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Bureau of Land Management
Farmington District

Rio Chama Wilderness Study Area
Vegetation Treatment Project

DOI-BLM-NM-F020-2012-0032-EA

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Rio Chama Wilderness Study Area Vegetation Treatment Project *DOI-BLM-NM-F020-2012-0032-EA*

Chapter 1: Purpose and Need

1.1 Introduction

The BLM Taos Field Office proposes to use wildfire, apply prescribed fire and mechanical treatment, and treat noxious weeds with herbicides to restore approximately 16,300 acres of vegetation predominantly within the Rio Chama Wilderness Study Area in Rio Arriba County, New Mexico (See Figure 1). These actions would be implemented in phases on an annual basis, as necessary, beginning in 2014 until the project objectives are met.

In January 2012, an administrative review was initiated for implementing the Rio Chama Wilderness Study Area (WSA) Vegetation Treatment Project. The design and evaluation of this project was developed by an interdisciplinary team consisting of the BLM Taos Field Office manager and resource staff. This project is largely based on the 2009 Cebolla Forest and Range Restoration Treatment Project (DOI-BLM-NM-F020-2009-0027-EA), with analysis from that project incorporated by reference in this document.

An ecological history of fire suppression, along with other human and environmental factors, has caused imbalances in the environment of the Rio Chama area. The project is designed to restore historic vegetation regimes to the landscape, thus preserving its wilderness characteristics. In the past, fire played a significant role in maintaining native grasslands and ecosystems where pinyon and juniper trees are found in Northern New Mexico. The most natural way in which land managers can manipulate a landscape is with fire. Fire is nature's way to restore balance to a wild ecosystem via destruction of old imbalances. The desire to keep wilderness areas free of visible human impacts on the surface landscape can be maintained by the use of wildfire as a management tool, especially through the management tool known as "use of wildland fire." These fires indicate that nature intended a burn in that specific area, and these actions are in accordance with the management objectives for WSAs. Thus, special treatments for landscape management would not impair the suitability for preservation as wilderness (See Section D, 2C, page 1-15 of Manual 6330).

Fire and other disturbance regimes are instrumental in keeping pinyon and juniper trees in balance with other species in these ecosystems. The proposed vegetation treatments make use of fire as a natural phenomenon that would best solve the imbalances that have occurred in the Rio Chama area. By encouraging ignitions in this landscape the vegetation would revert to its original evolutionary pathways. The preferred treatment for the area would be wildland fire, thus allowing a natural element of the landscape to restore historic conditions that have been disturbed by human impacts over time. Fire is a natural and important element in the ecosystem.

These proposed treatments would restore ecosystem function in areas where non-native invasive weed populations have taken over the natural ecology and land cover. The BLM is mandated to protect and enhance the wilderness characteristics of the project area, and this goal can be met via vegetation treatments that would restore plant populations to their previous and natural compositions. In compliance with the goal of restoring wilderness characteristics to the project area, treatments would consist of wildland fire use for management objectives and prescribed fire. Reintroducing and encouraging fire in this landscape is a natural means of influencing the plant populations in the area and would have positive affects in both the short term and long term ecological regrowth of these plant populations.

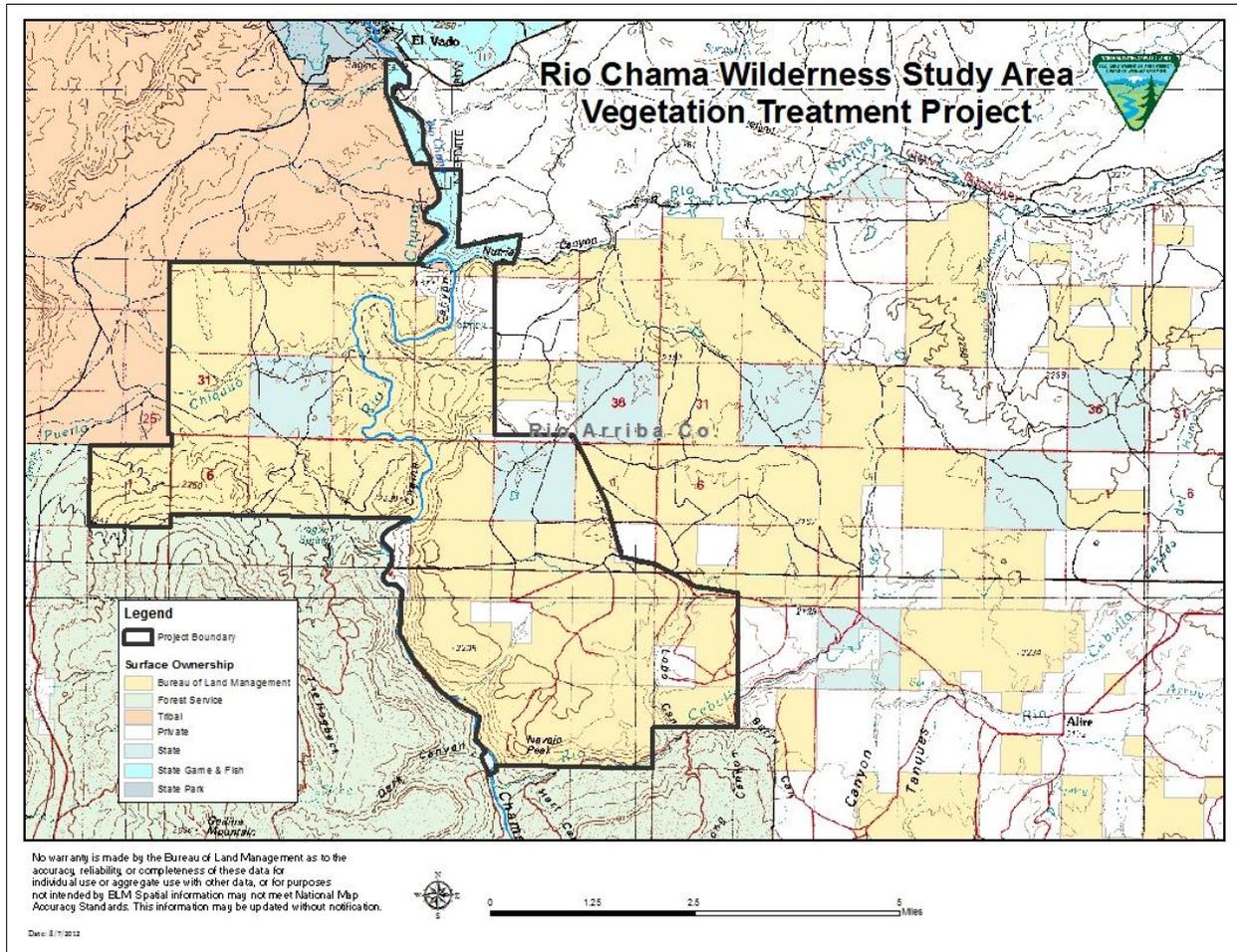


Figure 1. Project Map

1.2 Purpose and Need for Action

The purpose of the Rio Chama WSA Treatment Project is to reduce the density of big sagebrush and shrub species (including pinyon pine, juniper and decadent, overgrown, shrubs like oak, mountain mahogany, and other browse species) and to control any federally, state or locally recognized non-native noxious weed populations. The project objectives are designed to maintain, improve, and increase native grass habitat, herbaceous understory, ponderosa pine stands and overall forest and grassland health within the area.

The project is needed to restore native grasslands and ponderosa pine stands, enhance wildlife habitat, improve watershed function, and enhance naturalness in the WSA. This need is affirmed by multiple goals and objectives in the Taos Resource Management Plan (RMP), specifically those for wildlife, vegetation, wildland fire, and invasive species and noxious weeds.

A fairly recent period of absence of fire in the project area has set this ecosystem out of balance, allowing certain types of vegetation to dominate (especially non-native and noxious weeds). In most cases these recent shifts in vegetation populations has ruined habitat for various wildlife, and effected drainage and watershed function in the area. All these ecological elements—vegetation, wildlife, and watershed function—combine to make up a healthy southwestern landscape, and wildland fire is the linchpin in this

ecological equation: without fire there is a cascade of ecological imbalances. The intentional addition of fire would be a key solution towards pushing the area back into ecological balance, enhancing retention of the wilderness characteristics of this landscape.

The BLM must decide whether or not to approve this project, which would allow for use of prescribed fire, wildland fire for multiple resource objectives, and invasive weed herbicide treatments to achieve its objectives. Prioritization of treatment areas would be based on Fire Regime Condition Class (see Fire Regime Condition Class map in appendix 1) within the project area in order to restore fire as a natural disturbance to the area.

1.3 Land Use Plan Conformance

The Proposed Action is in conformance with the Taos RMP approved in May 2012, as required by the Federal Land Policy and Management Act of 1976 (FLPMA), since it is clearly consistent with the goals and objectives for managing wildlife habitat, vegetation, wildland fire, and invasive species and noxious weeds (See sections 2.1.3.1, 2.1.7.2, 2.1.11, and 2.1.12 of the Taos RMP, respectively).

Project objectives are consistent with the Taos RMP's management guidance on vegetation manipulation projects to enhance native grass species by restoring healthy vegetative grassland and forest communities. In addition the Proposed Action is consistent with the provisions of the 2010 Farmington District Fire Management Plan (FMP) and the Rio Chama Management Plan (1990; 2010).

1.4 Identification of Issues

Beginning in August 2012, the proposed project has been discussed by an interdisciplinary team of BLM resource specialists at monthly coordination meetings. Issues discussed included potential impacts to the WSA, potential impacts to the Rio Chama Wild and Scenic River, consultation requirements on threatened and endangered species, and archaeological clearance requirements. Follow-up coordination with resource specialists has been on-going to ensure the appropriate scope of analysis is addressed in this EA.

Through these efforts, as well as from the existing analysis of the 2009 Cebolla Forest and Range Restoration Treatment Project, the following issues have been identified as relevant for this assessment:

1. Air Quality - *How would the Proposed Action and Alternatives affect the quality of air within the project area?*
2. Climate – *What impacts would the Proposed Action have on climate change?*
3. Cultural Resources - *How would the Proposed Action and Alternatives impact the condition and integrity of cultural resources present in the area?*
4. Livestock Management - *What impact would the Proposed Action and Alternatives have on forage within the area?*
5. Migratory Birds - *How would the Proposed Action and Alternatives affect bird nests, including habitat for migratory birds within the project area?*
6. Riparian/Aquatic - *How would the Proposed Action and Alternatives affect the quality and quantity of water resources within and adjacent to the project area?*
7. Soils - *What impact would the Proposed Action and Alternatives have on the integrity and stability of soil within the project area?*
8. Threatened and Endangered Species Including Special Status Species - *How would the Proposed Action and Alternatives affect threatened and endangered and special status species within the project area?*

9. *Vegetation - How would the Proposed Action and Alternatives affect the quality, extent of grasses, including other native vegetation available within the project area?*
10. *Visual Resources - How would the character of the viewshed be maintained by the Proposed Action and Alternatives?*
11. *Wilderness characteristics- How would the action affect naturalness and outstanding opportunities for primitive and unconfined recreation within the Chama Wilderness Study Area? - Will the project meet the non-impairment standard or one of the exceptions and how will it enhance wilderness characteristics?*
12. *Wild and Scenic River- How would the action affect the Rio Chama's outstandingly remarkable values and classification?*
13. *Wildlife - How would critical mule deer and big game winter range habitat be affected by the Proposed Action and Alternatives?*

Chapter 2: Description of Alternatives

2.1 Alternative A: Proposed Action

The BLM Taos Field Office proposes to use the management technique of “use of wildland fire,” apply prescribed fire and mechanical treatment, and treat noxious weeds with herbicides to restore approximately 16,300 acres of vegetation predominantly within the Rio Chama WSA in Rio Arriba County, New Mexico. The Proposed Action would be implemented in a manner consistent with BLM policy for Management of Wilderness Study Areas in Manual 6330. The objectives of this project have already been a focus in the adjoining Cebolla Restoration Treatment Project evaluated in 2010.

The overall goal of managing fire in WSAs is to allow the frequency and intensity of the natural fire regime to play its inherent role in the ecosystem (BLM. WSA. 2012). The BLM Taos Field Office proposes to restore rangelands to reasonable densities of sagebrush, pinyon pine, and juniper, which would allow other native vegetation (such as warm and cool season perennial grasses, forbs, favorable shrub species and Ponderosa Pine stands) to exist and/or recover. The restoration of vegetation in the Rio Chama WSA would restore wilderness characteristics to conditions before it underwent changes due to past grazing and fire suppression efforts. It also proposes to control any federally, state, or locally recognized non-native noxious weed populations in the project area. Approximately 16,300 acres has restoration potential, either by use of wildland fire, prescribed fire, or chemical application (for noxious weeds only where appropriate).

The natural fire regime would restore the long-term health of the Rio Chama WSA, improving herbaceous growth, understory recovery, improving overall forest health and winter range forage by treating big sagebrush plant communities, hazardous fuels and non-native noxious weeds within the project area. The objective is to reduce existing sage/pinyon/juniper/oak brush densities through the use of prescribed fire and use of wildland fire, and to control non-native noxious weeds with Integrated Pest Management (IPM) vegetation treatments. IPM programs use current, comprehensive information on the life cycles of pests and their interaction with the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment (www.epa.gov/opp00001/factsheets/ipm.htm). It is expected that vegetation treatments would take place each year for the next several years. Treatment areas would be selected based on one or more of the following site characteristics:

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- The site's ability to recover with native vegetation.
- Soil is present which is not prone to erosion due to land use treatments such as prescribed fire or Integrated Pest Management techniques.
- A seed source is present and available for desirable vegetation.
- Cooperation with the grazing allotment operator for adequate grazing deferment.
- The area is favorable for application of IPM techniques, use of wildland fire, or prescribed fire.
- The treatment would have no significant adverse impacts on non-target plant or animal components of the community.

As indicated, the project area is located directly to the west of the community of Cebolla in Rio Arriba County, New Mexico covering nearly 16,305 acres (See Figure 1). The project area is located within the Rio Chama WSA and includes section 1 of T26N R02E; sections 1, 2*, 3, 4, 5, 6, 9, 10, 11, 12, 13, 14, 15, 22, 23, and 24 of T26N R02E; sections 7, 18, and 19 of T26N R03E; and sections 19, 20, 21, 22, 27, 28, 29, 30, 31, 32*, 33, and 34 of T27NR02E (*Sections owned by the New Mexico State Land Office). Treatment on BLM land within the project area would be given highest priority, while treatments on state and private land would only occur after establishing consultation and agreements.

The project would be implemented so as not to impair the suitability of the Rio Chama WSA for preservation as wilderness. The non-impairment criteria must be met by avoiding surface disturbance. Therefore, only existing primitive routes would be used to ensure there would be no surface disturbance, and any slash from the project would be dispersed or disposed.

Access throughout the project area would be limited to existing primitive two-track routes accessible by high-clearance vehicles. Vehicular travel would only occur during dry weather conditions. These existing routes would provide at least one access point to all sections of the project area. Some old two-track access roads to the project area were recently reclaimed and would not be used. If any unanticipated travel off of existing primitive routes becomes necessary during a wildland fire event to protect human life or property, evidence of tracks would be raked and eliminated at the completion of the project.

Funding would be the primary factor in determining the rate at which the projects are developed and targets met. Other factors such as environmental conditions, timing, and availability of personnel may also impact project progress and development.

Based on implementation of recent and comparable projects, it is expected that the total number of acres treated per year would not exceed 1,280 for herbicidal applications. Broadcast burns and wildland fires naturally ignited would be determined on a case by case basis and would not exceed 10,000 acres per year. Given this rate of implementation, the project could be expected to be completed within two years. The total acres of treatments combined would not exceed 12,000 acres per year.

There would be no increase in permitted livestock use levels due to increased forage production or habitat enhancement resulting from these proposed vegetation treatments. Adjustments to livestock numbers are a function of the permit renewal process and the monitoring of the attainment or non-attainment of the public land health standards.

In addition, the standard operating procedures and guidelines for the herbicide treatments proposed in the project area are detailed in the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS)* (Bureau of Land Management, USDI).

2.1.1 Project Design and Management Actions

Treatments

Various treatments would be conducted to some extent on all lands and would include prescribed fire, use of wildland fire, and herbicide application. These treatments would accomplish resource objectives described in this environmental assessment on approximately 16,300 acres.

Prescribed fire would include broadcast burns and occur at any time of the year when fuels are dry and able to carry a fire. Broadcast burns would be conducted in areas encroached upon by sagebrush and/or pinyon-juniper. Broadcast burns encourage grass recolonization of the site and maintain the grassland and ponderosa pine stands. On selected portions of pinyon-juniper forest, fire would be used to burn out pockets of continuous pinyon-juniper forest, creating more suitable habitat for deer and elk. All burn operations would be conducted under the supervision of a qualified prescribed burn specialist. Broadcast burns could continue throughout the duration of the project and to some extent on all sections.

Wildland fire for multiple resource objectives is the action of allowing a natural ignition (i.e., lightning) to burn under a pre-determined set of environmental conditions. Areas proposed for wildland fire for multiple resource objectives include sections that are entirely under BLM ownership in the north and central portions of the project area. These areas are predominantly pinyon-juniper savannah and pinyon-juniper woodland, including several small and isolated stands of ponderosa pine. Private and state lands within the project boundary may be included under this treatment, although this inclusion is contingent upon a signed agreement.

Mountain and mesa tops are typically identified for use of wildland fire primarily because of successes observed when these topographic features burn. For example, in the year 2000 a lightning-start wildfire occurred on Cerro de la Olla in Taos County. Since then, the area has seen tremendous recovery and an increased diversity of native plant species in Taos County. This burned area has served as an effective natural fuel-break in containing potential wildfire starts, and could be used as a fuel-break for future project burns.

Wildland fire use and prescribed fire may be used to restore or maintain habitat for threatened, endangered, or sensitive species; restore or maintain ecological conditions; and/or meet desired conditions of the Rio Chama Management Plan (RCMP). Management and suppression activities would be carried out in a manner consistent with direction in the RCMP and compatible with the management of contiguous Federal lands.

Mechanical fuel treatment, such as thinning using chainsaws and digging contingency lines using handtools, may be used in advance of, or in conjunction with, prescribed fire. Or mechanical fuel treatment may be used singularly as a prepositioned anchor point to be used in the case of a natural start and the use of wildland fire for multiple resource objectives.

Herbicide treatments would be used to treat non-native invasive weeds (e.g., plants of the genus Tamarix) within the project area. Only herbicides approved in the Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS) would be used. Cutting or eradication of trees and other vegetation is not permitted in the wild segment of the Rio Chama Wild and Scenic River except under the following circumstances: when needed in association with a primitive recreation experience, such as to clear trails, to protect users or the environment, including the use of wildfire suppression, or when vegetation is an invasive species and managed in accordance with the PEIS.

Non-native invasive plants, such as those of the genus *Tamarix*, are to be targeted for eradication in the project area. The preferred method in this area for eradication of *Tamarix* (“salt cedar”) is to cut the plants as close to the surface as possible, then apply herbicide on the cut stumps with a backpack sprayer. This technique allows for a highly selective application process that protects non-target vegetation. After cutting and applying herbicide to the plants, crew members would remove the slash from the project area. Slash should be burned in order to stop the plant from re-seeding itself. A blue indicator dye should be added to the spray mixture to show prior treatment of stumps.

The spread of terrestrial and aquatic invasive species should be prevented and controlled, consistent with direction in the CRMP and other authorities. A full range of manual and chemical prevention and control methods may be used, consistent with direction in the CRMP; BLM Manual Section 9011, 9014, and 9015; BLM Handbook 1740-2; and other approved Federal direction.

All options presented above would further the goal of making conditions possible for natural wildfire to return to the WSA. BLM Manual 6330- Management of Wilderness Study Areas states that “Fuel treatment . . . includes thinning or removing vegetation, either mechanically or chemically, in advance of, or as a replacement for, wildland fire (either wildland or prescribed fire) . . . the goal of fuel treatment [in a WSA] is to make conditions possible for natural wildfire to return to the WSA” (p. 1-15). The natural character of the wilderness area must be retained, and certain vegetation treatments that may cause initial surface disturbance are necessary to restore wilderness values. When invasive and noxious weeds threaten the natural balance of a wilderness area then the land in question must be managed to restore its historic vegetation regimes. As such, habitat manipulation using mechanical (i.e., chainsaws and handtools) or chemical (i.e., herbicides) means may be allowed to correct unnatural conditions resulting from human influence, as is the case in the Rio Chama WSA.

2.1.2 Survey, Inventory, and Monitoring

Vegetation: Baseline vegetation inventory was collected to aid in the analysis of this environmental assessment. Methods used included photo point specific rangeland transect establishment using the 2010 Farmington District Fire Monitoring protocol. GIS mapping, LANDFIRE data, and existing computer models were also used to calculate acreage of existing vegetation within the project area.

In addition to the baseline vegetation data, pre- and post- treatment inventories in the treatment areas would be conducted. Pretreatment studies would be done prior to any implementation activities and will include rangeland transects, permanent vegetation plots, and cultural resource inventories. Site-specific post treatment monitoring would involve assessing the effectiveness of the treatment, or control method, on specific species relative to application rate, method, and treatment area. Monitoring methods, in most cases, would be quantitative and commensurate with the level of treatment complexity, size and extent of the project.

Landscape-level monitoring would be used over the long term to track various vegetative species’ occurrences and would be accomplished through Geographic Information System (GIS) mapping.

Cultural Resources: Class level appropriate cultural inventories would be conducted prior to implementation of prescribed fire and mechanical treatments, as determined by the BLM in consultation with affected Tribes and the New Mexico State Historic Preservation Office. In addition, a qualified cultural resources monitor (or multiple resource advisors, depending on the size and complexity of the archaeological resources at hand) would be onsite during all implementation activities to help with avoidance and other mitigation opportunities.

Migratory Birds: Prior to any resource management activity occurring that might have an adverse effect on migratory bird species and their habitat, the project area would be surveyed by a qualified biologist for species of concern. Specifically, if project activities commence during the nesting season (April-August), a bird survey would be required to ensure there are no nesting birds in targeted trees or shrubs. If vegetation must be removed, it would be recommended that this occurs from August 15 through April 15 to avoid impacts to nesting birds. If this cannot be accomplished, a pre-treatment survey for actively nesting birds may be conducted by a qualified wildlife biologist. If active bird nests are found, coordination with the USFWS is required and a permit must be obtained in order to move or disturb any active nest.

Threatened and Endangered Species, Including Special Status Species: To determine the presence or absence of special status species in the project area, the land would be surveyed by a qualified biologist prior to any land management actions.

2.2 Alternative B: No Action

Under the No Action alternative there would be no vegetative treatments conducted in the Rio Chama WSA. If no vegetation treatments were carried out in the Rio Chama WSA then it is likely that a continuation of the current vegetation regime imbalance would occur, or even be exaggerated.

2.3 Alternatives considered but dismissed from detailed analysis

The BLM considered but dismissed from detailed analysis an alternative that would not provide for the use of herbicides as a treatment method. The Proposed Action provides for a range of treatment options that would be considered during implementation based on resource conditions, and certain conditions would not warrant the use of herbicides as a treatment method. While the Proposed Action includes the limited use of herbicides (i.e., a maximum application of 1,280 acres annually), herbicides would be an effective tool and would be an important component to the vegetation treatment strategy for this project. Herbicide use for management of habitat is consistent with the goals and objectives of the “Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS),” mentioned above, which has analyzed the public health effects of herbicide use. This document prescribes appropriate procedures for herbicide use that would be applied to minimize the potential for impact.

As shown in the PEIS, risks from herbicidal applications, which are registered with the Environmental Protection Agency (EPA), are minor if the BLM follows the appropriate procedures for herbicidal use and mitigation measures identified in the PEIS. Other treatment methods also have risk and may not be appropriate for large-scale treatments because they may result in greater environmental effects, may be more costly, or may result in significantly longer time frames for restoration.

Although there would be minimal risk to humans and the environment from herbicides under this alternative, the risk of environmental damage from the spread of invasive vegetation, and increased risk of wildfire, would be greater under this alternative than the action alternative analyzed. For these reasons, the BLM did not analyze this alternative in detail.

Chapter 3: Affected Environment

This chapter describes the affected environment (resources that may be affected by the alternatives). The general effects of each alternative on resource categories are addressed in Chapter 4. The affected environment for most resources is described in detail in the Cebolla Forest and Rangeland Restoration Treatment Project EA (DOI-BLM-NM-F020-2009-0027-EA) and incorporated by reference below.

Elevations in the project area range from approximately 6,811 to 7,966 feet. Annual precipitation is approximately 16 inches, with the majority of this accumulation in late summer.

Users of public land in the Chama area are primarily ranchers, farmers, and hunters. Amount of use is low due to remoteness and seasonally poor access conditions. Public interest is moderate due to their value of wilderness characteristics and although is not visible from major travel routes, may be seen by visitors to the Rio Chama. Adjacent uses include grazing, hunting, hiking, boating, and Forest Service and Jicarilla tribal land. Special designations in the area include the Rio Chama Wild and Scenic River, the Chama River Canyon Wilderness (managed by the Santa Fe National Forest), and the Rio Chama WSA.

3.1 Air Quality

Airborne pollutants and particulate matter from motor vehicles degrade air quality in certain sections of the district. Air temperature affects the escape and dispersion of these pollutants, causing seasonally dependent differences in air quality. One of the most noticeable air pollutants in the project area is blowing dust. See section 3.1 of DOI-BLM-NM-F020-2009-0027-EA for further details.

3.2 Climate

Gradual climate change, consisting of an increase in temperatures, has been observed throughout the southwestern U.S. since the early 20th century. Should these warming trends continue, the habitats and identified drought sensitive species in these forested areas and higher elevations may also be effected by climate change (Enquist and Gori 2008). See section 3.2 of DOI-BLM-NM-F020-2009-0027-EA for further details.

3.3 Cultural Resources

During prehistoric times the area was used primarily for hunting and gathering activities. Landforms such as arroyos, natural lakes, mountains and mesa tops were important land forms for prehistoric peoples, and as such sites and features are often found clustered near these areas. Historic use of the area was dominated by livestock grazing, hunting and mining. Prior to any resource management activity that might pose an adverse effect to known and unknown cultural resources the project area must be surveyed by a qualified archaeologist. Section 3.3 of Cebolla Forest and Rangeland Restoration Treatment Project DOI-BLM-NM-F020-2009-0027-EA explains: Prehistoric remains associated with every major southwest cultural period have been recognized in the Chama region and are likely to be present within the current project area. Open artifact scatters, rockshelters, structural remains associated with the Gallina Culture, as well as the remains of Navajo hogans and Apache wickiups have been recorded within or in the vicinity of the project area. A number of abandoned homestead sites are located in the area along with the remains of logging camps and saw mills. Early roads and trails traverse the project area, including designated segments of the Old Spanish National Historic Trail. This feature is managed by specific stipulations and prescriptions, including VRM exclusions, which are outlined in the Taos 2012 RMP.

3.4 Livestock Management

| | | |
|-------------------------|----------------------------------|-----------------|
| All | 00557 Puerto Community Allotment | Vacant |
| Portion | 00559 Nutrias Canyon Allotment | Vacant |
| All | 00558 Rio Chama Allotment | Vacant |
| 5/16-7/23 | 00574 Navajo Peak Allotment | 283 AUMs |
| 6/7-10/31 and 5/1-10/31 | 00561 Esperanza Allotment | 1698 total AUMs |

3.5 Migratory Birds

Migratory bird species of conservation concern have the potential to occur in the project area. See section 3.5 of DOI-BLM-NM-F020-2009-0027-EA for further details.

3.6 Riparian/Aquatic

Several aquatic areas of concern are located within the project boundaries. These water sources serve essential ecological functions. See section 3.6 of DOI-BLM-NM-F020-2009-0027-EA for further details.

3.7 Soils

Soils across the project area vary widely from shallow-to-deep, fine-to-course, salt, and organic matter content. The soils support the vegetation communities in question, and as such are an important concern in the restoration of habitat within the project area. See Section 3.7 of DOI-BLM-NM-F020-2009-0027-EA for further details. In addition, detailed soil information can be found at <http://soils.usda.gov/survey/> for the project area.

3.8 Threatened and Endangered Species and BLM Sensitive Species

The project area does not contain habitat for threatened and endangered species. There is no designated critical habitat for any such species in or near the project area. See section 3.3 of DOI-BLM-NM-F020-2009-0027-EA for further details.

BLM Sensitive species that are known to occur, or have potential habitat, in the area include the Gunnison’s prairie dog (*Cynomys gunnisoni*), bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus anatum*), western burrowing owl (*Athene cunicularia hyougaea*), loggerhead shrike (*Lanius ludovicianus*) and several bat species.

3.9 Vegetation

The project area has a limited range of vegetation zones and habitat types. The canopy is a mixture of ponderosa pine (*Pinus ponderosa*), juniper (*Juniperus spp.*), and pinyon pine (*Pinus edulis*). The understory is composed of various grasses, forbs, and shrubs; including big sagebrush (*Artimesia tridentata*), rabbit brush (*Chrysothamnus spp.*), blue grama (*Bouteloua gracilis*), side-oats grama (*Bouteloua curtispindula*), longleaf squirreltail (*Elymus longifolius*), lupine (*Lupinus spp.*), broom snakeweed (*Gutierrezia sarothrae*), gambel oak (*Quercus gambelii*), and mountain mahogany (*Cercocarpus montanus*).

The diverse array of habitat zones that occur within the project area support a wide variety of plant communities. Sagebrush does dominate these plant communities, and this is a concern for the health of

the overall ecosystem in the project area. See section 3.9 of DOI-BLM-NM-F020-2009-0027-EA for further details.

3.10 *Visual Resources*

The Rio Chama Wilderness Study Area is located south of Tierra Amarilla and southeast of El Vado Lake and includes the hills, ridges, and foot slopes around the Rio Nutrias and Rio Cebolla. With the exception of the Rio Chama river corridor, it is characterized by low rolling mesa with some small light yellow and grey cliffs and bluffs converging and rising to other low mesas. Sagebrush and grass dominate the lower areas while piñon-juniper woodlands are found in draws and tops of bluffs. Oak and Ponderosa forest may be seen as the mesa slopes and breaks toward the Rio Chama. River canyons are small and shallow but steeply cut with rust and light orange walls. River beds are cobble and sand. Human activity in the area is apparent by dirt routes, livestock grazing, power lines, and fencing.

The Visual Resource Management objective for the Rio Chama WSA, as prescribed in the Taos RMP, is Class I, which requires the preservation of the existing character of the landscape. The level of change should within Class I areas must be very low and not attract attention.

3.11 *Wilderness Characteristics*

The Rio Chama WSA encompasses approximately 11,150 acres containing the following wilderness characteristics: naturalness and outstanding opportunities for solitude and primitive and unconfined recreation. The WSA also contains scenic quality as a supplemental value.

The WSA consists of rolling hills, mesas, and deep canyons of the Rio Chama, Rio Nutrias, the Rio Cebolla, as well as the predominate Navajo Peak. The WSA is remote from the sights and sounds of human activity and offers great opportunities for solitude and a sense of isolation. Boating the Wild and Scenic Rio Chama is the most popular recreational activity, though users are limited and tightly managed under a river management plan. Recreation outside of the river canyon is primarily hunting but a sparse number of hikers may seek out the Navajo Peak Trail. Outstanding recreation opportunities include unconfined exploration in a highly scenic environment.

3.12 *Wild and Scenic River Values*

Over 30 miles of the Rio Chama were designated as Wild and Scenic in 1988 through Public Law 100-633, under the provisions of the Wild and Scenic Rivers Act of 1968, for their outstandingly remarkable values, which include scenic, riparian, fish habitat, wildlife, and recreational values.

The river segment from El Vado boat launch site to the Christ in the Desert Monastery is classified as “wild” and runs through the Chama River Canyon Wilderness, while the remaining three miles are classified as “scenic.” Wild river areas are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America (US 1968). Scenic river areas are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads (ibid.).

Uses of the river, particularly boating opportunities, are allocated and managed under the Rio Chama Management Plan. Allowable activities must be consistent with the segment’s classification and not compromise any of the outstandingly remarkable values.

3.13 Wildlife

The project area includes big game critical winter range and serves as a migration corridor for these species. See Section 3.11 of DOI-BLM-NM-F020-2009-0027-EA for further details.

Chapter 4: Environmental Effects

4.1 Direct and Indirect Effects

This chapter describes the anticipated effects on the resource issues if the alternatives are implemented. The general effects of each alternative on resource categories are addressed. Direct effects are caused by an action and occur at the same time and place. Indirect effects are caused by an action and occur later in time or farther removed in distance.

4.1.1 Alternative A: Proposed Action

4.1.1.1 Air Quality

Treatment with prescribed fire would have an immediate, but short term impact on air quality in the immediate area due to smoke. Impacts from smoke would be temporary and quickly dispersed throughout the area. These factors, combined with standard operating procedures (SOPs), would minimize potential impacts. Federal and State air quality standards would not be violated. In addition, standard management practices for ground-based application of herbicides would limit the amount of drift into non-target areas.

4.1.1.2 Climate Change

The assessment of greenhouse gas (GHG) emissions, their relationship to global climatic patterns, and the resulting impacts is an ongoing scientific process. It is currently not feasible to know with certainty the net impacts from the Proposed Action on climate—that is, while BLM actions may contribute to the climate change phenomenon, the specific effects of those actions on global climate are speculative given the current state of the science. The BLM does not have the ability to associate a BLM action's contribution to climate change with impacts in any particular area. The technology to be able to do so is not yet available. The inconsistency in results of scientific models used to predict climate change at the global scale coupled with the lack of scientific models designed to predict climate change on regional or local scales, limits the ability to quantify potential future impacts of decisions made at this level and determining the significance of any discrete amount of GHG emissions is beyond the limits of existing science. When further information on the impacts to climate change is known, such information would be incorporated into the BLM's planning and NEPA documents as appropriate. It is not, however, possible at this time to predict with any certainty the causal connection of site specific emissions from the Proposed Action or other alternatives in this EA to impacts on the global and regional climate.

There is an assumption, however, that certain related activities in the alternatives (e.g., fire and herbicidal treatments) would contribute to short-term emissions of GHGs for the duration of the project. Examples of some of these short term activities or sources, which may contribute to GHS, include small particulates from smoke from prescribed fires and vehicle emissions.

4.1.1.3 Cultural Resources

Under the Proposed Action many of the proposed activities could have adverse effects on cultural resources. Most obviously, fire along with suppression/fire management practices can alter or destroy cultural sites and features. Intense, high temperature fires can alter archaeological features such as fire hearths and artifacts. However, these possible impacts to inventoried sites can be reduced or eliminated through protective measures taken during the burning operation, such as foaming or black-lining around existing sites.

As discussed in section 2.1, archaeological inventories would be performed before prescribed fire and non-fire fuels treatment projects. The intensity of archaeological inventory would be determined for each proposed project based on the potential for earth disturbing activities, fuel types, projected site types, etc. Cultural inventories would provide data essential to developing and implementing suitable measures to mitigate potential impacts to cultural resources.

Short-term effects may include an increase in erosion due to the initial loss of vegetation cover. Erosion is a major cause for the loss of archaeological resources. Long-term effects of the proposed project would likely have a positive effect on cultural resources due primarily to forest, grassland, and watershed restoration, which should reduce long term erosion.

4.1.1.4 Livestock Management

Vegetation restoration treatments to enhance forage, including prescribed broadcast burns, would result in direct surface and vegetation disturbance. These treatments in the short term would remove vegetation and potentially impact livestock forage within the project area. Treatments would be implemented and completed when livestock are not in the project area.

Following treatments included in the Proposed Action, the treated areas would be rested for a minimum of two years, or until range conditions are deemed suitable for limited livestock grazing as determined by BLM staff, to allow for the successful establishment of key vegetation. This post-treatment rest could be considered a negative impact to livestock operators as alternative grazing must be located for their livestock.

BLM would work with operators prior to treatments to give them enough notification to make their livestock elsewhere.

4.1.1.5 Migratory Birds

Migratory bird species of conservation concern that have the potential to occur in the project area include bald eagle, pinyon jay, Western burrowing owl, Baird's sparrow, loggerhead shrike, Grasshopper sparrow, golden eagle, and mourning dove.

If the Proposed Action is implemented during the primary breeding season (April through August) there is the potential to impact reproductive and/or foraging activities, resulting in a negative effect on individual birds, eggs, young, and/or nesting habitat due to trampling, vegetation removal or disturbance from human noise and commotion. This would not have a measurable negative effect at the population or species level due to improved structural and vegetation diversity as a result of the Proposed Action.

If project activities commence during the nesting season (April-August), a bird survey would be required to ensure there are no nesting birds in targeted trees or shrubs. If vegetation must be removed, it would be

recommended that this occurs from August 15 through April 15 to avoid impacts to nesting birds. If this cannot be accomplished, a pre-treatment survey for actively nesting birds may be conducted by a qualified wildlife biologist. If active bird nests are found, coordination with the USFWS is required and a permit must be obtained in order to move or disturb any active nest.

Increase in vegetative diversity and control of nonnative invasive vegetation could positively affect local macroinvertebrate populations, resulting in an increase in the avian prey base, indirectly benefiting migratory birds in and adjacent to the project area.

4.1.1.6 Riparian/Aquatic

Short-term direct impacts would be similar to those described in section 4.1.1.9 below. Long-term and indirect impacts would be beneficial to habitat within riparian/wetland areas due to the removal or control of unwanted vegetation infestations.

Due to the scope and scale of the Proposed Action, mechanical treatments would be unlikely to have an adverse effect on riparian and aquatic areas. In most cases, unwanted vegetation near a riparian area could be removed without disturbing more desirable species. Fuel and lubricant spills that could result from using chainsaws and trimmers would be contained or cleaned up (using plastic tarps to cover the ground during refueling) before contamination spreads to surrounding areas. With mechanical treatments, erosion can be a problem on slopes greater than 20%, due to the decreased number of roots holding the soil down. Thus, mechanical methods would be avoided on slopes greater than 10% within 300 yards of riparian areas.

The effect of prescribed fire as a treatment method in riparian areas would be dependent on the natural fire regime of the area, the time of year that burning occurred, and the extent of the prescribed fire. In riparian areas where vegetation density is usually high, the potential for hotter, more extensive burns is elevated (Thompson and Shay, 1984). However, most prescribed burns in riparian areas would consist of pile burns and mid-scale broadcast burns, therefore, the effect to riparian systems would be minimal.

The use of herbicide treatments would have a limited effect on riparian systems because of the scope of the Proposed Action and location of riparian areas in relation to herbicide treatment areas. As stated earlier, the IPT cut stump treatment will be used for Tamarix eradication, allowing crews to be highly selective about which plants are affected by the herbicide.

Additional impacts could include unintentional applications of herbicides in riparian areas. Accidental spills of herbicides would be very damaging to native riparian vegetation and would degrade water quality in these areas. The standard operating procedures for applying herbicides found in the Record of Decision for the PEIS (BLM 2007, Appendix B table B-2) would be observed in implementing herbicide treatments in riparian and aquatic areas.

An increase in soil erosion and surface water runoff would result from vegetation reduction near riparian and wetland areas, which could lead to streambank erosion and sedimentation (Ott 2000). The amount and likelihood of streambank erosion and sedimentation would be directly proportional to the size of the treatment area.

4.1.1.7 Soils

Overall, the removal of encroaching sagebrush, pinyon pine, and juniper would be beneficial to the soils and watershed components of these lands. Preventing the long-term decline in ecological conditions that accompanies vegetation encroachment would result in better watershed function (hydrologic, nutrient,

and energy cycles). Healthy native grass and bunchgrass communities would stabilize soils, improve infiltration and storage, and maintain soil productivity.

Direct and indirect impacts from the actual implementation operations would be minimal. Some physical soil disturbance would occur from vehicle use, but would only affect small localized areas and natural recovery would occur within two to five years of the disturbance. Direct impacts from burning, such as intense surface heating causing soil sterilization, would be minimal in the project area due to fuel types present, weather conditions, and prescribed burning procedures.

Although herbicides would not alter a soil's physical properties, they may have indirect effects on soil microorganisms. However, herbicide application rates would be adjusted to prevent soil organism mortality.

Total surface area impacted would be minimal. There are adequate seed sources of native perennial plant species to allow rapid colonization of any localized areas that could be impacted. The colonization of perennial plant species would decrease the amount of erosion, resulting in improved water quality.

4.1.1.8 Threatened and Endangered Species and BLM Sensitive Species

As indicated under section 3.8, the Proposed Action would have no effect on federally listed species. The project area does not contain habitat for threatened and endangered species. There is no designated critical habitat for any such species in or near the project area. See section 3.3 of DOI-BLM-NM-F020-2009-0027-EA for further details.

BLM Sensitive species that are known to occur, or have potential habitat, in the area include the Gunnison's prairie dog (*Cynomys gunnisoni*), bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus anatum*), western burrowing owl (*Athene cunicularia hyougaea*), loggerhead shrike (*Lanius ludovicianus*) and several bat species.

4.1.1.9 Vegetation

Under the Proposed Action, target species in treated areas would be directly affected. The overall effect of treatments would be to achieve the desired successional stage, and to create a more stratified age structure for wildlife habitat improvement and livestock grazing.

Plants may vary greatly in their sensitivity to different treatment methods. Effectiveness may vary with different climatic and soil conditions. Soil-applied herbicides are less effective on fine textured soil relative to coarse-textured soil, because herbicide molecules may be adsorbed into clay colloids. Response of non-target plant species to herbicides depends not only on their susceptibility to the herbicide directly, but also on their response to a decrease of target plant species in the community.

Prescribed fire typically does not kill southwestern grass species (Warren et al 1999). This is because fires are usually fast moving and do not burn into the root crown. This allows the grass plants to re-sprout. Mechanical treatments would also impact vegetation. Depending on the type of vegetation being treated, impacts from these types of treatments would be minimal and used to achieve the desired condition. Grass species recovery is dependent upon post-treatment precipitation, plant vigor prior to burning, relative humidity at time of burning, and post-treatment grazing pressure. Depending upon the amount of post-treatment precipitation, grasses can recover as quickly as the first growing season. Without sufficient post-treatment moisture, recovery could take several years to reach pre-treatment levels and support less desirable species during the interim.

4.1.1.10 Visual Resources

Wildland fire has been suppressed in the project area in the past, allowing for an imbalance in vegetation cover and subsequent disparities in the rest of this environment. The reintroduction of fire to the area would be a natural way in which to manipulate the vegetation in order to return it to its historic ecological conditions. Retaining old growth pinyon and other scenic groupings of sagebrush would maintain the scenic quality along Rio Chama. Slash piles and cleared area would result in short term adverse but weak impacts to the line, color, and texture of vegetation. Edges of the treatment area may be visible, as well as greener, brighter, and finer vegetation of grasses. Overall areas burned as part of the treatment plan would be restored to their historic vegetation regimes, plus the use of wildland fire in the area would maintain or restore habitat needed for special status and sensitive species.

The level of change to the landscape itself would be minimal, and, in fact, the use of fire in this landscape would restore its original surface conditions, with mosaics of native vegetative cover.

An element of the Proposed Action that may impact scenic resources is prescribed fire. A natural ignition or wildfire could have short term contrasts to the existing line, color, and texture of vegetation. However, fire plays a natural role in ecology. The results of a fire are expected to look natural and be consistent with the ecological community. Any necessary suppression activities are anticipated to be of low disturbance to soil and vegetation as well as mitigated after a potential fire. This would meet VRM Class I objectives over the long term.

Public perception of different forest management practices can vary according to subjective expectations within and across cultures. A positive or negative reaction to any particular treatment could be related to the following factors: forest condition in which a technique is being compared (managed vs. unmanaged, old growth, stand type or rotation), professional background (forester vs. biologist), awareness of the benefits of various management practices, management designation (national park or wilderness vs. commercial range or timberland), gender, and culture or country (Ribe 1989).

However, short term visual contrasts from a fire in this area could meet management objectives if mitigation is closely followed. In a 2010 study in the Boundary Waters Canoe Area Wilderness one respondent described burned areas as “not very pretty,” however another said “nature’s not always going to be pretty, but it’s always going to be awesome” (Schroeder and Schneider 2010). The Pacific Southwest Research Station conducted a survey by telephone in 2003 asking residents of Arizona, California, Colorado and New Mexico their opinions about management options in National Forests. While 80 percent of New Mexico respondents agreed that “Views along the road and on trails are less scenic following a fire,” 85 percent agreed that “Fire is a natural ecosystem process,” and 63.3 percent agreed that “We probably have to let some fires burn, but must protect residences” (Winter 2003).

4.1.1.2 Wilderness Characteristics

Fire management practices and herbicides may be used in WSAs to protect and enhance wilderness characteristics, to restore natural ecological conditions, and to facilitate wildfire in ecosystems that evolved *with* fire. The Proposed Action would meet the BLM policy for Management of Wilderness Study Areas in Manual 6330. So long as the non-impairment criteria are met and no surface disturbance occurs, as anticipated under the Proposed Action, then the area would retain its suitability for wilderness designation.

Naturalness: Using wild fire, prescribed fire and fuel treatments for planned ignitions could promote natural succession and regeneration of native flora in the historic land cover. The history of early 20th century land management saw wildland fire suppressed from landscapes where it was required to retain

the natural characteristics of the land. Current science has taught land managers that fire is essential for ecosystem health and function.

The natural role of fire cannot be returned solely by reliance on wildfire. Prescribed fire may be used to make conditions possible for natural fire to return to the WSA. In accordance with WSA requirements only existing authorized routes would be used, rehabilitated routes would be avoided, no surface disturbance would occur, and any slash would be disposed of as soon as possible.

These activities could restore naturalness within the wilderness study area and enable the ecological community to return to natural processes. Eliminating weeds would also preserve the existing character of the landscape.

Outstanding Opportunities for Solitude and Primitive and Unconfined Recreation: During implementation activities, the Proposed Action would disrupt the opportunities for solitude in much of the WSA due to the presence of crews, vehicles, and other associated visual and audible intrusions. These intrusions however may be avoided by proximity and/or topography depending on the location and spread of implementation activities.

Supplemental Value—Scenic Quality: While a large sector of the American public still sees wildland fire as a negative impact to the land—burned areas are often referred to as “ugly” or “not scenic”—burned landscapes are actually essential to the natural mosaic quality of groundcover in wilderness. However, VRM Class I objectives would be met over the long term. (For more detailed analysis, see section 4.1.1.10.)

4.1.1.12 Wild and Scenic River Values

The Proposed Action is consistent with the BLM’s protective management of the Wild and Scenic Rio Chama, as prescribed in the Rio Chama Management Plan. The treatments involving cutting and use of chemicals to remove invasive species are acceptable within “wild” and “scenic” segments. The activities would be consistent with management limitations within these classifications because they would not alter the character of the segment or introduce an intrusive feature. Nothing in the Proposed Action would affect the free-flowing nature of the river.

The Proposed Action would not compromise the river’s outstandingly remarkable scenic, riparian, fish habitat, wildlife, and recreation values. Their respective analyses under section 4.1 show that long term benefits would occur to scenic quality, vegetation, and wildlife and aquatic habitats as a natural ecological condition is restored.

4.1.1.11 Wildlife

The proposed action would affect the following habitats which support local wildlife populations: grasslands, shrublands, pinyon-juniper forests, ponderosa pine forests, and mixed conifer forests. The restoration of these habitats to historic conditions would provide long-term benefits to the native wildlife populations that are dependent upon them.

Prescribed fire would accomplish the following habitat management goals: an increased understory production of native grasses and forbs (Brockway et al. 2002), establishment of a higher amount of “edge,” or transition zone, between different habitat types, and the creation of a mosaic. An increased understory production of native grasses and forbs would also provide increased forage opportunities for deer, elk, pronghorn and small mammals, as well as nesting habitat for ground nesting birds, and would support insect populations essential to bird forage.

The creation of more edge in large unbroken blocks of the pinyon-juniper forests would provide increased forage and cover opportunities in close proximity to one another. Edge is an important structural component for many species' habitats; and benefits deer, elk, and many other mammal and bird species. Creation of a mosaic in the burn areas would provide habitat for cavity-nesting birds and support insect populations which many bird species would use for food.

Short term effects of the proposed management activities on wildlife populations include disturbance from machinery, administrative motor vehicle use, and prescribed fire. These disturbances may include temporary surface disturbance from vehicle travel, noise, and smoke. There also may be short-term impacts to individual birds due to disturbance during the implementation phase of the project; there would be long-term benefits from an increase in diversity of vegetation. There could also be a slight reduction in the quantities of seeds and berries produced in the project area due to reduction of pinyon pine and juniper, decreasing the amount of forage available for birds dependent on those resources. There would be a reduction in sagebrush obligate and semi-obligate species habitat, including that for sage sparrow, sage thrasher and Brewer's sparrow, while over the long-term grassland avian species habitat could increase.

Browse for big-game could decrease with the elimination of sagebrush communities and conversion to grassland species, while warm season forage could increase over the long-term. Winter range, therefore, may be decreased for deer and elk, while summer range would increase with the restoration of grass and forb vegetation. Depending on migration patterns, long-term habitat restoration under the Proposed Action could have a beneficial or detrimental impact to big-game herbivores like elk and deer.

4.1.2 Alternative B: No Action

4.1.2.1 Air Quality

The No Action alternative would have no impact on air quality.

4.1.2.2 Climate

The No Action alternative would not affect climate change.

4.1.2.3 Cultural Resources

The No Action alternative would have no short-term effects on noncombustible cultural resources. Combustible cultural resources could be at risk under the no action alternative due to the higher risk for wildfire associated with monocultures of non-native invasive plants and vegetation. Cultural resources would also be at greater risk from erosion in the long term where inadequate understory leaves soils more vulnerable. In addition, long-term effects on cultural resources could include less opportunity for accurate surveys due to dense understory foliage.

4.1.2.4 Livestock Management

The No Action alternative could likely result in the succession of the pinyon/juniper and sagebrush vegetation types, allowing for undisturbed plant communities where herbaceous species are under-represented. Livestock could be negatively affected by a reduction in forage due to the encroachment of invasive plants outcompeting herbaceous vegetation. However, operators in the short term would not be displaced from allotments during the recovery period following wildfire uses or prescribed fire activities.

4.1.2.5 Migratory Birds

The No Action alternative could benefit some species, specifically sagebrush or woodland obligates that prefer climax vegetation conditions, while negatively impacting grassland species that are precluded from these habitat conditions. Generally, migratory birds would find fewer habitat niches within existing conditions and, therefore, the No Action alternative would have a negative impact on these species.

The no action alternative could have either a beneficial or detrimental effect on individual migratory bird species of concern, depending on the response of individual species requirements, but effects at the population or species level would not be adverse.

4.1.2.6 Riparian/Aquatic

Under the No Action alternative there would be increased vitality and higher stand density of non-native invasive plants and vegetation found within riparian ecosystems. Long-term impacts would include a decline in native plant species, decreased biodiversity, and a reduction in the quality of the riparian ecosystems within the project area.

4.1.2.7 Soils

Under the No Action alternative, no direct effects would impact the soil. The long term indirect effect of continued big sagebrush expansion would result in the transition to an aggressive big sagebrush type system, where interspatial plant communities are reduced or absent. Over the long term the increased vegetation density and subsequent loss of understory species would result in accelerated soil erosion, loss of site productivity, decreased watershed function, and reduced nutrient and energy cycling (Wilcox et al. 1996).

4.1.2.8 Threatened and Endangered Species and BLM Sensitive Species

A No Action alternative would create long term changes to the food base for some special status species. Invasive vegetation could out-compete native vegetation, creating monocultures of vegetation. Because of this lack of biodiversity, the macro invertebrates and small mammals could be forced to find different native habitat or may decline due to lack of habitat. These species are part of a food web that could directly or indirectly impact special status species.

4.1.2.9 Vegetation

The No Action alternative would result in the likely succession of pinyon/juniper and sagebrush vegetation types towards plant communities where herbaceous species are generally absent or severely under-represented. Plants such as sagebrush and pinyon-juniper present within the project area would continue to exist and would likely expand their dominance. This would result in the vegetation moving toward a monoculture instead of a mosaic of natural vegetation and higher biodiversity. Over time the competition for soil moisture, nutrients, and sunlight from the overstory of pinyon/juniper and sagebrush would exceed these herbaceous and shrubby browse plant species' ability to compete for these elements (Bates et al. 1998). Any spread of invasive species and noxious weeds and threat of their dominance could cause the ecological integrity of the area to fall further out of balance.

4.1.2.10 Visual Resources

Under the No Action alternative there would be no direct effects. A gradual transition in vegetation on the landscape to more of an overpopulated high density vegetation community would occur over time, but is unlikely to have an adverse effect on the existing character of the landscape.

4.1.2.11 Wilderness Characteristics

The ecological condition of the Rio Chama WSA, and therefore its natural character, could degrade over the long term if no action is taken to manage invasive species, dominate monocultures, and to facilitate the presence and role of wild fire in this ecosystem. An opportunity to restore conditions to promote wild fire and its natural role in the WSA would be lost. Allowing weeds to proliferate unchecked would also threaten the area's naturalness. Although, the area may retain its suitability for wilderness designation, the BLM policy is to protect wilderness characteristics in the same or better condition than they were on October 21, 1976 (BLM WSA 2012).

Under the No Action outstanding opportunities for solitude and primitive and unconfined recreation would be unaffected. As indicated under section 4.1.2.10, the scenic quality of the area would also be unaffected.

4.1.2.12 Wild and Scenic River Values

The No Action alternative would compromise the outstandingly remarkable values of the river corridor, particularly riparian and fish habitat and wildlife values. Conditions may stay the same but the spread of invasive species are likely to continue within the river corridor. Shorelines would not be protected or enhanced, but, instead, would be vulnerable to invasive species, reducing the quality of riparian habitat. The "wild" and "scenic" segment classifications would be unaffected, as would the free-flowing condition of the river.

4.1.2.11 Wildlife

The No Action alternative would leave wildlife habitat in the management area in their current conditions, allowing them to further degrade over time. Relative to the conditions that the Proposed Action is likely to create, current habitat conditions would exhibit a decreased production of native understory grasses and forbs, and would produce larger unbroken blocks of sagebrush.

Under this alternative, the management area would be more susceptible to large stand replacement by pinyon-juniper encroachment, which could remove the native cover and forage that many wildlife species require. This possibility would have negative effects on the overall landscape.

4.2 Cumulative Effects Analysis

A cumulative impact, as defined in 40 CFR 1508.7, is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other action.

4.2.1 Cumulative Actions

4.2.1.1 Past, Present and Reasonably Foreseeable Actions

Two recent and on-going actions are relevant to the cumulative impacts analysis, the 2010 Cebolla Vegetation Restoration Project and the 2011 Rio Chama Route Reclamation Project. The vegetation restoration project involves the treatment of approximately 42,000 acres of vegetation within an area about 65,000 acres in size, located to the east and immediately adjacent to Rio Chama WSA, the current project area. The project includes various treatment methods implemented at a rate of up to 8,000 acres per year. The need for and objectives of the project are essentially the same as those for the current proposal. In fact, the current proposal is essentially designed as an expansion of the 2010 project, but with appropriate adjustments to the implementation methods within the WSA.

The Rio Chama WSA Route Reclamation Project involved reclaiming approximately 39 miles of illegal routes that had proliferated since the WSA was originally inventoried in 1980. The proposed action would not utilize these reclaimed routes unless unanticipated actions associated with wildland fire warranted their travel to protect human life or property.

4.2.2 Cumulative Effects

4.2.2.1 Air Quality

Treatments with prescribed fire would have an immediate, but short term impact on air quality in the immediate area due to smoke. Thinning treatments would have an immediate short-term impact on air quality due to chainsaw particulates and exhaust. Other impacts to air quality might come from nearby pollutants such as oil and gas developments, road maintenance, and regular traffic.

4.2.2.2 Climate Change

The incremental contributions to global GHG gases as a result of the proposed alternatives cannot be translated into effects on climate change globally or in the area of this site-specific action. As stated in the direct/indirect effects section under climate change, the assessment of GHG emissions and the resulting impacts on climate is an ongoing scientific process. It is currently not feasible to know with certainty the net impacts from the proposed action on global or regional climate—that is, while BLM actions may contribute to the climate change phenomenon, the specific effects of those actions on global climate are speculative given the current state of the science. Therefore, the BLM does not have the ability to associate an action's contribution in a localized area to impacts on global climate change.

4.2.2.3 Cultural Resources

BLM staff archaeologists have been integrated into the assessment process to promote proactive, long-term management of cultural resources. Proposed activity areas, which have not been intensively inventoried, and at-risk resources would be delineated for minimizing activity impacts within their perimeters. No cumulative impacts to cultural resources within the Project area would occur under either alternative.

4.2.2.4 Livestock Management

Cumulative impacts from rangeland restoration treatments, prescribed broadcast burns, and other vegetation restoration projects would result in surface and vegetation disturbance. These treatments in the short term would disturb and remove vegetation, and could potentially impact livestock grazing forage

within the project area. In the long term, these management actions would assist with maintaining and improving the overall vegetation conditions for a variety of resource objectives including increases of forage of native grasses for livestock grazing.

4.2.2.5 Migratory Birds

While there would be short-term impacts to individual birds due to disturbance during the implementation phase of the project, there would be long-term benefits from an increase in diversity of vegetation. Cumulative actions might also result in a slight drop-off in the quantities of seeds and berries produced in the project area due to reduction of pinyon pine and juniper. This reduction decreases the amount of forage available for birds dependent on those resources, as well as reduces sagebrush obligate and semi-obligate species habitat.

4.2.2.6 Riparian/Aquatic

Cumulative impacts to riparian and aquatic ecosystems from the actual implementation of operations would be minimal. Treatments in the short-term would disturb and remove vegetation. In the long-term, these management actions would assist with improving and restoring the overall conditions of the riparian and aquatic ecosystems.

4.2.2.7 Soils

Cumulative impacts from the actual implementation of operations would be minimal. Some physical soil disturbance would occur from vehicle use, but would only affect small localized areas and natural recovery would occur within two to five years of the disturbance. Direct impacts from burning, and intense surface heating causing soil sterilization, would be minimal in the project area.

4.2.2.8 Threatened and Endangered Species and BLM Sensitive Species

Cumulative impacts to special status species include actions from forest, woodland and rangeland treatments to enhance wildlife habitat. These treatments in the short term would disturb and remove vegetation. In the long term, these management actions would assist with improving biodiversity that could benefit special status species.

4.2.2.9 Vegetation

Forest and woodland treatments, prescribed fire, and other vegetation restoration projects would result in surface and vegetation disturbance. These treatments would, in the short term, disturb and remove vegetation. In the long term, these management actions would assist with maintaining and improving the overall vegetation conditions, thus meeting a variety of resource objectives. Objectives met include increasing vegetation diversity and abundance, increasing vegetation structural diversity, improving resiliency to wildfire impacts, increasing water infiltration, and decreasing erosion, among others.

4.2.2.10 Visual Resources

An element of the Proposed Action that may impact scenic resources is prescribed fire. A natural ignition or wildfire could have short term contrasts to the existing line, color, and texture of vegetation. However, fire plays a natural role ecologically. The results of a fire are expected to look natural and be consistent with the ecological community. Any necessary suppression activities are anticipated to be of low disturbance to soil and vegetation as well as mitigated after a potential fire. This should meet Visual Resource Management Class I objectives over the long term.

4.2.2.11 Wilderness Characteristics

Implementation of this action when added to the route reclamation project would result in the long term enhancement of naturalness, and because the completed route reclamation project also benefited other wilderness characteristics, no cumulative impacts are expected to those values.

4.2.2.12 Wild and Scenic Rivers

No cumulative impacts are anticipated to the river’s free flowing character and outstandingly remarkable values since the cumulative actions would not occur within the Wild and Scenic River corridor.

4.2.2.13 Wildlife

Cumulative impacts of the proposed management actions on wildlife populations include disturbance from machinery, administrative motor vehicle use, and prescribed fire. There would be short-term impacts to individual species due to disturbance during the implementation phase of the project, however, there would be long-term benefits from an increase in diversity of vegetation composition and structure.

In general, the cumulative impacts of this forest restoration project on wildlife would be positive; this project would reduce fuel loadings and decrease threats of catastrophic wildfires that bring temporary loss of wildlife habitat until, or if, recovery is accomplished. The Proposed Action in combination with other federal actions would lead to more diverse woodland ecosystems that are healthy and sustainable.

Chapter 5: Consultation and Coordination

(This section will be completed once the 30 day review and comment period has ended.)

5.1 List of Preparers

Table 5-1: List of preparers

| <u>NAME</u> | <u>TITLE</u> | <u>TASK</u> |
|------------------------------|---------------------------------------|------------------------------------|
| Rudolph (Pat) Pacheco | District FMO, Farmington District | Assisted with Editing EA |
| Hannah Kligman | Range Technician (Fire) | Lead preparer |
| Valerie Williams | Wildlife Biologist | Wildlife/Migratory/TE/Editing |
| Merrill Dicks | Fire Archaeologist | Archaeology |
| Tami Torres | Outdoor Recreation Planner | Visual Resource Management/WSA/WSR |
| Patricio Martinez | Geographic Information Specialist | Maps, Arc GIS, Data |
| Kyle Sahn | Fire Management Specialist | Reviewed document |
| Peter Hoagland | Forester | Reviewed document |
| Brad Higdon | Planning and Environmental Specialist | Reviewed document |

Chapter 6: References

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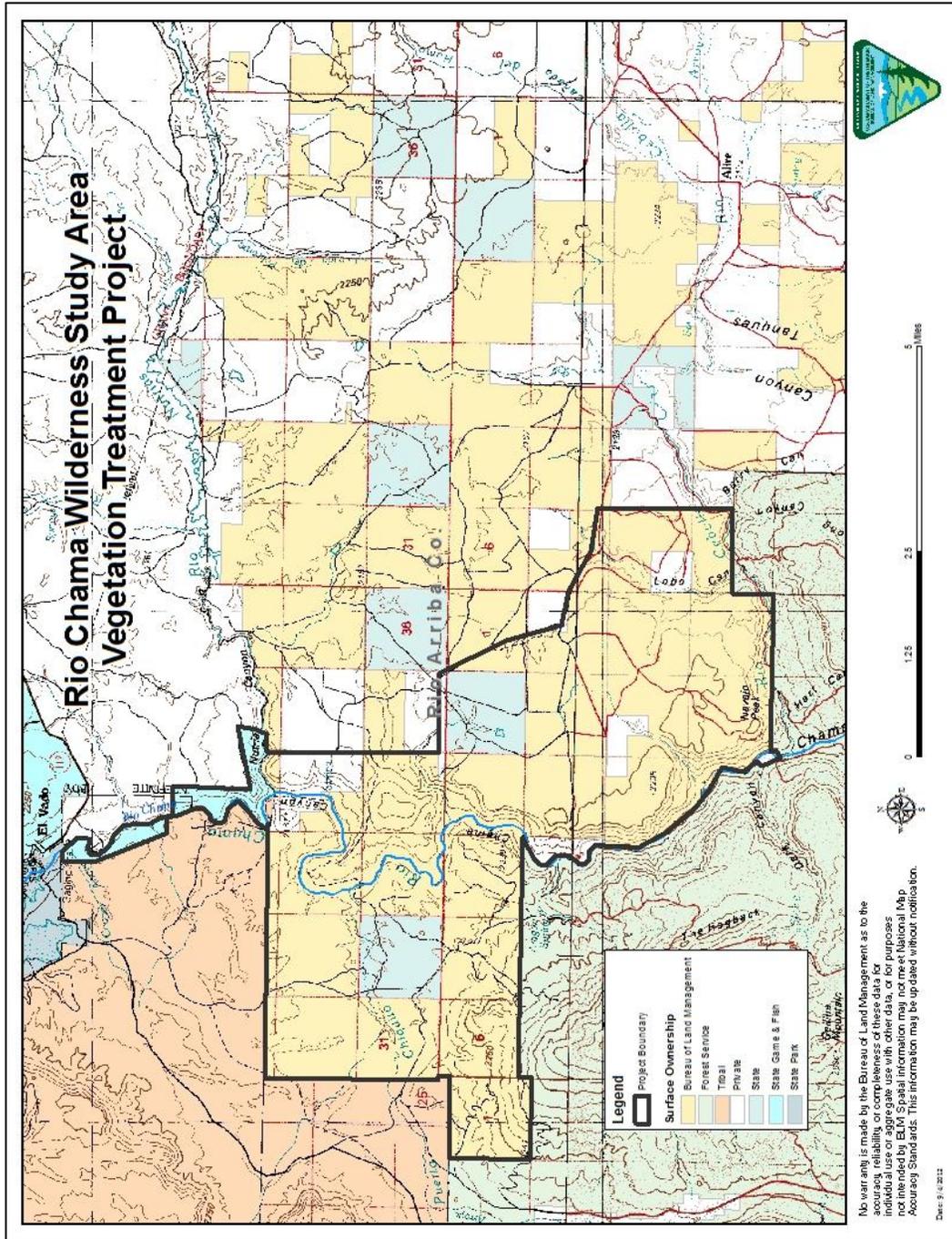
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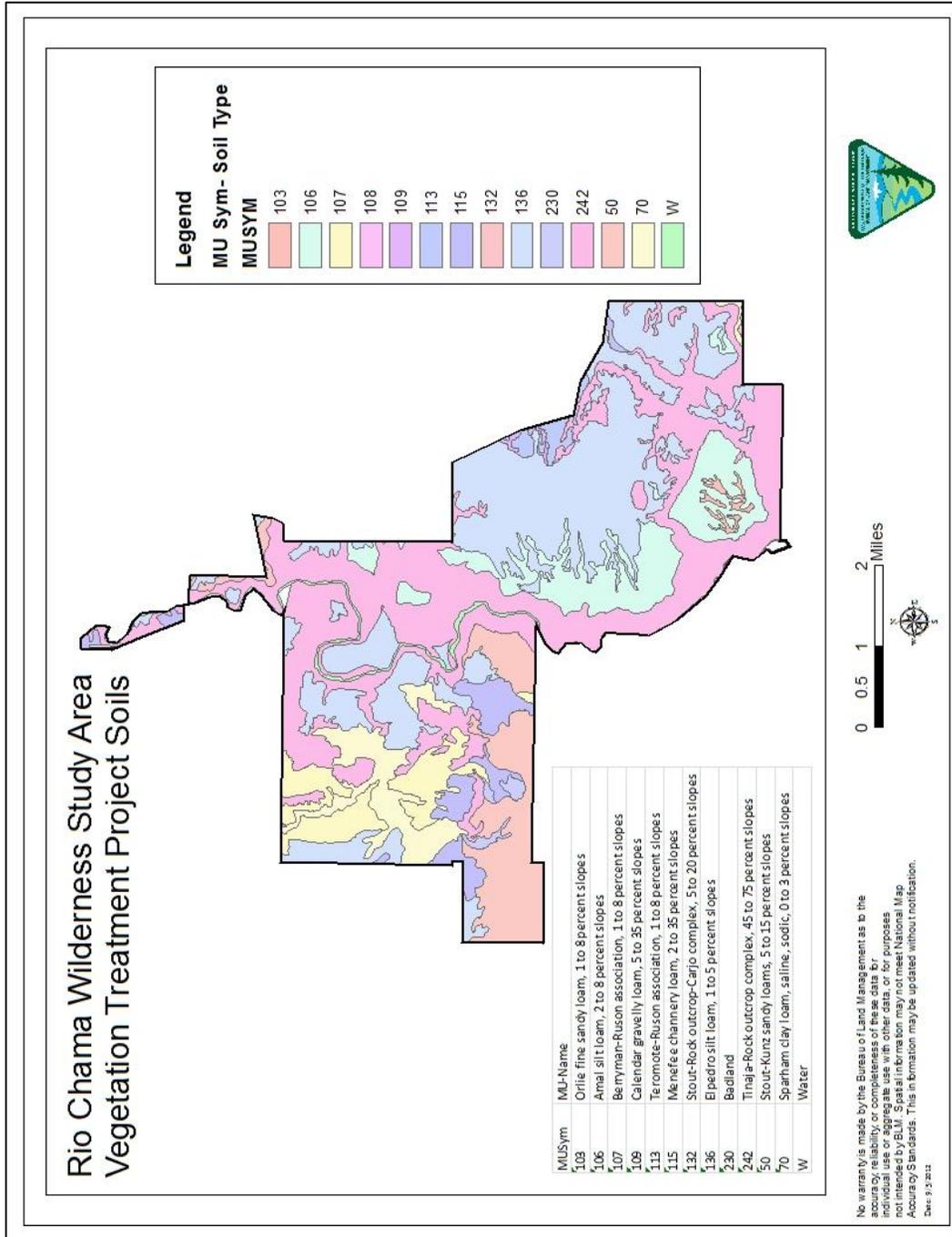
Appendix 1

Project Maps

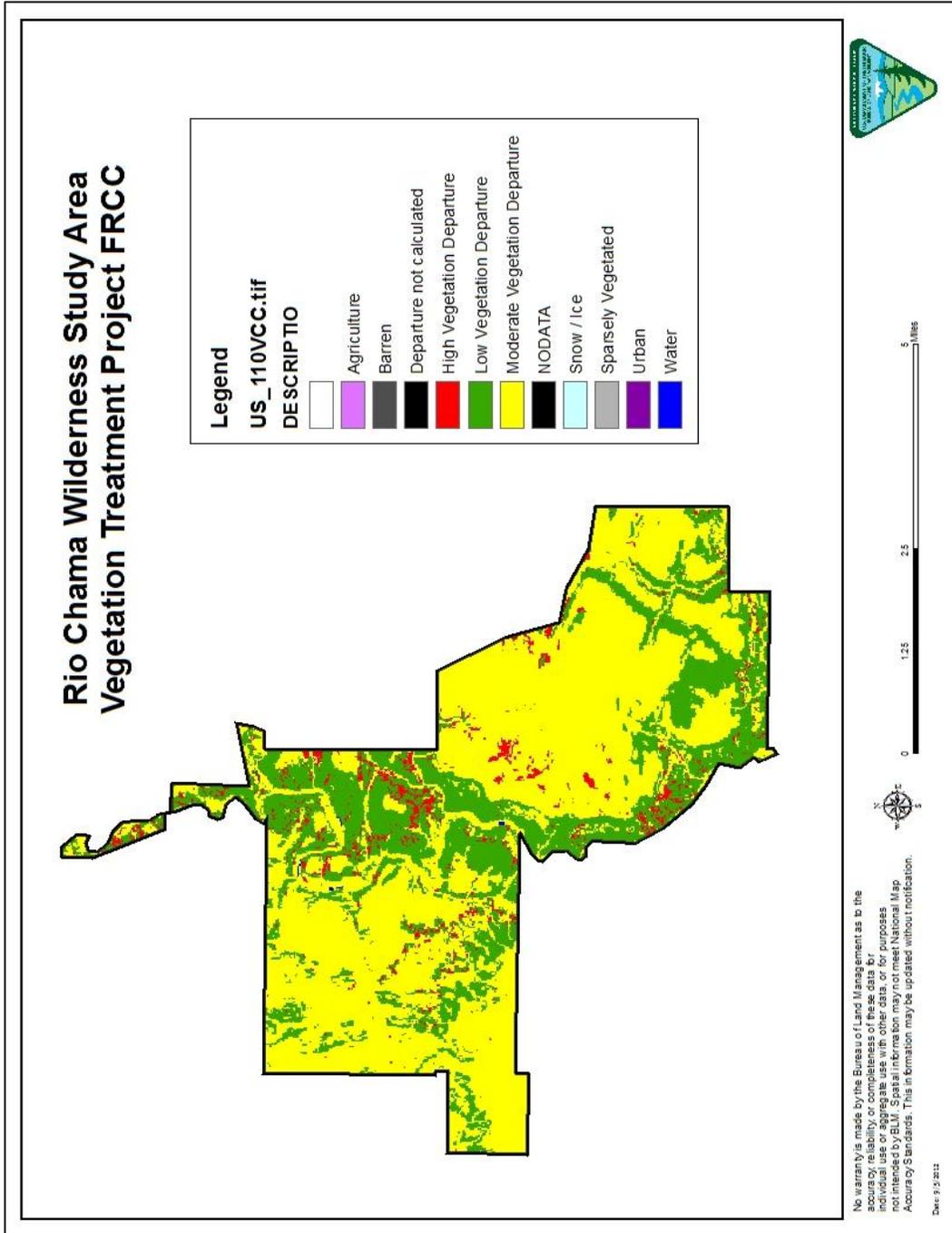
MAP 1 – Project Boundary



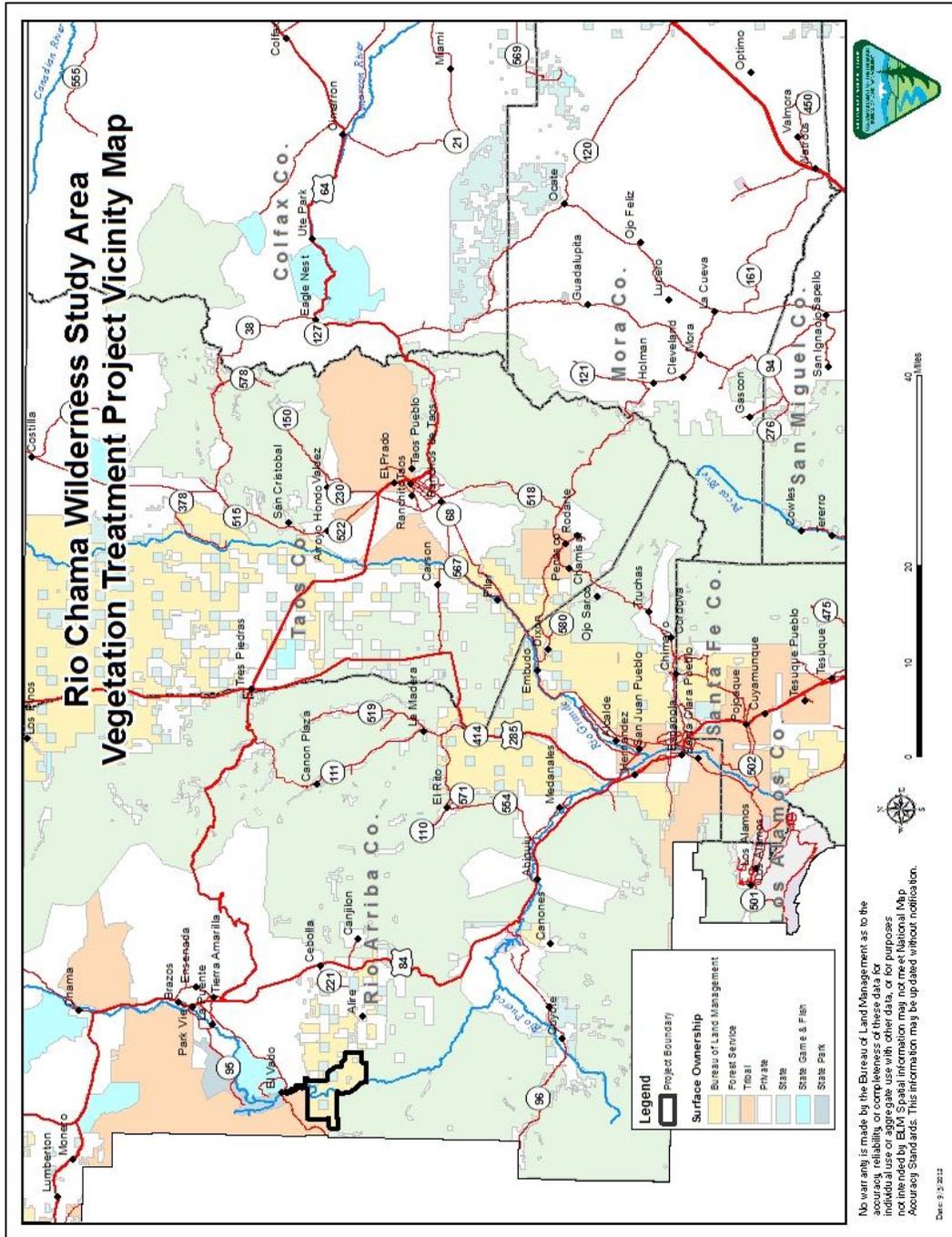
MAP 3 – Soil Composition



MAP 4 – Existing Land Fire- FRCC



MAP 5 – Vicinity Map



Appendix 2

Summary of Special Status Species

Rio Chama Wilderness Study Area Vegetation Treatment Project
DOI-BLM-NM-F020-2012-0032-EA

Source: New Mexico Ecological Services Field Office Listed and Sensitive Species in Rio Arriba County (8/5/14)

Source: BLM
New Mexico
State Office
(2011)

| RIO ARRIBA COUNTY | | USFWS | | | | BLM |
|----------------------------------|---------------------------------------|-------|---|---|---|-----------|
| | | E | T | C | P | Sensitive |
| Common Name | Scientific Name | | | | | |
| Mammals | | | | | | |
| bat, big-eared, Townsend's | <i>Corynorhinus townsendii</i> | | | | | X |
| bat, spotted | <i>Euderma maculatum</i> | | | | | X |
| lynx, Canada | <i>Lynx canadensis</i> | | | X | | |
| mouse, jumping, meadow, NM | <i>Zapus hudsonius luteus</i> | | | | X | X |
| prairie dog, Gunnison's | <i>Cynomys gunnisoni</i> | | | | | X |
| Birds | | | | | | |
| cuckoo, yellow-billed | <i>Coccyzus americanus</i> | | | | X | X |
| eagle, bald | <i>Haliaeetus leucocephalus</i> | | | | | X |
| flycatcher, willow, Southwestern | <i>Empidonax traillii extimus</i> | X | | | | |
| jay, Pinon | | | | | | X |
| owl, burrowing, western | <i>Athene cunicularia hyougaea</i> | | | | | X |
| owl, spotted, Mexican | <i>Strix occidentalis lucida</i> | | X | | | |
| tern, least, Interior | <i>Sterna antillarum</i> | X | | | | |
| Amphibians | | | | | | |
| salamander, Jemez Mountains | <i>Plethoson neomexicanus</i> | X | | | | |
| Fish | | | | | | |
| trout, cutthroat, Rio Grande | <i>Oncorhynchus clarki virginalis</i> | | | X | | |
| Plants | | | | | | |
| milk-vetch, Ripley | <i>Astragalus ripleyi</i> | | | | | X |
| cactus, grama grass | <i>Sclerocactus papyracanthus</i> | | | | | X |