footed myotis	*Myotis ciliolabrum*	Areawide	RPFO Sensitive
Long-eared myotis	*Myotis evotis*	Areawide	RPFO Sensitive
Occult myotis	*Myotis occultus (check on latest)*	Areawide	RPFO Sensitive
Fringed myotis	*Myotis thysanodes*	Areawide	RPFO Sensitive
Long-legged myotis	*Myotis volans*	Areawide	RPFO Sensitive
Yuma myotis	*Myotis yumanensis*	Areawide	RPFO Sensitive
Big free-tailed bat	*Nyctinomops macrotis*	Areawide	RPFO Sensitive
Texas horned lizard	*Phrynosoma cornutum*	Areawide	RPFO Sensitive
Flathead chub	*Platygobio (Hybopsis) gracilis*	Areawide	RPFO Sensitive
White-faced Ibis	*Plegadis chihi*	Areawide	RPFO Sensitive
Millipede (no common name)	*Totecus chihuanus*	Areawide	RPFO Sensitive
Gray vireo	*Vireo vivinior*	Areawide	RPFO Sensitive