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Rio Grande del Norte National Monument Cones Fire Project

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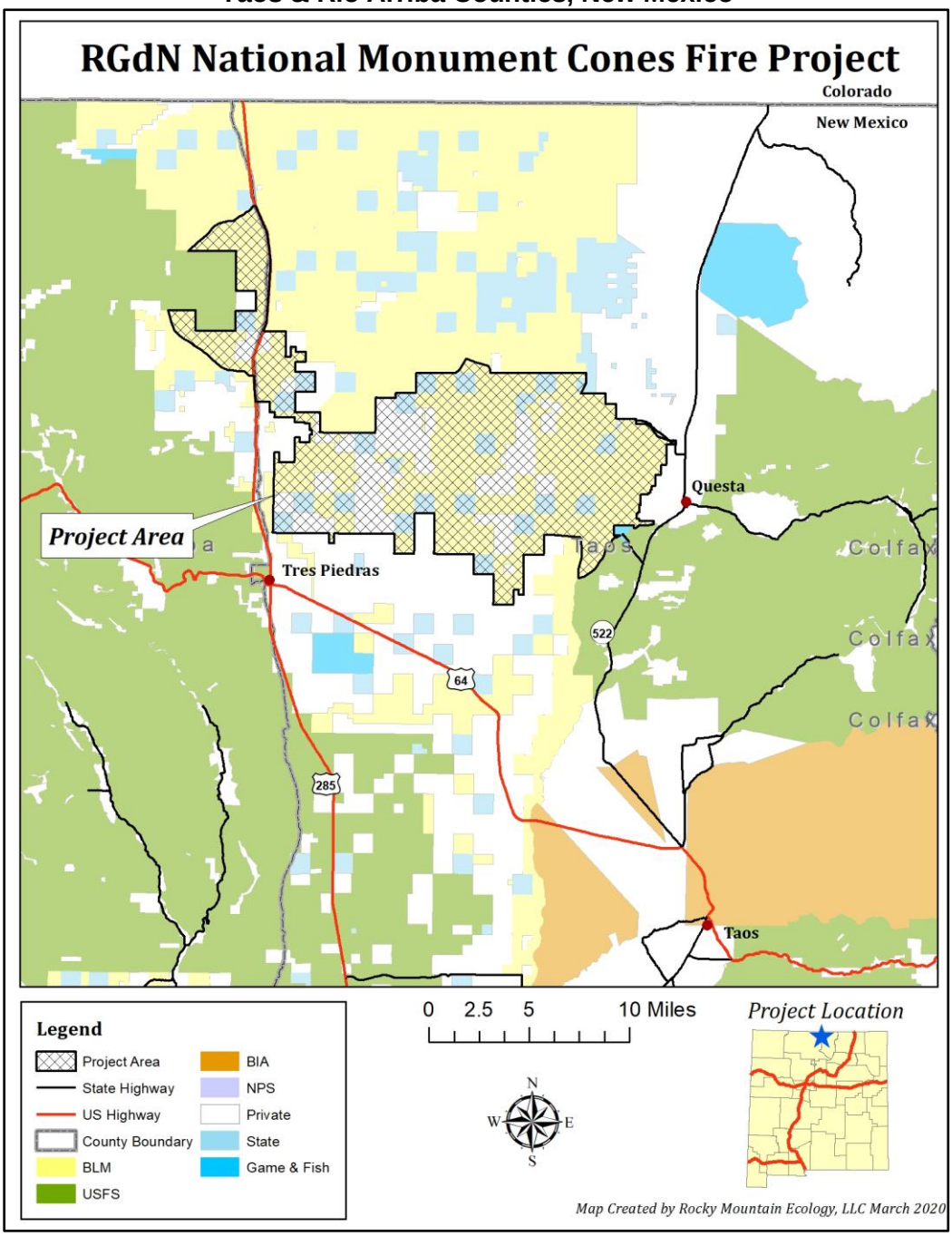
Taos & Rio Arriba Counties, New Mexico



Taos Field Office
226 Cruz Alta Road
Taos, New Mexico· 87571-5981
575.758.8851

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CHAPTER 1. INTRODUCTION

1.1 Background

Ecosystems change through time due to interactions between vegetation, disturbance, climate, and humans. Fire was arguably the most important disturbance in terrestrial ecosystems across the southwestern U.S for centuries to millennia. Fire suppression and other anthropogenic influences since the late 1800s in the Rio Grande del Norte National Monument (RGdN) in northern New Mexico have altered ecological processes, resulting in degradation and loss of functional integrity in fire dependent ecosystems. The Bureau of Land Management (BLM) Taos Field Office is proposing to continue implementing a landscape-scale fuels management program in the RGdN that would reduce hazardous fuels that threaten public health, safety, and property, and to protect and enhance the ecological diversity recognized in the Presidential Proclamation which established the Monument.

The fire and hazardous fuels reduction projects evaluated in this Environmental Assessment (EA) updates the analysis of several EAs that have, until now, allowed for thinning and fire projects in the Monument. In light of new inventories, new information, and the Monument designation, the BLM is completing a new EA to update disclosures of impacts and reevaluate design features of the Proposed Action in order to provide for ongoing projects and adaptive management of fire projects in the Monument for years to come. By implementing the Proposed Action, annual fire management targets would be accomplished.

The Rio Grande del Norte National Monument Cones Fire Project (CFP) is located in Taos and Rio Arriba counties in northcentral New Mexico, just south of the Colorado state line. The Monument contains the northernmost reach of the Rio Grande in New Mexico.

The project area for the CFP totals 106,634 acres across the central portion of RGdN (Appendix A – Maps). The planning area occurs within a variety of land jurisdictions - State Trust Land managed by the New Mexico State Land Office (NMSLO) (13,899 ac), federal land managed by the BLM (89,140 ac), and private lands (3,595 ac). This EA considers the 106,634-ac planning area because the private, state and federal lands are intermingled. The project area contains an east-west belt of volcanic cones, spanning from the Guadalupe Mountains to the east to San Antonio Mountain to the west, which predominantly host piñon and juniper-dominated forests. Between volcanic cones are sage-dominated shrublands that have been historically suppressed from fire and subject to livestock grazing.

All of the 106,634-acre project area would be managed to utilize unplanned wildfire starts—referred to as *fire for resource benefit*—to meet objectives for landscape-scale fuels and fire regimes. That is, in the event of a wildfire start anywhere within this acreage, the fire would be managed in order to meet the objectives for the hazardous fuels reduction and restoration project. It should be recognized that because unplanned wildfires cannot be anticipated, they may sometimes be considered an emergency action in which the ignition requires suppression. However, when feasible, these unplanned ignitions would be used to meet objectives. See Table 3 for an outline of objectives in the project area.

Within the 106,634-acre project area, if ignitions do not occur naturally, the BLM would proactively treat 50-70 percent of a 79,000 acre area with prescribed fire. The CFP also includes the thinning of up to 30 percent (or ~15,200 acres) of 50,160 forested acres within the project area, at a rate of no more than 4,000 acres per year.

In addition, the CFP proposes to treat up to 70 percent of a 19,580-acre sage-dominated area with Tebuthiuron, an herbicide that targets sagebrush. Subsequent to the herbicide application, prescribed fire

would be used to maintain the treated areas and to create naturally appearing mosaic of vegetation types. No forested areas would be treated with herbicide.

See Table 4 below, for a breakdown of vegetation types across the project area.

1.2 Purpose and Need

Purpose: The purpose of the action is to achieve the following objectives by implementing restoration measures across the project area:

- Provide for public health and safety and protect property through the following objectives.
- Reduce the risk of uncharacteristically large and severe wildfires,
- Restore fire regimes approximating those that shaped ecosystems within the project area,
- Increase resiliency to fire, insect outbreaks, disease, and drought.
- Improve overall forest and watershed health,
- Reduce high densities of smaller diameter trees,
- Improve timber stands,
- Retain and promote tree clumping,
- Increase structural heterogeneity,
- Reduce the prevalence of diseased trees.

Future desired outcomes include allowing some Fire for Resource Benefit (FFRB) (i.e. unplanned fire) to be managed for resource benefit throughout select areas of the landscape, thus promoting landscape diversity and heterogeneity by creating mosaics of un-even aged stands, benefitting forest health and wildlife habitat.

Need: This action is needed to protect people, property and resources from uncharacteristically large and severe wildfires by reducing fuel loading and restoring wildfire dependent ecosystems, which would minimize the potential scope, intensity and severity of wildfire. The need is identified in numerous planning documents which indicate the need for restoration action within the project area. These documents include the New Mexico Statewide Assessment Strategy (SAS) (EMNRD 2010) and the Taos County Community Wildfire Protection Plan (TCCWPP 2016). The need is also established by Secretarial Order 3372, *Reducing Wildfire Risks on Department of Interior Land Through Active Management* (2019), with which the BLM must comply. The SAS identified the project as a high priority watershed, and as a high priority for susceptibility to insect and disease outbreak, and for wildfire risk. The Taos County CWPP identifies portions of the project area as occurring within the Wind Mountain (Unincorporated Subdivision) Wildland Urban Interface (WUI), the Cerro WUI, and Wild Rivers Recreation Area WUI.

Finally, the forest-products industry in the region is experiencing a lack of available, NEPA-cleared forest, from which to obtain fuelwood and material, according to the local wood products industry, and thus this project would provide those clearances.

Decision to be made: This EA discloses the environmental consequences of implementing the Proposed Action or alternatives to that action. Based on the information in this EA, the BLM Field Manager would decide whether to allow or reject implementation of the Proposed Action.

1.3 Plan Conformance

Land Use Plan: Taos Resource Management Plan (BLM 2012)
Approval Date: May 24, 2012

The Proposed Action conforms to the following goals for Wildland Fire (Section 2.1.11, page 29):

- *Restore fire frequency and intensity by reducing fuel loads.*
- *Reestablish appropriate vegetation communities to maintain natural fire regimes.*

The Proposed Action also advances the following goal, so far as it serves to preemptively suppress wildland fires that would threaten human health and safety, cultural and natural resources, and private property:

- *Suppress wildland fires where they threaten human health and safety, natural resource values, and private property.*

The Proposed Action would help the BLM implement the following objectives, also page 29:

- *Prevent the loss of life, property and cultural resources from wildland fire.*
- *Use prescribed fire and chainsaw fuels treatments to reduce hazardous fuels while achieving the objectives of the wildlife habitat, livestock grazing, visual quality, vegetation, watershed quality, and weed control programs, when possible.*

The Proposed Action would also be consistent and/or in conformance with other objectives concerning maintenance and enhancement of wildlife habitat and provisioning of forest products (i.e. fuelwood), but such benefits are complementary to, and not the primary driver of, the core need for the Proposed Action.

Fire Management Plan

Under the provisions of the Taos RMP, the Farmington District Fire Management Plan (2017) is recognized as a guidance document for fire and fuels management activities. Although the Farmington District Fire Management Plan is not a decision document (i.e., it is not subject to the decision-making process in accordance with NEPA), the document outlines general resource avoidances and fire objectives in the event of managed ignitions, consistent with the Taos RMP's prescriptions. This EA is consistent with the prescriptions of the Fire Management Plan and provides a NEPA supported decision document that would support the management of planned and unplanned fire in the project planning area.

Healthy Forest Restoration Act of 2003 (as amended by Agriculture Act [Farm Bill] of 2014)

The Healthy Forests Restoration Act was signed into law for the purpose of improving the capacity for Federal agencies such as the BLM and US Forest Service to conduct hazardous fuels reduction projects on public lands and forests. The act includes a variety of provisions aimed at expediting the preparation and implementation of such projects on federal land, including the environmental review processes.

The streamline approach provided by the Healthy Forest Restoration Act includes the following components:

- For projects within WUI, agencies are only required to study, develop, and describe the proposed agency action and one other action alternative
- For all other hazardous fuel reduction projects, agencies are only required to study, develop, and describe the proposed agency action and the no action alternative. An additional alternative should be studied, developed, and described only *if* it is proposed during scoping or the collaborative process *and* it meets the purpose and need of the project. If more than one alternative is proposed during scoping/collaboration, only one alternative would be selected for consideration and the rationale for such selection must be documented.

National Monument

The Proposed Action is consistent with the Presidential Proclamation designating Rio Grande del Norte National Monument (signed March 25, 2013) and BLM Manual 6220, which provides guidance on

managing components of the BLM's National Landscape Conservation System (NLCS) in which the proposed fire treatments would take place. In general terms, there are four Monument objects that are afforded protection by the proclamation: (1) Geology, (2) Ecological Diversity, (3) Wildlife Habitat, and (4) Cultural Resources. Each are considered in this EA, though some are summarily dismissed from detailed analysis with a rationale. In addition, historical uses, including grazing and fuelwood harvesting, can continue under the Monument designation.

1.4 Identification of Issues

Preliminary scoping was conducted by the preparer and the members of the BLM Interdisciplinary (ID) Team. A broad list of potential issues, including the resources that could be affected by the Proposed Action, were identified at that time.

Potential resources identified that could be impacted by the Proposed Action include:

- Public Safety
- Air Quality
- Soils and Watershed
- Forest Ecological Diversity
- Sagebrush Ecological Diversity
- Fuelwood Resources
- Paleontological Resources
- Cultural Resources
- Visual Resource Management
- Geological Resources
- Wild & Scenic Rivers, Outstanding Remarkable Values
- Recreation
- Invasive, Non-Native Species
- Special Status Species
- Migratory Birds
- Livestock/Range Management
- Surface Water Quality

1.4.1 Relevant Issues

Based on internal scoping efforts, the issues presented in Table 1 have been determined relevant to the analysis of this action:

Table 1. Issues Identified for Detailed Analysis

RESOURCE	ISSUE STATEMENT
Soils and Watershed	Issue 1: How would chainsaw treatment, herbicide application, RX fire, and FFRB impact soils and soil erosion across the watershed?
Forest Ecological Diversity	Issue 2: How would chainsaw treatment, herbicide application, RX fire and FFRB impact forest health and ecological diversity across the project area?
Sagebrush Ecological Diversity	Issue 3: How would herbicide application, RX fire and FFRB impact ecological diversity of sagebrush shrublands and sagebrush-obligate species across the project area?
Fuelwood Resources	Issue 4: How would chainsaw treatment, herbicide application, RX fire and FFRB impact fuelwood availability and sales across the project area?
Special Status Species (Plant & Animals)	Issue 5: How would chainsaw treatment, herbicide application, RX fire, and FFRB impact populations of special status species? Specifically, would these activities impact federally threatened/endangered species, or BLM sensitive/state threatened or endangered species with potential to occur in project area?

Migratory Birds	Issue 6: How would chainsaw treatment, RX fire and FFRB activities and their timing, impact migratory birds and their habitats?
Cultural Resources	Issue 7: How would chainsaw treatment, herbicide application, RX fire and FFRB impact cultural resources and their management?
Public Safety	Issue 8: How would chainsaw treatment, herbicide application, RX fire, and FFRB impact public safety within the Wildland Urban Interface?

1.4.2 Issues Dismissed from Detailed Analysis

The issues presented in Table 2 below were considered, but dismissed from detailed analysis in this EA for the reasons provided.

Table 2. Issues not Analyzed in Detail

RESOURCE OR ISSUE	RATIONALE FOR DISMISSING
Air Quality	While temporary impacts to air quality would be sustained during implementation of RX fire and FFRB, lasting impacts would not be incurred. All prescribed burns in NM must follow permitted air quality guidelines set forth by New Mexico Environmental Department (https://www.env.nm.gov/air-quality/). This policy is designed to reduce negative impacts to public health from prescribed fires. Impacts of the Proposed Action would be much less severe than the potential impacts that would result from a high severity burn event, and a long-term mitigation of the risk of high severity wildfire would result from implementation of the Proposed Action.
Recreation	Areas subject to treatment would be closed to public access during implementation of RX and FFRB fire. Closures would be short-term and of little impact to recreationists, as they could select to recreate in adjacent open areas, as it is likely only small areas would be closed at a single time. Most of the project area is not a primary destination for recreation. Few developed recreational opportunities exist (e.g., Wild Rivers Recreation Area), so only limited developed recreation would be temporarily displaced by this project.
Paleontology	The entirety of the project area falls into Potential Fossil Yield Class (PFYC) 1 & 2, which are areas that generally do not require mitigation due to ground disturbance. No earthwork is proposed thus potential impacts from earth moving are not expected. No impacts to paleontological resources are anticipated due to the lack of ground disturbing activities and the relatively low PFYC class of the project area.
Surface Water Quality	The Proposed Action would be required to follow the EPA precautions for herbicide application, including no application to areas adjacent to sinkholes or depressions lacking external drainage (playas); no application to shrink/swell soils typical in playa beds; and no application in areas where overland flow of water, such as ephemeral streams, might move Tebuthiuron

	from the treatment area (EPA Form 8570-1). See Map 13 (Appendix A) for areas of Tebuthiuron exclusion areas due to the above restrictions.
Geologic Resources	Geologic resources would not be impacted. There is no connection between the Proposed Action and the integrity of geologic features, such as playas, the Rio Grande Gorge, and Volcanic cones.
Wild and Scenic River, and attendant Outstandingly Remarkable Values (ORVs) for which it was designated	No treatments would occur within the Wild and Scenic River Corridor for the Rio Grande. No ORVs would be directly impacted by the Proposed Action. The limited visibility and noise associated with the project would not be easily discernable in the nearest and most-likely impacted parts of the Rio Grande Wild and Scenic Corridor.
Visual Resource Management	The VRM Objectives in the project area are Class I and II throughout the western portions of the project area, and Class III throughout the eastern portions of the project area. The VRM Class I Objective is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention. The objective of VRM Class II 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. The objective of VRM Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape. Burned over areas and slash piles would result from the Proposed Action but would be short term. Design features described in the Proposed Action are expected to avoid lines, repeating patterns, or symmetrical shapes in the forest and sage treatments. Planned and unplanned fire treatments are intended to mimic ecological changes and design features are intended to avoid the appearance of a managed landscape and attracting the attention of the casual observer.
Wilderness Character	40,000 acres proposed for treatment are inventoried to have wilderness character, but none of these 40,000 acres are managed for their wilderness character. The potential impacts include intrusion of naturalness which would be avoided through design features. Design features would prevent lines, repeated patterns, or symmetrical shapes that could impair the natural condition of the treatment area. The Proposed Action would not have any long-term adverse effect on wilderness

	characteristics, because no elements of the Proposed Action affect the criteria for wilderness. No new roads would be designated; opportunities for solitude would not be impacted (apart from temporary noise from chainsaws); the natural condition of the landscape would not be noticeably altered; any changes to the forest would be aimed at removing the signature of human modification of the forest in the long-term.
Noxious Weeds/Invasive Plants	It is expected that there would be a temporary increased susceptibility to recruitment of noxious weeds and invasive plants. Weeds are monitored post-treatment and managed as necessary. Rapid response treatments of weeds has been analyzed and is implemented routinely under the Programmatic Treatment Plan for the Rapid Response to Weeds (DOI-BLM-NM-F020-2010-0008-EA**)**. Based on past experience, invasive plants were not found in increased amounts in hazardous fuels treatment sites compared to similar non-treated sites on the Taos Plateau [*Vegetation Treatment Monitoring Summary 2016, BLM*].
Livestock/Rangeland Management	The Proposed Action occurs on eight unallotted parcels, with the rest occurring on 26 separate allotments. Direct conversations were had between the BLM Range Specialist, BLM Fire Management Specialist and the range permittees at the Annual Range Permittee Meetings held in Manassa, Colorado (February 28, 2018) and Taos, New Mexico (February 20, 2018). AUMs would not change based on the Proposed Action in this EA. The permittees are in full support of the project, and the Proposed Action is not expected to have an adverse effect on grazing operations.

CHAPTER 2. ALTERNATIVES

2.1 Alternative A – Proposed Action

The Proposed Action is to implement a landscape-scale fuels management program in the RGdN to reduce hazardous fuels that threaten public health, safety, and property, and to protect and enhance the ecological diversity recognized in the Presidential Proclamation which established the Monument. The project area for the CFP is located in Taos and Rio Arriba counties in northcentral New Mexico.

As discussed under Section 1.1 above, the project area totals 106,634 acres across the central portion of Rio Grande del Norte National Monument—see Map 1, Appendix A. The project area contains an east-west belt of volcanic cones, spanning from the Guadalupe Mountains to the east to San Antonio Mountain to the west, which predominantly host piñon and juniper-dominated forests separated by sagebrush-dominated shrublands.

All of the 106,634-acre target area would be managed to utilize unplanned wildfire starts—referred to as *wildland fire for resource benefit*—to meet objectives for landscape-scale fuels and fire regimes. That is, in the event of a wildfire start anywhere within this acreage, the fire would be allowed to burn in order to meet the objectives for the hazardous fuels reduction and restoration project. As discussed above, it should be recognized that because unplanned wildfires cannot be anticipated, they may sometimes be considered an emergency action in which the ignition requires suppression. However, when feasible,

these unplanned ignitions would be used to meet objectives. Further, if suppression is necessary, protection of life and property would take precedence; if time permits beyond protection of life and property, other resources such as historic properties would be protected.

Within the 106,634-acre project area, if there are no unplanned ignitions, the BLM would proactively treat 50-70 percent of a 79,000 acre area with prescribed fire. The CFP also includes the thinning of up to 30 percent (or ~15,200 acres) of 50,160 forested acres within the project area, at a rate of no more than 4,000 acres per year.

In addition, the CFP proposes to treat up to 70 percent of a 19,580 acres sage-dominated area with Tebuthiuron, an herbicide that selectively targets sagebrush. Tebuthiuron would only be used outside of the exclusion area (See Appendix A, Map 13). Application of Tebuthiuron as an initial treatment to sagebrush is favorable over prescribed fire due to its spatial precision, longer windows of opportunity for treatment, and decreased risk of damage to non-target species due to its functional selectivity toward sagebrush (Kitchen and McArthur, 2007). Further, it has been found that post-treatment increases in productivity for desirable herbaceous species can be substantial (Baxter 1998; McDaniel and others 2005; Olson and Whitson 2002). Subsequent to the herbicide application, prescribed fire would be used to maintain the treated areas and to create naturally appearing mosaic of vegetation types. Sagebrush community re-establishment is dependent on the distance from the seed source and the condition and amount of seed in the soil. Fire should only be used if there are adequate amounts of native perennial grasses to compete with invasive annuals such as cheatgrass (See benchmarks- Table 7). Treatments of Tebuthiuron would be monitored using BLM quantitative monitoring protocol and would occur pre-treatment, post Tebuthiuron treatment, and post prescribed burning to provide information on the treatment outcomes that can be used for future adaptive management. (Currently there is no research using the chemical Tebuthiuron followed by prescribed burning. This project is an ideal opportunity to monitor the results of the treatment and provide data to the current available sagebrush management research.)

Tebuthiuron would be applied to selectively lower the presence of big sagebrush, such that perennial grasses (graminoids) and other small forbs are expected to have a positive response. These non-sage species carry fire in sage, with less intensity and severity, and would allow for the reintroduction and restoration of fire into the sage ecosystem. Sage treatments would be done selectively and in a manner that promotes ecotones and mosaics of grass, forb, and sage vegetation in the greater treatment area. The treatment would move the sagebrush with depleted herbaceous community (State III) to a native perennial herb dominated stand (State IV). Herb dominated stands as a result of treatments with Tebuthiuron or prescribed burns that increase the populations of perennial native herbs and would allow for a slow return to a relictual condition (State II) from State IV (Mosley 1996, West 1999). A relictual condition (State II) is a sagebrush shrubland with a healthy almost complete perennial understory that are less susceptible to large-scale fires and subsequent invasion of cheatgrass (Peters and Bunting 1984).

The Proposed Action is designed to achieve a multi-age stand with tree densities between 10-120 stems/acre (see Table 4) and a diverse understory of grass and forbs. This desired future condition is more consistent with the forests under mixed severity and historical fire regimes. Current forest conditions cannot carry fire consistent with normal fire dynamics. This project aims to reduce the density of trees to a level that facilitates the passive restoration of species that constitute light, ground fuels, and to a level that is closer to levels of forest densities present under normal fire dynamics. Currently, stands in the Guadalupe Mountains show densities of: 436 trees/ac (NMFWRI, 2016) and 648 trees/ac (NMFWRI, 2015); Cerro de la Olla: 166 trees/ac (2016) and 274 trees /ac (NMFWRI 2014); Cerro del Aire: 209 trees/ac (NMFWRI, 2013), 168 stems/ac (Cerro del Aire – CFRP) and 210 trees/ac (Rocky Mountain Ecology, 2019); Cerro Montoso: 212 trees/ac (Pre-treatment 2012), 356 trees/ac (Area A - 2014), 276 trees/ac (Area B- 2014). Although tree densities vary from mountain to mountain and slope to

slope, all densities are higher than optimal. In some cases, use of wildland fire, planned and unplanned can achieve this; in others, mechanical removal of live biomass is necessary.

In general, the objective is to move the landscape toward a state that fire can be carried, consistent with historical fire dynamics. The current fuel loads—notably those associated to live biomass—prohibits the sole use of wildland fire, planned and unplanned, to achieve this end. It is necessary to strategically remove biomass, by mechanical and chemical methods, to restore the landscape so it is conducive to more normal fire conditions, and to facilitate the recruitment and growth of grasses and forbs, which, in the long term, allow for less severe fires. Fuels treatments are designed to address the desired wildland fire conditions in consideration of other resource objectives.

There are four general treatment types: thinning, wildland fire (planned-prescribed fire), wildland fire (unplanned fire for resource benefit), and chemical application to sagebrush.

I. Thinning would consist of:

a. Hand Thinning—the BLM or a qualified contractor would cut trees using chainsaws. Larger trees and wildlife trees would be retained to the extent practical. Thinning would proceed at a rate of ~20 acres/day, up to six total months per year, though not necessarily in succession, at a rate of no more than 4,000 acres per year, in the same area.

b. Hand Piling—Within five years of implementation of thinning, a BLM fire crew or qualified contractor would pile fuelwood and downed biomass into piles that would be approximately 6´ by 6´ by 6´ in size. These would be burned at a later date in accordance with a BLM fire plan and other BLM policy. Objectives would include consumption of up to 95% of material during burning. The density of piles would vary depending on tree densities, but would be approximately 30-100 piles per acre. Piles would be burned when conditions warrant its' safe implementation.

c. Public Collection— Public collection and harvest of fuelwood would be permitted in the project area. Fuelwood treatments were designed in areas with high road densities where there is the most public access. Any new routes that become apparent from repeated use would be rehabilitated where needed and closed to public access to prevent new permanent roads.

II. Planned Wildland Fire (Prescribed) would consist of:

a. Pile Burning: This approach consists of burning of piles of slash (trimmed biomass), approximately 6' by 6' by 6', that are gathered and burned to remove the biomass removed by thinning. Within 10 years of the implementation of thinning, a BLM fire crew would burn vegetation piles in accordance with BLM fire plan and BLM policy.

b. Jackpot Burning: This involves applying prescribed fire of felled trees that are left in place, sometimes trimmed to lower slash ground height, that produce localized clearances in the forest—emulating canopy-carried, higher-intensity wildfires. These provide fuel breaks and create fire clearances that pile burns don't generate. Within 18 months to 5 years of initial thinning, slash would be burned in a jackpot configuration to remove slash and emulate natural fire occurrence, a BLM fire crew would burn jackpots in accordance with BLM fire plan and BLM policy.

c. Broadcast Burning: This approach involves applying prescribed fire that is carried by ground-fuels and tree canopies. Typically, broadcast burns are mixed-severity and result in natural mosaic—Fire would be used to maintain prior treatments, reduce fuels and act as a natural

ecological disturbance to move VCC IIIa, IIIb, IIb to VCC IIa, Ia and Ib (LANDFIRE 2013). 50-70 percent of the 79,000 acres identified for RX fire would be treated using broadcast prescribed fire. Disking would be considered during broadcast burning to construct firelines where necessary, being cognizant of biological soil crusts, highly erodible soil, cultural resources, Special Status Species, and other resources that may incur impacts, to aid in the control of prescribed fires.

III. Unplanned Wildland Fire for Resource Benefit would consist of:

a. Management of an unplanned wildfire to promote natural ecological disturbance. Use of Wildland Fire for Resource Benefit to move VCC IIIa, IIIb, IIb to VCC IIa, Ia and Ib and use wildfire to maintain VCC IIa, Ia and Ib. This method could be utilized anywhere within the 106,634-acre project area.

IV. Chemical Application to Sagebrush would consist of:

a. Tebuthiuran will be applied aerially on BLM lands. It will be applied in the fall or early winter before snow accumulation occurs. Application rates would be applied according to manufacturer label recommendations for sagebrush. Application rates of Tebuthiuron are expected to reduce sagebrush densities 70-90 percent in treatment areas. Within the designated treatment areas, Tebuthiuron would be applied on up to 70 percent of the acreage identified outside of the exclusion areas (See Appendix A, Map 13) in order to create mosaics and buffers.

a. Use planned or unplanned wildland fire to maintain sagebrush treatments when the vegetation cover benchmark of native perennial grass exceeding 65%, sagebrush exceeding 20% and gaps that exceed 50 cm is less than 10% to avoid invasion of cheatgrass and other noxious weed species. In order to carry fire, perennial grasses must be greater than 50% and bare ground less than 15%. The maintenance burns would better create mosaics. Construction of firelines would be allowed where necessary to aid in the control of prescribed fires (e.g. disking).

The treatment area of the CFP consists of 22 treatment units, which have discrete treatments tailored to local resource conditions and specific objectives (e.g. wildland urban interface, general fire re-introduction, wood collection, and wildlife habitat). The acreage estimates reflected in Table 3 breaks down the resulting 15,200 total acres planned for thinning, 19,580 acres of sagebrush treatments, 79,000 acres planned for prescribed fire, as well as the full 106,634-acre project area where unplanned wildland fire would be allowed to run its course regardless of the proactive treatment applications. Of the 50,160 forested acres, only 15,200 acres would be thinned in order to avoid potential impacts to other resources (e.g. Pinyon Jay colonies, historic properties, etc.). Treatment types and objectives are shown in Maps 5 - 12, Appendix A.

Table 3. Alternative A—Prescription for Treatment Units

Treatment Unit Name	Acres	Thinning Prescription	Objective	Wildland Fire Prescription
San Antonio Prescribed Fire*	2,802	None	WUI	Broadcast
Wissmath Crater Fuelwood	649	Thin to 80-120 stems/ac	Hazardous Fuels Reduction	Pile/Jackpot
Wind Mtn Fuelwood	1,874	Thin to 80-120 stems/ac	Hazardous Fuels Reduction	Pile/Jackpot
Wind Mtn Powerline	199	Thin 250 ft from powerline center to 10-20 stem/ac	WUI	Pile/Jackpot

Cerro del Aire Prescribed Fire*	10,649	None	Hazardous Fuels Reduction	Broadcast
South Wind Mtn WUI	1,064	Thin to 40-80 stem/ac	WUI	Pile/Jackpot
West Wind Mtn Old Growth	237	Thin to 40-80 stem/ac	Hazardous Fuels Reduction	Pile/Jackpot
North and South Wind Mtn Aspen Stand****	97	Thin to 10-20 stem/ac	Hazardous Fuels Reduction	Pile/Jackpot
Cerro de la Olla Prescribed Fire*	17,776	None	Hazardous Fuels Reduction	Broadcast
Northeast, Southwest, and South Pot Mtn Aspen****	667	Thin to 10-20 stem/ac	Hazardous Fuels Reduction	Pile/Jackpot
Pot Mtn Fuelwood	4,191	Thin to 80-120 stem/ac	Hazardous Fuels Reduction	Pile/Jackpot
Cerro Montoso Fuelwood	1,128	Thin to 80-120 stem/ac	Hazardous Fuels Reduction	Pile/Jackpot
Chiflo Prescribed Fire*	3,069	None	Hazardous Fuels Reduction	Broadcast
Chiflo Fuelwood	371	Thin to 80-120 stem/ac	Hazardous Fuels Reduction	Pile/Jackpot
Guadalupe Mtn Prescribed Fire*	8,921	None	Hazardous Fuels Reduction	Broadcast
Guadalupe Mtn Fuelwood	1,676	Thin to 80-120 stem/ac	Hazardous Fuels Reduction	Pile/Jackpot
Guadalupe Range Jackpot	310	Thin to 40-80 stem/ac	Hazardous Fuels Reduction	Jackpot
WRRA WUI	1,048	Thin to 40-80 stem/ac	WUI	Pile/Jackpot
Cerro WUI Phase II	2,603	Thin to 40-80 stem/ac	WUI	Pile/Jackpot
Pot Mtn Juniper Encroachment	2,182	Thin 95% of encroaching Juniper spp. around Ponderosa and Douglas Fir trees	Hazardous Fuels Reduction	Pile/Jackpot
Sagebrush Treatments**	19,580	None	Hazardous Fuels Reduction	Broadcast
Management of Planned and Unplanned Wildland Fire	106,634	None	WUI/ Hazardous Fuels Reduction	Broadcast

* ~50-70% of this acreage is planned for treatment

** Up to 70% of this acreage is planned for treatment

*** Pile and /or Jackpot may all be used

**** Aspen- Acres may increase as individual aspen stands are discovered

Table 4 Alternative A—Summary of Treatments & Vegetation Types

Treatment Type	Acres	Vegetation Type(s): Acres	% of Total 106,634 acres
0 – No Treatment	44,756	N/A	42%
1 – Use of prescribed fire	43,217	Pinyon-Juniper: 24,551 Ponderosa Pine: 3,352 Mixed Conifer: 1,977 Big Sagebrush Shrubland and Steppe: 4,460 Developed: 64 Grassland: 672	41%

		Spruce-Fir: 12 Aspen: 2,025 Riparian: 71 Open Water: 2 Barren: 1	
2 – Thin to 80-120 stems/ac	9,889	Pinyon-Juniper: 7,935 Ponderosa Pine: 716 Riparian: 21 Mixed Conifer: 445 Big Sagebrush Shrubland and Steppe: 365 Grassland: 204 Aspen: 202 Open Water: 1	9%
3 – Thin to 40-80 stems/ac	5,262	Pinyon-Juniper: 4,244 Ponderosa Pine: 201 Riparian: 4 Mixed Conifer: 161 Big Sagebrush Shrubland and Steppe: 195 Developed: 1 Grassland: 404 Aspen: 50 Open Water: 2	5%
4—Thin to 10-20 stems/ac	963	Pinyon-Juniper: 536 Ponderosa Pine: 165 Riparian: 8 Mixed Conifer: 84 Big Sagebrush Shrubland and Steppe: 25 Developed: 1 Grassland: 13 Aspen: 131	1%
5—Thin 95% of Juniper spp. encroachment	2,182	Pinyon-Juniper: 72 Ponderosa Pine: 718 Riparian: 1 Mixed Conifer: 272 Grassland: 187 Aspen: 932	2%
6—Chemical Treat up to 70% of 19,580 acres of sagebrush with chemical; maintain treatments to create mosaic. Disking would be allowed to construct firelines where necessary.	19,580	Big Sagebrush Shrubland and Steppe: 15,332 Pinyon-Juniper: 1,522 Ponderosa Pine: 1 Developed: 87 Grassland: 2,632 Open water: 6	19%
7—Management of Planned and Unplanned Wildland Fire	106,634	Big Sagebrush Shrubland and Steppe: 44,242 Pinyon-Juniper: 39,264 Grassland: 12,655 Ponderosa Pine: 4,540 Mixed Conifer: 2,515 Aspen: 2,428 Developed: 489 Open Water: 395 Riparian: 76 Spruce-Fir: 16	100%

		Barren: 13 Agricultural: 1	

* All thinning treatments would allow for the use of prescribed fire

** Some treatments are in the footprints of other treatments- i.e. - thinning treatments within prescribed fire treatment boundaries

The locations and footprints of the proposed prescriptions are shown in Maps 5 -12, Appendix A.

Table 5 Alternative A—Treatment prescriptions for special forest resources

Condition	Prescription	Acres
Aspen	Hand thinning would be used to thin aspen stands to 10-20 stems/ac (typically 70-90% of current stand density) to promote Aspen tree growth and health.	764
Old Growth	Pinyon-Juniper Ponderosa or Douglas Fir stands with old growth trees (e.g. West Wind Mtn old growth stand) would be thinned to 40-80 stems/ac to protect old growth trees within these stands.	237
Oak	Oak brush would not be thinned, except where needed to access conifer trees. Prescribed fire would be used to maintain prior treatments.	N/A

Table 6 Alternative A—Summary of Sage Treatments (LandFire Data 2017)

Treatment Acres	Percent of Cones EA Sage (45,510)	Percent of Monument Sage (142,947 acres)	Percent of Taos Plateau Sage (418,954 acres)	Percent of Regional Sage* (1,258,340 acres)
13,706 acres (70% of 19,580 acres)	30%	10%	3%	1.1%

* Taos Plateau and San Luis Valley

Table 7. Alternative A—Benchmark Conditions to Maintain Treatments with Wildland Fire in Sagebrush

Attribute	Appropriate Conditions to Use Fire	Fire Use Discouraged
Sagebrush Canopy	> 12%*	< 20%*
Perennial Grass Cover	> 55%	< 55%
Bare Ground	< 20%	> 20%
Noxious Weeds	Only a few plants present, use of fire only to destroy pappus on fruit to limit seed dispersal by wind	Large areas of noxious weeds, insufficient desirable herbaceous species present to adequately re-stock the site
*Although there is a range greater than or equal to 12% sagebrush foliar cover to ensure appropriate conditions for fire, retreatment is discouraged when sagebrush foliar cover is under 20%. The fire program would limit retreatment when sagebrush foliar cover is under 20% unless conditions are approaching a condition where fire would not carry in a normal precipitation year. The perennial grass component must still be attained before retreatment to ensure no encroachment of exotic annuals such as cheatgrass. The range of attributes would ensure retreatment by fire rather than chemical retreatment with Tebuthiuron.		

The locations and footprints of the proposed prescriptions are shown in Appendix A. Maps 5 – 12.

2.1.1 Design Features

These measures would be followed under Alternative A, in order to mitigate potential effects on the human environment throughout the project area, except in the event of an unplanned wildfire:

1. Disturbance from the Proposed Action would be limited to areas with approved, site-specific resource surveys, across the 106,634-acre EA project area.

    - The additional surveys are required to (a) make sure the site-specific mitigation measures are applied, and (b) to ensure that the resources and potential impacts are disclosed.
    - At present, approximately 76,634 acres would need an approved cultural resource survey, prior to ground disturbing activities in that area. Approximately 30,000 acres has been subject to Class III inventory (100% coverage). All treatments would be in compliance with Section 106 of the National Historic Preservation Act prior to implementation.

2. Herbicide application rates (range of rates) and application would be subject to label restrictions and standard operating procedures (SOPs) and would be carried out by a certified applicator or contractor. Further, BLM Taos Field Office Standard Stipulations and Best Management Practices (BMPs) for the prevention of noxious weeds and future monitoring of disturbed sites, especially within mastication and fire combination treatment zones, would be followed on BLM lands.

3. To mitigate impacts to migratory birds, no treatments would be planned for implementation between May 1 and July 31 (the primary nesting season). Should treatments need to occur between May 1 and July 31, nest searches would be required and carried out prior to any treatment implementation, in coordination with the BLM Wildlife Biologist. Specifically, for any treatments that are seasonally dependent, pre-treatment nest searches would be conducted to locate and flag any active nests or nesting colonies, in coordination with the BLM Wildlife Biologist. If a nest or nesting colony is detected within a treatment area, appropriate buffers would be applied prior to implementation.

4. Visual Resource Management design features are expected to minimize lines, repeating patterns, or symmetrical shapes in the forest and sage treatments. Design features are intended to avoid attracting the attention of the casual observer. The appearance of a managed landscape would be minimized, as best as possible, through the following design features/tools:

    - Use of contours, rocks and other natural features would be employed to aid in creating natural shapes.
    - Minimization of angles and lines would be achieved in part by endeavoring to use buffers along roads or property lines as treatment boundaries.
    - Carefully plan treatment features relative to angle and duration of view from highways and major two track routes.
    - Gradation may be implemented to minimize hard edges. Vegetation in forest thinning treatments would be spaced and clumped in such a way as to ‘feather’ or create a diffuse

edge whereby the center may appear to be of higher density with trees fanning out downslope or the end of the prescription polygon.
- The public would be directed to existing routes or disturbed areas for fuelwood harvest whenever possible to prevent creation of new roads.
- Islands and peninsulas within clearings may be retained to maintain complexity and minimize size of clearings or the appearance of a managed unit.

5. Forest treatments shall maintain trees with nest cavities to benefit wildlife.

6. Sagebrush treatments, to include both herbicide and fire treatments, would be designed to create mosaics to ensure adequate amounts of intact sagebrush shrublands remain to support sagebrush obligates and near obligates while increasing grassland openings and edge habitat that would slowly begin the successional process back to State II sagebrush shrublands.

7. All federal undertakings would be evaluated individually for level of cultural resource inventory required in compliance with Section 106 of the National Historic Preservation Act (NHPA). Adverse effects to sites that are listed on or that have been determined as eligible for listing on the National Register of Historic Places and sites that require additional evaluation as to their eligibility would be mitigated during the implementation of the proposed undertaking. Avoidance and/or mitigation measures would be followed as determined by the agency-specific Project Archaeologist. An archaeologist would be involved, as detailed plans are developed for each phase of the implementation to ensure avoidance or mitigation is factored into the detailed project designs. An archaeologist would review plans for each phase of the project's implementation to ensure avoidance of NRHP eligible or unevaluated sites. Any unanticipated archeological discovery on BLM or NMSLO lands would be reported to a BLM or NMSLO archeologist and any work within a 100-foot radius of the discovery would cease until the Project Archaeologist is consulted.

8. The Proposed Action can be facilitated by avoiding application of herbicide to combustible cultural resources (primarily the remains of historic homesteads) and the imposition of a minimum 50' treatment buffer. Combustible resources would be further protected from the enhanced potential for wildfire spread following herbicide treatments by the creation of non-ground-disturbing fire breaks by blacklining or by other suitable, non-ground-disturbing methods. Other protective measures may be required during burn and suppression operations such as the staging of resources to suppress spread, spot fires or starts within vulnerable cultural resource boundaries.

9. Manual reduction of fuel loads by thinning and transporting slash off-site without dragging, to avoid additional ground disturbance is a suitable mitigation strategy for cultural resources that are highly susceptible to wildfire in both untreated and treated environments. Thinning to create a buffer around susceptible cultural resources, and "piling" of slash beyond a 50' site buffer results in an effective "fire break" that would inhibit the spread of fire into combustible and fragile site environments.

10. Any user created routes would be inventoried and compared to existing cultural resource data for potential rehabilitation and route closure, after focused fuelwood gathering has ended in the area.

11. Fuelwood harvesting may be excluded, or limited, in certain areas to avoid impacts to fragile or sensitive cultural resources. Consultation with cultural resources staff prior to the implementation of public collection would be pursued by the BLM Forester to identify areas where this permitted activity should be excluded, minimized, monitored or otherwise mitigated.

12. Piling within cultural sites would be avoided. If thinning is conducted within site environments, the attendant slash, if piled, would be carried off-site and piled beyond a 50' buffer. This prescription would alleviate the potential adverse effects that may result from piling within site boundaries. Consultation with cultural resources staff, prior to the implementation of public collection, would be pursued to identify areas where this permitted activity should be excluded, minimized, monitored or otherwise mitigated. Some operations in sensitive cultural resource areas may necessitate the presence of a line-qualified archaeologist/READ to consult with Fire staff on implementation and mitigation measures.

13. Consultation with cultural resources staff prior to the implementation of RX burning would be pursued to identify areas where this activity should be excluded, minimized, monitored or otherwise mitigated. Some operations in sensitive cultural resource areas may necessitate the presence of a line-qualified archaeologist/READ to consult with Fire staff on implementation and mitigation measures.

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

15. If any significant paleontological resources are found during operations, it would be reported immediately to the project paleontologist and managers. Further impacts would be mitigated through avoidance and/or data recovery. Any unanticipated vertebrate fossil discovery on BLM lands would also be reported immediately to the project paleontologist.

16. Large areas of intact biological soil crust should be recorded for avoidance. In order to mitigate impacts, mechanical disturbance including off-road vehicle travel, tractor use/disking, and foot traffic should be minimized to maintain intact biological soil crusts. Impacts can be mitigated by reducing the amount of paths open for use by vehicles or on foot. Where it is not in conflict with the objectives of this EA, travel on foot should be minimized to reduce impacts to biological soil crust.

17. To protect soil productivity, burning should be conducted, if possible, under conditions when a low intensity burn can accomplish stated objectives. Burn only when conditions of organic surface or duff layer have adequate moisture to minimize effects to the physical and chemical properties of the soil. When possible, maximize the retention of the organic surface of duff layer. (Pg 163 of Taos RMP). In addition, following any type of treatment that is within a grazing allotment, grazing should be deferred for one growing season to aid in soil stabilization and plant community reestablishment.

18. Slash should not be piled and burned within riparian/wetland areas. If riparian/wetland areas are within or adjacent to prescribed burn unit, piles should be fire lined or scattered prior to burning. (Pg 163 of Taos RMP).

19. When preparing the unit for burning, avoid pulling concentrations of large logs and stumps; pile only small material (3 – 8 inches in diameter). Slash piles should be burned when soil and duff moisture are adequate to reduce potential damage to soil resources. (Pg 163 of Taos RMP).

20. All fire management activities would be subject to the BMPs identified in the Decision Record and Resource Management Plan Amendment for Fire and Fuels Management on Public Land in

New Mexico and Texas, U.S. Department of Interior, BLM New Mexico State Office, September 2004c (Taos RMP 2012 pg 163)

21. Design burn prescriptions to achieve mixed severity fire (Harvey et al., 1994).

22. Construct fireline to the minimum size and standard necessary to contain the fire and meet overall resource objectives.

23. Locate and construct fireline in a manner that minimizes erosion by considering site slope and soil conditions, and using and maintaining suitable water and erosion control measures.

24. Avoid building firelines in or around riparian areas, wetlands, marshes, bogs, fens, or other sensitive water-dependent sites which results in habitat fragmentation, unless needed to protect life or property.

25. Prior to construction of firelines, a survey for Special Status Species would take place to prevent impacts the this resource.

26. All treatments, would be monitored following the most current monitoring standard at the time of the treatment.

2.2 Alternative B – No Action Alternative

Under the "No Action" alternative, the BLM would not implement any component of the Proposed Action, except unplanned wildfire. There would be no new thinning and no new expansion of prescribed fire. Baseline conditions of the forest (described in Section 3.1, below), including high fuel loads, would persist and environmental trends would continue.

However, previously authorized and ongoing fuels/fire management activities would continue. Ongoing projects consist of approximately 3,000 acres of previously authorized treatments at various stages of implementation.

2.3 Alternatives Considered but Dismissed

Alternative means of achieving the desired result by increasing the intensity of thinning over a smaller area or decreasing the intensity of thinning over a greater area were considered. The need to reduce fire behavior directs the intensity of thinning. Therefore, neither a larger-footprint/less-intensive nor a smaller-footprint/more-intensive thinning treatment is a reasonable approach to meet the purpose and need of the project.

A more intensive treatment over a smaller area may be possible in areas whose primary purpose is protection from catastrophic wildfire. That notwithstanding, the ecological benefits of reducing unnaturally high tree densities and re-introducing fire are consequently lost, and, accordingly, this approach also fails to achieve the project's purpose and need. The BLM has identified (and will identify) the specific treatments and treatment areas in consideration of the flexibilities and constraints of the Proposed Action as informed by localized objectives and resource conditions.

The use of commercial masticators rather than fire, to reduce tree density was considered and dismissed on the basis of its potential impact to cultural resources and its failure to re-introduce fire and its' attendant ecological benefits.

No further alternatives were identified that met the purpose and need for this project and conformed to the RMP, statutes, and regulations to which the project is subject.

2.4 Cumulative Actions

This section introduces other actions which overlap geographically and temporally with the Proposed Action and would be considered in cumulative impacts.

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. The relevant past, present, and reasonably foreseeable actions discussed below are considered "cumulative actions," which when viewed with the Proposed Action or alternatives could result in the cumulative impacts disclosed below in Chapter 3.

2.4.1 Past and Present Actions

In the last 30 years, the BLM and NMSLO have carried out 13 thinning treatments that have thinned a total of 2,741 acres. A total of 3,366 acres of prescribed fire outside the sagebrush community has been treated by the BLM, which includes broadcast, jackpot and pile burns. The BLM has also managed two natural ignitions that total 1,490 acres. The BLM carried out 10,004 acres of sagebrush treatments, which included 2,500 acres chemical, 932 acres of mowing, 3,432 acres of disc and seed, and 3,140 acres of broadcast prescribed fire (See Table 8). Ongoing projects consist of approximately 3,000 acres of previously authorized treatments at various stages of implementation.

2.4.2 Reasonable Foreseeable Future Actions

Other than the Proposed Action, there are no other relevant reasonably foreseeable future actions planned in the CFP planning area by the BLM. Private landowners and state land lessees could potentially treat an additional 20,000 acres over the next 20 years.

Table 8 Cumulative Actions—Past, Present, & Future Actions

Treatment Type	Acres	% of Total CFP
Past Thinning Treatments	2,741	2.6%
Past Prescribed Fire Treatments	6,506	6.1%
Past Managed Natural Ignitions	1,490	1.4%
Past Sagebrush Treatments	10,004	9.4%
Ongoing Forest Management Treatments	3,000	2.8%
Reasonably Foreseeable Future Actions	20,000	18.8%

CHAPTER 3. ENVIRONMENTAL IMPACTS

3.1 General Setting

The RGdN National Monument Cones Fire Project is located in northcentral New Mexico—see Appendix A. Map 1. The project area is comprised of a wide variety of species representative of multiple vegetation types. The project area occurs within the San Luis Shrublands and Hills and the Taos Plateau of the Arizona/New Mexico Plateau ecoregion (Griffith et. al. 2006). The project area includes ponderosa pine forest interspersed with limited, dry mixed conifer stands throughout the higher elevations, piñon-juniper shrubland on the middle and lower slopes of Cerro de la Olla (Pot Mountain), Cerro Montoso, Cerro del Aire (Wind Mountain), Guadalupe Mountain and San Antonio Mountain, and sagebrush shrubland and grasslands throughout the lowest elevations (Dick-Peddie 1993).

Baseline Conditions: As the project area occurs over 106,634 acres, vegetation health, densities, and types vary dramatically. However, in general, the forested stands within the project area exhibit unnaturally high densities of trees and high basal areas, and elevated risk of crownfire due to climatic variations, fire suppression, past logging practices and livestock grazing during the past century (Moore et al. 2004; Romme et al. 2009). Further, sagebrush encroachment at the lower elevations has limited the ability of herbaceous species to proliferate, reducing foraging options for native ungulates in the area.

3.2 Issue 1: How would chainsaw treatment, herbicide treatment and RX fire impact soils and soil erosion across the watershed?

3.2.1 Affected Environment

Watershed

Drainage within the project area is primarily located within the Upper Rio Grande 8-digit hydrologic unit code (#13020101) drainage basin. The western portion of the project also occurs in the Alamosa-Trinchera (#13010002) and the Conejos (#13010005) drainage basins, all of which ultimately flow into the Rio Grande. For a comprehensive picture of all 12-digit HUC's within the project area, refer to Appendix A – Map 14.

Soils

Information on soil composition was derived from the Natural Resource Conservation Service Web Soil Survey database (NRCS 2020). Thirty soil map units comprise the CFP project area. Details on those soils are included in Appendix D. The primary soil map unit is the Fernando-Hernandez association, which is present upon approximately 20.3% of the project area. The next most abundant soil map unit is the Rock outcrop-Raton complex, moderately steep, occurring upon approximately 20.2% of the CFP project area. The remaining map units all constitute less than 10% of the CFP project area, each.

Biological soil crusts are present within the CFP project area. Biological soil crusts in arid and semiarid regions are effective in stabilizing soil and reducing soil erosion by water from raindrop impact and surface runoff. (Warren 2001).

Generally, soils across the CFP project area have very low susceptibility to sheet and rill erosion by water (Appendix D). Moreover, project area soils generally have a very low susceptibility to wind erosion in disturbed locales. The entire CFP project area contains soils that are considered well drained.

3.2.2 Environmental Impacts

3.2.2.1 Impacts of Alternative A – Proposed Action

Under the Proposed Action, soils and water quality may experience short term disturbance in areas where fuels are being treated. Larger diameter debris created by chainsaw treatments, and piling of material - burns for longer durations and at greater intensities and can have minor impacts on soils when burned (Busse et al. 2005). Soils and water quality may also experience a temporary increase in nutrients from RX fire ash from burning chipped and piled woody debris (Schoch and Binkley 1986). Such increases may provide favorable conditions for many plant species. AIM plots and associated monitoring have shown that no increase in weeds is found when compared between treated and untreated areas of similar vegetation type. Water infiltration capability can be enhanced in areas where native herbaceous plants have established after surface fires.

Disturbance can affect the cover, species composition, and function of biological soil crusts. Avoiding disturbance is crucial for maintaining and recovery of healthy structure and patches of biological soil crusts (Belnap and Eldridge 2003). Total protection from disturbance is the easiest method for maintaining biological soil crusts, but not feasible for most management activities. Monitoring the impacts of management on biological soil crusts can be assessed by collecting data prior to and after treatment or by comparison of the area with conditions from relic or reference sites (Belnap et al. 2001). Fire may cause a loss of cover, biomass, and species diversity of biological soil crusts. Impacts and recovery are dependent on composition and structure of the existing plant community, fuel distribution, and fire intensity and frequency (Johansen et al. 2001). Grasses generally do not burn hot enough to eradicate crust organisms, and recovery of crust can be fairly rapid in these areas (Johansen et al. 2001). Little information exists on the effects of herbicide and caution should be used in applying chemicals on remnant native areas that support biological soil crusts (TR 1730-2).

Soils that are covered by hand piles could experience increased impacts due to the prolonged presence of elevated heat when hand piles are burned. However, these impacts are localized, and represent a miniscule area when compared to the greater soil surface area within the watershed and project area. 17,986 acres are proposed for handpiles and/or jackpot burning (see Table 3). It is estimated that there would be 30-100 piles per acre depending on forest density. Therefore, assuming an average handpile dimension of 6 ft by 6 ft (or 36 ft^2 each), between 446 and 1,485 acres could be impacted by handpiles. However, these are maximum numbers given that some of those would instead be jackpot burns, albeit that level of planning detail is not available at this time. When compared to the greater watershed, those acreages represent a fraction of the soil surface area; further, impacts upon those acres would be short term. Soil conditions following chainsaw and RX fire treatments also favor establishment and growth of native herbaceous and shrub species (Scudieri et al. 2010; Schoch and Binkley 1986). Negligible adverse impacts to soils or soil properties are anticipated under the Proposed Action. Long-term impacts to soils from chainsaw thinning, fuelwood harvesting, and RX fire treatments would be increased productivity and subsequent plant diversity (Scudieri et al. 2010; Carter and Foster 2004). The increase in herbaceous cover would reduce erosion and sediment production which should improve water quality. With implementation of Design Features in Section 2.1.1, impacts to biological crusts would be minimized.

3.2.2.2 Impacts of Alternative B – No Action Alternative

Under the no action alternative there would be no new disturbance to soils as disturbance associated with fuels treatments and RX fire would not occur. However, in the event of an uncharacteristically large and severe wildfire, wind and water erosion caused by loss of vegetation in burned areas could occur, a direct effect. 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. Without the use of fuel treatments to prepare sites for RX fire, uncharacteristically large and severe wildland fires resulting from continued fuels buildups are more probable under this alternative and would likely result in more severe impacts to soil stability, including those to biological crusts, and watershed health if mitigating measures (rehabilitation, restricted access to vulnerable areas such as forest stands where surface cover has been removed, etc.) are not applied in a timely manner (Covington and Moore 1994). 3,000 acres of previously authorized and ongoing fuels/fire management activities would continue under the No Action Alternative, which would result in impacts to soils similar to the Proposed Action, however, at a much smaller scale.

3.3 Issue 2: How would chainsaw treatment, herbicide treatment, RX fire and FFRB impact forest health and ecological diversity across the project area?

3.3.1 Affected Environment

As with many forests in the American Southwest, forest dynamics in the CFP have undergone major changes in the last century. Ecosystems change through time due to interactions between vegetation, disturbance, climate, and humans. Fire suppression, along with livestock grazing has contributed to the uncharacteristically dense and fuel accumulating forest. Overgrown forests have elevated the risk of several forest health hazards and present a paramount risk, in this area, of stand-jeopardizing wildfires. If left untreated, forests of the RGdN could be altered more permanently by wildfire, with appreciable impacts to ecological diversity, an object for which the Monument is designated.

Fire records indicate that 100,000 acres (94%) of the CFP forests have not carried a fire from natural ignition since the 1950s (Personal communications with between Kyle Sahd, Fire Management Specialist, BLM and Ellis Margolis, Research Ecologist, USGS October 2018). Fire was arguably the most important disturbance in terrestrial ecosystems across the southwestern U.S. for centuries to millennia. Fire suppression and other anthropogenic influences since the late 1800s in the RGdN in northern New Mexico have altered ecological processes, resulting in degradation and loss of functional integrity in fire dependent ecosystems. The 5,000 acres that have burned were the result of approximately 40 recorded fires (ranging from 0.1-2000 acres). Three of the larger fires (500+ acres) have occurred in the last 20 years (comprising 2,500 acres), with the most recent fire taking place in 2015. Fire history is shown on Map 2, Appendix A.

Vegetation Condition Class (VCC) - a discrete metric that quantifies the amount that current vegetation has departed from the simulated historical vegetation reference conditions. Vegetation Condition Class (VCC) represents a simple categorization of the associated Vegetation Departure (VDEP) layer and indicates the general level to which current vegetation is different from the simulated historical vegetation reference conditions. VDEP and VCC are based upon methods originally described in Interagency Fire Regime Condition Class Guidebook but are not identical to those methods (Landfire 2012).

- Vegetation rated VCC Ia corresponds with vegetation experiencing very low departure from simulated historical vegetation reference conditions. This condition is less prone to uncharacteristic wildfire.
- Vegetation rated VCC Ib corresponds with vegetation experiencing low departure from simulated historical vegetation reference conditions. This condition is less prone to uncharacteristic wildfire.

- Vegetation rated VCC IIa corresponds with vegetation experiencing moderate to low departure from simulated historical vegetation reference conditions. This condition is prone to uncharacteristic wildfire.
- Vegetation rated VCC IIb corresponds with vegetation experiencing moderate to high departure from simulated historical vegetation reference conditions. This condition is prone to uncharacteristic wildfire.
- Vegetation rated VCC IIIa corresponds with vegetation experiencing high departure from simulated historical vegetation reference conditions. This condition is very prone to uncharacteristic wildfire.
- Vegetation rated VCC IIIb corresponds with vegetation experiencing very high departure from simulated historical vegetation reference conditions. This condition is very prone to uncharacteristic wildfire.

VCC-2 and higher VCC ratings are associated with a higher potential for uncharacteristically severe and intense wildfires that tend to lead to more adverse ecological impacts and more severe resource damage from wildfires. Much of the CFP is rated VCC-2 with scattered VCC-3, which has the potential of high intensity/ high severity wildfire. VCC ratings for the CFP project area are shown in Map 3, Appendix A.

The scope of the Cones EA encompasses 50,160 forested acres. These acres are predominantly Piñon-Juniper trees. On north facing slopes and on the highest elevations of the volcanic cones Ponderosa, Douglas-fir can be found, with traces of aspen in deep drainages. The Piñon-Juniper ecosystems are a mix of persistent woodlands (having had trees present in the area for at least several hundred years) and wooded shrublands (occurs on sites where competition, drought, and periodic disturbance limit tree growth) (North American Pinyon Juniper Woodland, 2018). Tree stands within the RGdN are typically single age and homogenous in structure. Even though age and structure vary between stands, stands are not multi-age within themselves. A 2018 inventory report shows 420 trees/acre on a south face in the Guadalupe Mountains, with 648 trees/acre on a north facing slope (Guadalupe Mountain (South) 2016 Inventory and Monitoring Report, 2016).

Tree stands within the project area are significantly overstocked (NMFWRI, 2015, 2014, 2013, & Rocky Mountain Ecology, 2019). This translates to heightened risk for high intensity wildfires, pest outbreaks and reduced forest health because of the lack of diversity of tree age, tree structure, and associated species (including grasses, forbs and shrubs).

These woodlands have expanded from the late 1800s to early 1900s to present day because of several factors. Some include the livestock grazing that removed fine fuels, suppression of wildfires (disturbance), as well as development and use of nearby railroads. These forests now exhibit continuous, closed canopy, which is indicative of potential crown fire behavior in the case of an ignition. The closed, continuous canopy hinders the amount of grasses, forbs and shrubs in the understory. This phenomena can be described as Phase III of woodland development; trees dominate the ecosystem, thus shrub and herb cover are reduced significantly (North American Pinyon Juniper Woodland, 2018).

These conditions have promoted an increase in densities and crown cover in PJ ecosystems. Over the past 100 years, the buildup of fuels has facilitated a shift for increased intensity and severity of any fire ignitions. Emerging fire history research from sites within The Monument is showing trees with five or six fire scars. These fires appear to range in size from roughly 500 to 5000 acres (Margolis & Sahd, 2018). The history of vegetation management treatments in the CFP project area are shown in Map 4, Appendix A.

3.3.2 Environmental Impacts

3.3.2.1 Impacts of the Alternative A – Proposed Action

The Proposed Action would treat 15,200 of 50,160 (30%) of the forested acres within the project area (thinning tress to densities of 10 – 120 stems/ac, strategically placed treatment polygons) and reduce stand densities greatly. 34,960 acres would remain untouched. The measure of a healthy forest lies not only in its stocking rate and density, but also in structure (age, diversity in age class, diversity of species present, understory species and density, regeneration and continuity of fuels), which directly correlates to ecosystem diversity. Thinning would reduce the amount of fuels as well as break up the continuity of homogenous, single-aged stands, improving the health of the forest and ecosystem diversity. Thinning would reduce the risk of high intensity fire. After, follow-up prescribed burning would stimulate growth of understory species, to include grasses, forbs, and shrubs by nutrient cycling and new exposure to sunlight. The seral stage of the woodlands would change in treatment areas from Phase III to Stage I or II. The Proposed Action would yield desirable results over time and result in higher ecosystem diversity and improved forest health.

3.3.2.2 Impacts of the Alternative B – No Action

The No Action Alternative would not provide for sustainable, healthy forests. It would also allow for further departure from VCC conditions. Long term, forests would become more densely stocked thus, the forest would be more susceptible to wide-spread disease because of high competition and compromised health due to limited resources. Probability of large fires increases as forest health continues to diminish. In addition, the forest would continue to lack diversity in structure. 3,000 acres of previously authorized and ongoing fuels/fire management activities would continue under the No Action Alternative, which would result in impacts to forest and ecological diversity similar to the Proposed Action, however, at a much smaller scale.

3.4 Issue 3: How would herbicide treatment, RX fire and FFRB impact ecological diversity of sagebrush shrublands and sagebrush-obligate species across the project area?

3.4.1 Affected Environment

The CFP encompasses sagebrush ecosystems with Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) dominating with scattered basin big sagebrush (*A.tridentata tridentata*) and mountain big sagebrush (*A. tridentata vaseyana*) with patches of grasslands dominated by blue grama (*Bouteloua gracilis*) and western wheatgrass (*Pascopyrum smithii*) and upland forested volcanic cone features. Playa lakes and ephemeral drainages that periodically flood are located within the CFP. The forested areas of the CFP include pinyon pine (*Pinus edulis*), juniper (*Juniperus monosperma* and *J. scopulorum*), ponderosa pine (*Pinus ponderosa*), and Gambel oak (*Quercus gambelii*) with scattered quaking aspen (*Populus tremuloides*) and Douglas fir (*Pseudotsuga menziesii*).

Sagebrush steppe communities can be categorized into States of degradation (West 1999). State I (pristine ecosystems) no longer exist, due to multiple anthropogenic and climatic conditions. State II (relictual conditions) sagebrush communities consist of scattered sage and near complete perennial herbaceous understories that are less susceptible to large-scale fires and subsequent invasion of cheatgrass (Peters and Bunting 1984). The treatment area is currently in State III (stagnant sagebrush), dense competitive stands of sagebrush with depleted herbaceous community. Tebuthiuron treatment would convert the treatment area to a State IV (herb-dominated stand) native perennial herb dominated stand. Herb dominated stands are the result of treatments with Tebuthiuron or prescribed burns that increase the populations of perennial native herbs and would allow for a slow return to a relictual condition (State II) (Mosley 1996, West 1999). The CFP would treat up to 70% of 19,580 acres of sagebrush habitat (10% of

the sage within the Monument) and overlaps the southeastern most boundary of sagebrush habitats in the Western United States (Boyle and Reeder 2005). 9,799 acres have been eliminated from chemical treatment to exclude playa basins and drainages leaving 9,781 acres of sagebrush habitat that would be chemically treated with Tebuthiuron in a mosaic pattern with an estimated 70-90% Tebuthiuron effectiveness and subsequently treated with prescribed or managed wildland fire. The project would retain areas of intact sagebrush shrublands (~30-50%).

The proposed CFP would impact the ecological diversity of the current State III sagebrush community with depleted herbaceous layer. The USDA, NRCS considers big sagebrush as one of the most important shrubs of the western rangelands (Tilley et al. 2005). Many species of mammals utilize big sagebrush for a winter food source including mule deer, elk, pronghorn antelope, bighorn sheep, and jackrabbits (Dealy et al 1981, Tilley et al. 2005). Big sagebrush is a keystone species, and nearly 100 bird species and 70 mammal species have been detected in sagebrush habitats (Braun et al. 1976, Trimble 1989). Big sagebrush also provides habitat for many invertebrates that feed bird, mammal, amphibian and reptile species.

3.4.2 Environmental Impacts

3.4.2.1 Impacts of Alternative A – Proposed Action

Species that are sagebrush obligates, as well as species that are dependent on grassland and edge habitats, would be impacted. Species dependent on perennial native grasslands as well as sagebrush edge species would benefit from the treatment with an increase in habitat. Sagebrush obligates and near obligates within the CFP that require intact sagebrush communities to survive include sage sparrow (*Artemisiospiza nevadensis*), Brewer's sparrow (*Spizella breweri*), Vesper sparrow (*Pooecetes gramineus*), green-tailed towhee (*Pipilo chlorurus*), sage thrasher (*Oreoscoptes montanus*), mule deer (*Odocoileus hemionus*) and pronghorn (*Antilocapra americana*).

Mosaic burns have been found to increase bird species richness as long as the removal of sagebrush does not exceed 40-50% (Peterson and Best, 1987). The increase in perennial grass would benefit species such as bighorn sheep (*Ovis canadensis*) and mule deer as long as sufficient sagebrush remains for cover and winter browse (Lauer and Peek 1976, Payne and Bryant 1994). Patchworks and mosaics that include stands of old and young sagebrush, grassland openings, wet meadows, and woodland habitats support many bird species at their needs (Paige and Ritter 1999). Old, dense stands untreated would support the sage sparrow, Brewer's sparrow, black-throated sparrow (*Amphispiza bilineata*), sage thrashers, and grey flycatchers (*Empidonax wrightii*) all of which were detected in the sagebrush habitat at Ute Mountain nine miles north of the CFP area (Mandersen 2010).

Mosaics would be outlined before treatment to ensure adequate amounts of intact sagebrush shrublands remains to support sagebrush obligates and near obligates while increasing grassland openings and edge habitat that would slowly begin the successional process back to State II sagebrush shrublands.

Avian inventories of summer residence between 2005 and 2008 were conducted at Ute Mountain within the RGdN National Monument approximately nine miles north of the CFP area (Mandersen 2010). Transects were surveyed within the sagebrush habitat, grassland with planted reaches of crested wheatgrass (*Agropyron sibiricum*) and Indian rice grass (*Oryzopsis hymenoides*), and pinyon-juniper woodlands. The grassland species in the CFP are dominated by blue gramma and western wheatgrass, thus the Ute Mountain inventory for the grasslands is not as robust as the pinyon-juniper and sagebrush comparisons. Sagebrush obligate species were detected in the sagebrush and grassland transects but in lower numbers. Species detected include: sage sparrow, sage thrasher, Brewer's sparrow, black-throated sparrow, and green-tailed towhee.

After Tebuthiuron treatment and follow up burns to maintain treatment and create mosiacs, the shortgrass prairie areas of blue grama and western wheatgrass would benefit many species. Although not obligate grassland species, the burrowing owl (*Athene cunicularia*), mountain plover (*Charadrius montanus*), lark bunting (*Calamospiza melanocorys*), scaled quail (*Callipepla squamata*), horned lark (*Eremophila alpestris*), western meadowlark (*Sturnella neglecta*), Vesper sparrow (*Pooecetes gramineus*), and Gunnison's prairie dog (*Cynomys gunnisoni*), a keystone species, would benefit from an increase in grassland habitat (Payne and Bryant 1994). Pronghorn would benefit from treatment areas that are no larger than 988 acres (400 ha) with shrub cover of 5-10% in the treatment areas (Holechek et al. 1989). While sagebrush obligate sage sparrows require continuous sagebrush stands of greater than 328 acres (130 ha) (Paige and Ritter 1999).

Playa lakes and drainages where amphibians have been detected have been eliminated from the tebuthiuron treatment. New Mexico spadefoot toad (*Spea multiplicate*) and tiger salamander (*Ambystoma mavortium)* have been detected in playa lakes and ephemeral drainages (Besser 2018). The sagebrush lizard (*Sceloporus graciosus*) does not occur in the CFP.

Small mammals are a useful indicator of biodiversity since they are sensitive to habitat alterations (Frischknecht and Baker 1972, Zou et al. 1989). Olsen et al. (1996) found that the moderate use of Tebuthiuron (0.3lbs/acre) increased herbaceous forage production and plant and animal diversity in Wyoming. Olsen et al. (1996) found a close association between high plant diversity and high small mammal diversity. Using the .3 lbs/acre of Tebuthiuron could provide for higher diversity of both plants and animals in the CFP.

Wildland fire would be used to create a mosaic when the vegetation cover benchmark is achieved. Rigorous monitoring pre and post treatment for invasive annuals such as cheatgrass would ensure there is no net loss of the sagebrush habitats. Due to the importance of sagebrush habitats to wildlife species it is imperative that "no net loss" is achieved. The CFP achieves "no net loss" as the treatment from State III sagebrush with depleted herbaceous layer to a native perennial herb dominated stand (State IV) that would eventually succeed back to a State II or relict sagebrush habitat.

While long-term effects would be beneficial to the ecological diversity, there would be potential short-term decreases in plant and animal diversity immediately following wildland fire. Although, there is no current data on the effects of wildland fire after Tebuthiuron treatment, monitoring pre- and post-treatment would provide valuable data for future adaptive management of sagebrush and grassland ecosystems.

3.4.2.2 Impacts of Alternative B – No Action

The no action alternative would slowly change from its present state and thus ecological diversity would continue to decline within the CFP. The sagebrush shrublands would remain in a State III condition with depleted herbaceous layer and continue to support the sage obligate species that inhabit them. There would be no long-term increase in ecological diversity and no short-term decrease in diversity due to treatment. 3,000 acres of previously authorized and ongoing fuels/fire management activities would continue under the No Action Alternative, which would result in impacts to sagebrush obligate species similar to the Proposed Action, however, at a much smaller scale.

3.5 Issue 4: How would chainsaw treatment, herbicide treatment, RX fire and FFRB impact fuelwood availability and sales across the project area?

3.5.1 Affected Environment

Within the Taos Field Office over the past decade a couple methods of permitting fuelwood harvesting have occurred. One method was designating small acreage areas open for green fuelwood cutting. A second method was opening recently thinned units to harvesting fuelwood, in which trees were already cut down. A third method, now used in conjunction with the second method, is having the entire field office (with some exclusion areas) open for harvest of any Dead & Down or Dead & Standing fuelwood. Dead & Down/ Dead & Standing fuelwood permits are available. Dead & Down is defined as any species of tree that has been cut or is fallen and is no longer photosynthesizing. Dead & Standing is defined as a dead, standing tree that is no longer photosynthesizing (i.e. no green foliage present on tree).

Totals for cords of fuelwood sold over the past 10 FY years:

2019 – 650 cords
2018 – 704 cords
2017 – 439.5 cords
2016 – 168 cords
2015 – 413 cords
2014 – 343 cords
2013 – 1045 cords
2012 – 620 cords
2011 – 277 cords
2010 – 397 cords
2009 – 554 cords

3.5.2 Environmental Impacts

3.5.2.1 Impacts of Alternative A – Proposed Action

The Proposed Action would allow for 15,200 wooded acres to be available for thinning treatment and thus, more opportunity for fuelwood harvest. Up to 4,000 acres per year could be treated. For every acre thinned and open to fuelwood harvest, an estimated two to four cords of fuelwood would be available for public. The Proposed Action allows for varied thinning treatments to occur simultaneously within the entire Monument. The impacts of the proposed treatment would be positive in regard to fuelwood sales.

3.5.2.2 Impacts of Alternative B – No Action

The proclamation of the RGdN National Monument explicitly allows for the continued traditional harvesting of fuelwood. The No Action alternative would not allow for new areas of fuelwood harvest, as a follow up of thinning activities. Field Office-wide dead & down harvest would continue; quality, accessibility and availability of dead & down fuelwood would continue to diminish. This optional method of dispersed harvest would be exhausted more and more as the years go by, given that vehicles must stay within 300 feet of existing roads. In turn, this could lead to an increase in theft of fuelwood and unpermitted cutting of fuelwood because of minimal availability and permits. This could lead to future management objectives being compromised.

3.6 Issue 5 How would chainsaw treatment, herbicide treatment, RX fire and FFRB impact populations of special status species? Specifically, would these activities impact federally threatened or endangered species, or BLM sensitive/state threatened or endangered species with potential to occur in the project area?

3.6.1 Affected Environment

Collectively, "special status species" include those species listed as endangered or threatened under either federal or state law, proposed, or candidate species for protection under federal law, or other sensitive species of interest.

The affected environment is first described for federally listed threatened, endangered, or proposed species with the potential to occur within the project area, and then for other special status species, including BLM sensitive species with the potential to occur within the project area.

Federally Listed Threatened, Endangered, and Proposed Species

We considered the habitat present within the project area, and reviewed the U.S. Fish & Wildlife Service (USFWS) New Mexico Ecological Services Information, Planning and Conservation (IPaC) website (http://www.fws.gov/ipac/) for federally-listed flora and fauna species (Consultation Code 02ENNM00-2020-SLI-0599 – Appendix B). The ESA requires the evaluation of potential impacts on federally listed species and their critical habitat. In addition, the New Mexico Department of Game and Fish (NMDGF) (BISON-M 2020), and NM Rare Plant Technical Council (NMRPTC) (NMRPTC 1999) databases were also reviewed to determine potential occurrence and habitat requirements of listed species in the project areas. Specifically, the habitat associations and species descriptions for the targeted species were derived from these websites, and their habitat requirements were then compared to the habitat found in the project area to identify which species were likely to occur. The likelihood of occurrence for listed species or their potential habitat within the project areas and determination of effects/impacts are noted in Table 9.

The potential for occurrence of the following federally endangered, threatened, proposed or candidate species and habitats are described below in Table 9. The USFWS IPaC species list was verified to ensure that all federally listed species in the CFP project area were considered. No further analysis is warranted for those species with a No Effect determination.

Presence/ Absence surveys were conducted in June of 2020 for Ripley's milkvetch (*Astragalus ripleyi*) and Taos springparsley (*Cymopterus spellenbergii*). These surveys revealed numerous amounts of these plants in past thinning and jackpot treatments throughout Cerro Montoso. These treatments were heavily thinned and burned at the high-end of the prescribed fire prescription. Time since these treatments varies from 6 months to seven years. Presence/ Absence monitoring would continue throughout the life of this EA.

Table 9. USFWS Federally Threatened, Endangered and Proposed Species from the USFWS IPAC website, February 2020

Species	Status	Habitat Occurrence	Designated Critical Habitat within Project Area	Comments
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Endangered	Habitat not present.	No	Suitable habitat for the species does not occur within the project area. There are no riparian habitat types within the project area. Furthermore, designated critical habitat for the species does not occur within the project area. There would be **no effect** to the species, no further analysis required.
Mexican spotted owl (*Strix occidentalis lucida*)	Threatened	Habitat not present.	No	Habitat is not present within the project area. The majority of the project occurs within sagebrush and PJ, with some portions reaching the lower limits of the mixed-conifer zone, albeit weak with extremely sparse and limited old growth. The primary Mexican spotted owl habitat constituents, which the site lacks, are: (1) old-growth component, (2) multiple canopy layers, (3) two snags >18 inches dbh/acre in pine-oak forest or five snags >18 inches dbh/acre in mixed-conifer forest, and a (4) diversity of seral stages dominated by large trees > 18 inches. Moreover, steep slopes (> 40 percent) are extremely limited or absent from the project area. The Proposed Action would have **no effect** on the species or critical habitat. No further analysis required.
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	Threatened	Habitat not present.	No	Suitable habitat for the species does not occur within the project area. There are no riparian habitat types within the project area. Furthermore, designated critical habitat for the species does not occur within the project area. There would be **no effect** to the species, no further analysis required.
Least tern (*Sterna antillarum*)	Endangered	Habitat not present.	No	Nests on flat, sandy substrates, typically devoid of vegetation (i.e. sand bars and reservoir shorelines). Habitat is not present within the CFP area. The Proposed Action would have **no effect** on the species or critical habitat. No further analysis is required.
New Mexico meadow jumping mouse (*Zapus hudsonius luteus*)	Endangered	Habitat not present.	No	Suitable habitat for the species does not occur within the project area. There are no riparian habitat types within the project area. Furthermore, designated critical habitat for the species does not occur within the project area. There would be **no effect** to the species, no further analysis required.

Species	Status	Habitat Occurrence	Designated Critical Habitat within Project Area	Comments
Canada lynx (*Lynx canadensis*)	Threatened	Habitat not present.	No	The species utilizes primarily subalpine/coniferous forests. Specifically, they are associated with mature forests, with downed logs and windfalls that provide cover for denning, escape and protection from severe weather (BISON-M 2020). Studies of lynx in Colorado suggest a preference for dense spruce-fir stands associated with outcrops of large boulders (Fitzgerald et al. 1994), neither of which occur within the project area. The Proposed Action would have **no effect** on the species or critical habitat. No further analysis is required.
Jemez Mountains salamander (*Plethodon neomexicanus*)	Endangered	Habitat not present.	No	This is a highly endemic species restricted to the Jemez Mountains (BISON-M 2020), approximately 75 miles southwest of the project area. The Proposed Action would have **no effect** on the species or critical habitat. No further analysis is required.

BLM Sensitive & State of NM Threatened/Endangered Species

The potential for occurrence of the following BLM Sensitive and State of NM Threatened/ Endangered species and habitats are described below in Table 10. No further analysis is warranted for those BLM Sensitive and State of NM Threatened/Endangered species - with a No Impact determination, (as described in Table 10 below).

Only species for which habitat is present, and could be affected by the project - are analyzed in the narrative below (Section 3.6.2.3).

Table 10. BLM Sensitive Species for the Taos Field Office & NM State Threatened/Endangered Species from BISON-M 2020

Species	Status	Habitat Occurrence	Comments
Jemez Mountains salamander (*Plethodon neomexicanus*)	State NM Endangered	Habitat not present.	Analyzed in Table 9, above.
Northern leopard frog (*Rana pipiens*)	BLM Sensitive	Habitat not present.	No riparian areas occur in the project area. Any water sources occurring in the project area are limited to earthen stock tanks or wildlife waters, which would not be impacted by the Proposed Action. The Proposed Action would have no impact to the species. No further analysis is required.

Species	Status	Habitat Occurrence	Comments
American peregrine falcon (*Falco peregrinus*)	State NM Threatened	Habitat present but not affected.	Foraging habitat occurs within the greater project area. No nesting or roosting habitat occurs, as there are no significant cliffs in the project area. Project activities may temporarily displace a few prey individuals but would not alter habitat. In the long-term, foraging habitat would exist in an improved condition as treatments would improve forest health thereby increasing prey diversity and availability. No further analysis is required.
Bald eagle (*Haliaeetus leucocephalus*)	State NM Threatened	Habitat present but not affected.	Suitable habitat for the species, containing large roost trees near large waterbodies, does not occur within the project area. There would be no impact to the species, no further analysis required.
Burrowing owl (*Athene cunicularia hypugaea*)	BLM Sensitive	Habitat present.	**Analysis required.**
Bendire's thrasher (*Toxostoma bendirei*)	BLM Sensitive	Habitat not present.	Typically found in open to dense shrubs, with a significant component of low trees and succulents in Chihuahuan Desert Scrub. Also found in desert arroyo riparian and annual grasslands. No habitat is present in the project area. No further analysis is required.
Chestnut-collared longspur (*Calcarius ornatus*)	BLM Sensitive	Habitat not present.	This species is a prairie specialist and seasonally migrates across suitable habitat within the contiguous U.S. (Sedgwick, 2004). No prairie habitat types exist within the project area. There will be no impact to the species. No further analysis required.
Mexican whip-poor-will (*Antrostomus arizonae*)	BLM Sensitive	Habitat present but outside of known distribution.	Suitable breeding habitat in New Mexico consists of pinon-juniper woodlands, ponderosa and mixed-conifer forests. However, the analysis area is outside of their known distribution; their northern summer limit appears to be the Sandia Mountains (BISON-M 2020). No further analysis required.
Pinyon jay (*Gymnorhinus cyanocephalus*)	BLM Sensitive	Habitat present.	**Analysis required.**
Southwestern willow flycatcher (*Empidonax traillii extimus*)	State NM Endangered	Habitat present.	Analyzed in Table 9, above.
Virginia's warbler (*Vermivora virginiae*)	BLM Sensitive	Habitat present.	**Analysis required.**
White-eared hummingbird (*Hylocharis leucotis borealis*)	NM State Threatened	Habitat not present.	Habitat includes scrubby growth (especially undergrowth of Madrean evergreen oak forest in highlands), pine woods, pine-oak forest, high mountain fir forest, forest edges and forested mountain canyons. The species is known to occur in southeast Arizona and southern New Mexico, significantly to the south of the project area. No further analysis required.

Species	Status	Habitat Occurrence	Comments
Rio Grande chub (*Gila Pandora*)	BLM Sensitive	Habitat not present.	Aquatic habitat is not present in the project area. No further analysis is required.
Rio Grande sucker (*Catostomus plebeius*)	BLM Sensitive	Habitat not present.	Aquatic habitat is not present in the project area. No further analysis is required.
American marten (*Martes caurina*)	State NM Threatened	Habitat not present.	The project area does not contain old-growth spruce-fir habitat as required by the species. No further analysis is required.
New Mexico meadow jumping mouse (*Zapus hudsonius luteus*)	State NM Endangered	Habitat not present.	Analyzed within Table 9, above.
Pale Townsend's big-eared bat (*Corynorhinus townsendii pallescens*)	BLM Sensitive	Habitat present.	**Analysis required.**
Spotted bat (*Euderma maculatum*)	State NM Threatened	Habitat present.	**Analysis required.**
Gunnison's prairie dog (*Cynomys gunnisoni*)	BLM Sensitive	Habitat not present.	**Analysis required.**
Yuma skipper (*Ochlodes yuma azasazi*)	BLM Sensitive	Habitat not present.	This species is strictly dependent on the presence of common reed (*Phragmites australis*) stands in wetland habitats. No wetlands or stands of common reed exist in the analysis area. No further analysis is required.
Monarch butterfly (*Danaus plexippus plexippus*)	BLM Sensitive	Habitat not present.	Strongly associated with milkweed (*Asclepias spp*), an essential feature of quality monarch habitat. Milkweed is primarily found along riparian areas, which are not present in the project area. The Proposed Action will have no impact to the species. No further analysis required.
Bowman's fairy shrimp (*Steptocephalus thomasbowmani*)	BLM Sensitive	Habitat not present.	Aquatic. Known only from a small pool north of Lordsburg, NM in Hidalgo County (NatureServe 2020). No further analysis required.
Clam shrimp (*Eulimnadia follisimilis*)	BLM Sensitive	Habitat not present.	Occur in dirt stock tanks in Cibola and Socorro counties, NM. No further analysis required.

Species	Status	Habitat Occurrence	Comments
Ripley's milkvetch (*Astragalus ripleyi*)	BLM Sensitive	Habitat present.	**Analysis required.**
Taos springparsley (*Cymopterus spellenbergii*)	BLM Sensitive	Habitat present.	**Analysis required.**
Clipped wild buckwheat (*Eriogonum lachnogynum var. colobum*)	BLM Sensitive	Habitat present but outside of known distribution.	Occurs in open sandy or gypseous limestone ridges and edges of mesas in pinon-juniper woodlands. Known from only two locations, between Prewitt and Thoreau in McKinley County, and on the rim of the Rio Grande Gorge in Taos County, NM (NMRPTC 1999). No further analysis is required.

3.6.2 Environmental Impacts

Environmental impacts are described for those species with habitat in the project area, for:

1. Federally-listed threatened, endangered, and proposed species with the potential to occur within the project area, in Section 3.6.2.1 below.

2. Special status species, including BLM sensitive and state threatened and endangered species with the potential to occur within the project area, in Section 3.6.2.2, below.

3.6.2.1 Impacts of Alternative A on Federally Listed Threatened, Endangered, and Proposed Species – Proposed Action

Due to lack of habitat or absence of the species as determined by surveys, no further analysis beyond that described in Table 9 is warranted for the seven federally Threatened, Endangered or Species Proposed under the Endangered Species Act.

3.6.2.2 Impacts of Alternative B on Federally Listed Threatened, Endangered, and Proposed Species – No Action

The no action alternative would have no chainsaw treatments, which would result in no changes to baseline conditions of wildlife habitat in the short-term. Without implementation of fuel treatments, RX fire or FFRB in the surrounding landscape, marginal habitat for federally listed species would continue to underserve the species, and would continue to be threatened by catastrophic wildfire, in the long-term (≥ 5 years). At present, thousands of acres across the project area are covered by unnaturally high densities of trees; this creates conditions for large and excessively hot wildfires, that could cause damage to wildlife habitat for listed species. 3,000 acres of previously authorized and ongoing fuels/fire management activities would continue under the No Action Alternative, which would result in short term negative impacts to federally listed species habitat; however, these impacts would be outweighed by long-term beneficial impacts to federally listed species, which would experience improved habitat conditions in the area. However, it has been determined that no federally listed species have habitat within the project area, therefore, these negative and beneficial impacts would be moot.

3.6.2.3 Impacts of Alternative A on BLM Sensitive – Proposed Action

Of the BLM Sensitive species evaluated in Table 10, above, the following species – the burrowing owl, pinyon jay, Virginia's warbler, Pale Townsend's big-eared bat, spotted bat, Gunnison's prairie dog, Ripley's milkvetch and the Taos springparsley – warranted further analysis.

Burrowing Owl

The burrowing owl can occur in a variety of habitat types ranging from grasslands and prairies, golf courses and other urban environments, to semidesert grass-shrubs and sagebrush-grassland associations (BISON-M 2020). As burrowing owls do not excavate their own burrows, existing mammal burrows must be present for owl occupation and nesting. The species diet consists of arthropod, reptile, amphibian, bird, and mammalian prey. It has been demonstrated that projects which utilize fire to control woody species can result in an increased prey base for the species, while also reducing plant height and cover around burrows (USFS 1996).

Affected habitat: Suitable habitat occurs within the sagebrush-grassland portions of the project area, however, it is unknown if existing burrows occur in these areas in which owls could potentially reside.

Treatments would be applied to reduce high-density stands of sagebrush and improve the herbaceous species component.

Impact analysis: Treatment of up to 19,580 acres of potentially suitable sagebrush habitat would result in direct and indirect impacts to the species, if present. Direct impacts would be relatively short-term and likely be in the form of displacement from the project area due to noise and presence of project personnel. However, individuals displaced by project activities would be expected to relocate to adjacent and widely available suitable habitat throughout the project area and greater vicinity. With implementation of the design features as part of the Proposed Action (avoidance of work during the avian breeding and nesting season, without first conducting a nesting survey) potential for impacts to breeding and nesting owls would be minimized. In the event a nest (active or inactive) is discovered, a buffer to protect the nest would be applied. In the long-term, reduction of the sagebrush, to result in a mosaic of sagebrush and grassland, would improve habitat conditions for the species by reducing the woody vegetation and improving the prey base.

Cumulative effects: Past, present or reasonably foreseeable actions that could contribute to cumulative impacts to burrowing owls (in addition to the proposed restoration treatments), includes future treatments by the BLM, the NMSLO and/or private landowners, which would aim to reduce sagebrush densities, increase herbaceous cover and increase prey base. In the long-term, the project area would respond to restoration treatments, which should result in better-functioning systems (i.e., through more herbaceous growth, and increased prey base). Other cumulative effects in the project area such as grazing and recreation would remain unchanged and may impact burrowing owls at levels consistent with pre-project levels.

Determination of effects: The Proposed Action could impact Western burrowing owls, but it is not likely to result in a trend toward federal listing or loss of population viability, as suitable foraging habitat exists adjacent to the project area and owls in the vicinity are expected to forage in those locales. Further, restoration efforts would contribute to increased herbaceous vigor and reduced woody plants, which would result in improved habitat condition for the species. Finally, the design feature to avoid work during the primary nesting season would further ensure that negative impacts to the population viability are prevented.

Pinyon Jay

The range of the pinyon jay extends across much of the Southwest and is a resident from central Oregon and eastern California east to the Dakotas and south to central portions of New Mexico and Arizona. It generally winters throughout its breeding range but occasionally occurs in neighboring regions when pinecone crops fail (NMPIF 2020). This species exists in colonies throughout their range. In New Mexico, they are variable residents in mainly middle elevation areas containing piñon-juniper woodlands almost statewide and range from uncommon to locally abundant. Being highly dependent on piñon nuts as a food source, the population size of pinyon jays is thought to be highly correlated with the local size of pine seed crops (BISON-M 2020). According to the U.S. Forest Service (2012), treatments that thin dense piñon and juniper stands could "increase the vigor and drought resistance of remaining trees" and ultimately be beneficial to pinyon jays.

Of note, the U.S. Fish and Wildlife Service (USFWS) Migratory Bird Program, Division of Bird Habitat Conservation, Region 6 developed occupancy survey methods in collaboration with partners in Colorado and Utah. These methods were tested in Colorado over the 2019 field season with much success and could prove to be successful in expanding into other states (New Mexico) and/or range wide. To assist in this effort, the BLM Taos Field Office will work collaboratively with the USFWS Region 2 in evaluating survey methodology to determine pinyon jay occupancy in appropriate pine habitats (e.g., pinyon-juniper and ponderosa pine on the Rio Grande del Norte National Monument in 2021. For immediate practical

purposes, these methods will be applied to evaluate pinyon jay occupancy in areas that are within areas proposed for future treatments (i.e., mechanical thinning and burning). t. Through identifying where PIJA occur and breed, we can design future projects to answer what the impacts of management activities on pinyon jay occupancy and breeding are, and attempt to identify their level of tolerance to these activities both in the short and long-term. If proven successful surveys would continue in the Copper Hill Fire Management Unit.

In addition, the monitoring efforts associated with testing of the protocol in the Taos Field Office will help to establish a much larger, 3-state wildlife tracking system (MOTUS) with a focus on migratory birds.

Affected habitat: Much of the project area harbors stands of piñon pine, which is the primary habitat type and food source for pinyon jays. Restoration treatments would be implemented in unhealthy, closed canopy piñon-juniper stands.

Impact analysis: Treatment areas would include overstocked, unhealthy stands of piñon-juniper that lack age and structural diversity. With implementation of the design features as part of the Proposed Action (avoidance of work during the primary nesting season, without first conducting a pre-treatment nesting colony search), potential for impacts to breeding and nesting jays would be minimized. In the event a nesting colony (active or inactive) is detected, a buffer to protect the colony would be applied. The Proposed Action could contribute to short term, temporary negative impacts to foraging pinyon jays. During project activities, impacts would primarily be in the form of noise associated with the use of heavy machinery or chain saws, and presence of fire and project personnel which may displace pinyon jays to nearby adjacent habitat. Clumps of large and old trees would also be retained throughout as an additional design feature, thereby minimizing impacts to nesting and foraging jays.

Cumulative effects: Past, present or reasonably foreseeable actions that could contribute to cumulative impacts to pinyon jays (in addition to the proposed restoration treatments), includes future treatments by the BLM, the NMSLO and/or private landowners, which would result in decreased densities of small trees, increased herbaceous cover, and increased structural diversity. In the long-term, the project area would respond to restoration treatments, which should result in better-functioning systems (i.e., through more herbaceous growth, and increased vigor of remaining piñon-juniper stands). Other cumulative effects in the project area such as grazing and recreation would remain unchanged and may impact pinyon jays at levels consistent with pre-project levels.

Determination of effects: The Proposed Action could impact pinyon jays, but it is not likely to result in a trend toward federal listing or loss of population viability, as suitable foraging habitat exists adjacent to the project area and pinyon jays in the vicinity are expected to forage in those locales. Pinyon jay nesting habitat differs from foraging habitat, however, design features to avoid the pinyon jay breeding and nesting habitat or avoidance of the pinyon jay nesting season during work operations in potential habitat, would prevent impacts to breeding and nesting pinyon jays. Further, restoration efforts would contribute to increased tree vigor and less competition for available soil nutrients, which could result in healthier pinecone and mast crop production of piñon nuts.

Virginia's Warbler

The Virginia's warbler is a neotropical migrant and occurs in the Intermountain West and southern Rocky Mountains. It breeds from Nevada and portions of eastern California east to New Mexico and far west Texas, and from southern portions of Idaho and Wyoming south to the Mexican border in Arizona and New Mexico (Olson and Martin 1999). The species winters along the Pacific slope of southern Mexico, primarily in the states of Jalisco, Guanajuato, Michoacan, Morelos, Guerrero, southern Puebla, and

Oaxaca (Howell and Webb 1995). Virginia's Warbler breeds throughout the western two-thirds of New Mexico; it is less common in the east where habitat is patchy.

Virginia's warbler occurs at middle elevations, where coniferous woodland or forest mixes with deciduous vegetation. It never occurs in coniferous forests where there is not a deciduous component (Olson and Martin 1999). Across its range, Virginia's Warbler is primarily associated with pinyon-juniper and oak woodlands, though in Arizona and New Mexico, it extends upward into mixed conifer habitat containing Gambel Oak, New Mexico locust, maple or other shrubby deciduous vegetation (Martin 1998, Olson and Martin 1999). In forest and woodland habitat, a dense understory is critical, and steep draws or scrubby hillsides are especially favored (Sedgwick 1987, Yanishevsky and Petring-Rupp 1998).

Affected habitat: The majority of the forested project area is suitable habitat for the species. Restoration treatments would be implemented in suitable habitat in unhealthy stands of pinon pine and ponderosa.

Impact analysis: Treatments would include overstocked, unhealthy stands of piñon-juniper and ponderosa that lack age and structural diversity. The design feature to conduct work operations outside of the primary nesting season (in potential habitat), would prevent impacts to breeding and nesting warblers. Abundant suitable foraging habitat exists adjacent to the project area, which could be utilized by this species during treatments, for foraging.

Cumulative effects: Past, present or reasonably foreseeable actions that could contribute to cumulative impacts to warblers (in addition to the proposed restoration treatments) includes future treatments by the BLM, the NMSLO and/or private landowners, which would result in decreased densities of small trees, increased herbaceous cover, and increased structural diversity. In the long-term, the project area would respond to restoration treatments, which should result in better-functioning systems (i.e., through more herbaceous growth, and increased vigor of remaining piñon-juniper and ponderosa stands). Other cumulative effects in the project area such as grazing and recreation would remain unchanged and continue to impact warblers at levels consistent with pre-project levels.

Determination of effects: The Proposed Action would not impact breeding and nesting warblers. It could impact individual foraging Virginia's warblers, but it is not likely to result in a trend toward federal listing or loss of population viability, as suitable foraging habitat exists adjacent to the project area and warblers in the vicinity are expected to forage in those locales. Further, restoration efforts would contribute to increased tree and deciduous shrub vigor, which would result in improved habitat condition for the species. Finally, the design feature to avoid work during the primary nesting season would further ensure that negative impacts to the population viability are prevented.

Pale Townsend's Big-Eared Bat

Townsend's big eared bat occurs in a variety of habitat types including desert scrub, chaparral, deciduous, and variable coniferous forest habitat types including but not limited to pinyon-juniper and mixed-conifer compositions. The species is known to utilize caves and abandoned mineshafts for dayroosts and hibernacula and would occupy abandoned buildings and crevices on cliff faces as needed for shelter (BISON-M 2020). The species is an insectivore and has been observed taking prey in open flight, gleaning from vegetative surfaces, and foraging within tree canopies. Variable coniferous forest habitat types are present within the project area.

Affected habitat: The majority of the project area could serve as potential foraging habitat for the species. Cave and cliff habitat may be present, however treatments would not be located in these areas.

Impact analysis: Roosting habitat for the species would not be impacted by project implementation because prescriptions would not overlap or impact cliff and cave habitat types and abandoned buildings are absent from the project area. Foraging habitat could be impacted by the implementation of RX fire, due to the persistence of burning into the night. Any bats displaced by RX burning during project implementation would be expected to relocate to adjacent and widely available suitable habitat within the greater vicinity during project implementation.

Determination of effects: The Proposed Action could impact individual bats, but it is not likely to result in a trend toward federal listing or loss of population viability, as suitable foraging habitat exists adjacent to the project area and bats in the vicinity are expected to forage in those locales. Following completion of prescription implementation, any displaced individuals would be expected to resume use of the project area. Following treatments, it is expected that forest health would improve, thereby increasing insect abundance and thus foraging options for the bat, a beneficial impact.

Spotted Bat

The spotted bat occupies a wide range of habitats including piñon-juniper and ponderosa dominated woodlands and are generally within a mile of cliffs or caves. These bats are cliff dwellers and generally use diurnal roosts within cracks and crevices of cliffs and canyons (BISON-M 2020). Cave and cliff habitat is likely present within limited portions of the project area.

Affected habitat: The majority of the project area could serve as potential foraging habitat for the species. Cave and cliff habitat may be present, however treatments would not be located in these areas.

Impact analysis: Ponderosa stands and cave habitat are present within the project area. Roosting habitat for the species would not be impacted by the Proposed Action because treatments would not overlap cliff habitats. Mechanical and hand treatments along with RX burning could cause impacts to foraging bats present within the project area during project implementation. Any bats disturbed during forest thinning or RX fire would be expected to relocate to suitable habitat widely available in areas adjacent to the project area.

Determination of effects: The Proposed Action could impact individual bats, but it is not likely to result in a trend toward federal listing or loss of population viability, as suitable foraging habitat exists adjacent to the project area and bats in the vicinity are expected to forage in those locales. Following completion of prescription implementation, any displaced individuals would be expected to resume use of the project area. Following treatments, it is expected that forest health would improve, thereby increasing insect abundance and thus foraging options for the bat, a beneficial impact.

Gunnison's Prairie Dog

Gunnison's prairie dogs inhabit grasslands, montane shrublands, and semi desert environments (BISON-M 2020). Specific habitat types range from mountain parks in Colorado to sagebrush flats in central New Mexico. Throughout New Mexico, the species frequently occurs in sagebrush dominated habitats. Prairie dogs typically live in social communities consisting of at least two to three individuals. They dig burrows and their home range usually encompasses about two acres. Diet for the species consist of grasses and forbs, although occasionally prairie dogs may opportunistically feed on invertebrates.

Affected habitat: The sagebrush portions of the project area are considered to harbor suitable habitat. The species has been documented within the RGdN, however those surveys that detected the species took place north of any proposed treatments (BLM 2011). Therefore, it is unknown if and/or where they occur in the project area.

Impact analysis: Treatment of up 19,580 acres of sagebrush habitat would likely result in short-term negative impacts to the species, primarily in the form of noise from project equipment, and presence of project personnel. Application of RX fire or FFRB could result in some mortality to individual prairie dogs should they be present during treatments. Individuals displaced from the project area by project activity would be expected to relocate to comparable, suitable habitat widely available within the vicinity of the project area. Following completion of treatment efforts, displaced prairie dogs would be expected to resume use of the project area. In the long-term, reduction of the sagebrush, to result in a mosaic of sagebrush and grassland, would improve habitat conditions for the species by reducing the woody vegetation near burrows and increasing foraging options for the species due to increased herbaceous growth.

Cumulative effects: Past, present or reasonably foreseeable actions that could contribute to cumulative impacts to prairie dogs (in addition to the proposed restoration treatments), includes future treatments by the BLM, the NMSLO and/or private landowners, which could lead to decreased sagebrush densities and increased herbaceous cover. In the long-term, the project area would respond to restoration treatments, which should result in better-functioning systems (i.e., through more herbaceous growth, and increased foraging options). Other cumulative effects in the project area such as grazing and recreation would remain unchanged and continue to impact prairie dogs at levels consistent with pre-project levels.

Determination of effects: The Proposed Action could impact the Gunnison's prairie dog, but it is not likely to result in a trend toward federal listing or loss of population viability, as suitable foraging habitat exists adjacent to the project area and prairie in the vicinity are expected to forage in those locales. Further, restoration efforts would contribute to increased herbaceous vigor and reduced woody plants, which would result in improved habitat condition for the species.

Ripley's Milkvetch

This plant species occurs in open piñon-juniper woodland, sagebrush and Gambel oak in ponderosa forest at elevations from 7,000 to 8,250 feet. It is a desirable forage plant and is readily fed upon by native ungulates without toxic effects (NMRPTC 1999). It may occasionally be impacted by brush control projects due to its occurrence in pinon-juniper-oak communities with big sagebrush. Since many species of *Astragalus* are toxic, it may occasionally be misidentified and targeted for local eradication (Ladyman 2003).

Affected habitat: The majority of the project area contains piñon-juniper woodland and ponderosa forest. The acreage of that which occurs between 7,000 and 8,250 feet is not precisely known, though it is less than the total acreage for the habitat types. Surveys for the species have been conducted in the project area, and the species was found to be present (BLM 2019). Monitoring of known locations is ongoing.

Impact analysis: Thinning treatments would utilize hand chainsaw crews. In the long-term, potential habitat for the milkvetch would exist in an improved condition, with increased solar infiltration to the understory, thereby possibly increasing gambel oak thickets in which this species associates with. Reducing the canopy would also afford more opportunity for herbaceous species establishment. Rx burning would perhaps have short-term impacts on the milkvetch, decreasing number of specimen in any given site. Rx fire would cause a change in nutrients, insolation, competing species present and other factors which may overall increase the growth of new specimen of this species, over time.

Cumulative effects: Past, present or reasonably foreseeable actions that could contribute to cumulative impacts to Ripley's milkvetch (in addition to the proposed restoration treatments), include continued drought impacts, which results in decreased habitat conditions for the species. In the long-term, the

project area would respond to restoration treatments, which should result in better-functioning systems (i.e., through more solar radiation to the understory, potentially propagating herbaceous species such as Ripley's milkvetch). Other cumulative effects in the area such as grazing and recreation would remain unchanged and continue to impact milkvetch at levels consistent with pre-project levels.

Determination of effect: The Proposed Action could impact individual milkvetch, but it is not likely to result in a trend toward federal listing or loss of viability. In fact, the proposed work could benefit potential habitat by enabling more solar radiation to reach the understory, and increasing herbaceous species (through tree thinning, which reduces competition for water).

Taos Springparsley

This plant grows primarily among basalt boulders that cover much of the Taos Plateau and form caprock along canyons rims. It occasionally grows in soils derived from metamorphic rock or in sandy draws. The plant community is open pinon-juniper woodland or Douglas fir-ponderosa pine forest at elevations of 6,200-8,800 feet. It is thought that forest treatment practices such as thinning and fire may negatively impact the species, albeit poorly studied (NMRPTC 1999).

Affected habitat: The majority of the project area contains piñon-juniper woodland and ponderosa forest. The acreage of that which occurs between 6,200 and 8,800 feet is not precisely known, though it is less than the total acreage for the habitat types. Surveys for the species have been conducted in the project area. Specifically, surveys were conducted on Guadalupe Mountain, where the species was documented in moderate numbers (BLM 2019a). Surveys for the species have been conducted in the project area, and the species was found to be present (BLM 2019). Monitoring of known locations is ongoing.

Impact analysis: Treatments would utilize hand chainsaw crews.In the long-term, potential habitat for the springparsley would exist in an improved condition, with increased solar radiation to the understory, thereby possibly increasing available suitable habitat for the species. Reducing the canopy cover would also afford more opportunity for herbaceous species establishment, such as Taos springparsley.

Cumulative effects: Past, present or reasonably foreseeable actions that could contribute to cumulative impacts to Taos springparsley (in addition to the proposed restoration treatments), include continued fire suppression, which results in un-naturally high densities of small trees, that utilize more water, thereby decreasing solar radiation to the forest floor, and minimizing the available understory, which this species depends upon (i.e. Gambel oak thickets). In the long-term, the project area would respond to restoration treatments, which should result in better-functioning systems (i.e., through more solar radiation to the understory, potentially propagating herbaceous species such as Taos springparsely). Other cumulative effects in the area such as grazing and recreation would remain unchanged and continue to impact the springparsely at levels consistent with pre-project levels.

Determination of effect: The Proposed Action could impact individual Taos springparsley plants, but it is not likely to result in a trend toward federal listing or loss of viability. Given that buffers would be adhered to in accordance with BMP's, impacts to the species would be drastically diminished. In the long-term, the proposed work could benefit potential habitat by enabling more solar radiation to reach the understory, and increasing herbaceous species (through tree thinning, which reduces competition for water).

3.6.2.4 Impacts of Alternative B on BLM Sensitive – No Action

The no action alternative would have no chainsaw treatments, which would result in no changes to baseline conditions of wildlife habitat in the short-term. Without implementation of fuel treatments, RX

fire or FFRB in the surrounding landscape, marginal habitat for BLM Sensitive listed species would continue to underserve the species, and would continue to be threatened by catastrophic wildfire, in the long-term (> 5 years). At present, thousands of acres across the project area are covered by unnaturally high densities of trees; this creates conditions for large and excessively hot wildfires, that could cause damage to wildlife habitat for sensitive species. 3,000 acres of previously authorized and ongoing fuels/fire management activities would continue under the No Action Alternative, which would result in impacts to BLM Sensitive species similar to the Proposed Action, however, at a much smaller scale. This would primarily consist of short-term negative impacts to some species, followed by long-term beneficial impacts.

3.7 Issue 6: How would chainsaw treatment, herbicide application and RX fire activities and their timing, impact migratory birds and their habitats?

3.7.1 Affected Environment

Under Executive Order 13186, 66 Fed. Reg. 3853 (2001), Responsibilities of Federal Agencies to Protect Migratory Birds, all federal agencies are charged with the conservation and protection of migratory birds and their habitats. In response to this order, the BLM and the U.S. Fish and Wildlife Service entered into a Memorandum of Understanding (MOU) to promote this conservation of migratory bird populations (BLM-USFWS 2010).

Habitat for numerous migratory birds exists across the project area. Primary habitat types utilized include pinon-juniper, ponderosa pine, sagebrush and middle-elevation riparian.

The USFWS IPaC Trust Resources List for the project area (Appendix B), lists ten migratory bird species that could have potential habitat in the project area: bald eagle (*Haliaeetus leucocephalus*), Brewer's sparrow (*Spizella breweri*), golden eagle (*Aquila chrysaetos*), Grace's warbler (*Dendroica graciae*), Lewis's woodpecker (*Melanerpes lewis*), mountain plover (*Charadrius montanus*), olive-sided flycatcher (*Contopus cooperi*), pinyon jay (*Gymnorhinus cyanocephalus*), rufous hummingbird (*Selasphorus rufus),* Virginia's warbler (*Vermivora virginiae*), and the willow flycatcher (*Empidonax traillii*).

Nest initiation dates vary per species, but the primary nesting season for the project area is 1 May – 31 July for the majority of species.

Note - the design feature to avoid implementation work during the primary nesting season without first conducting a nest search – would prevent direct impacts to breeding and nesting birds.

The bald eagle, pinyon jay, Virginia's warbler, and willow flycatcher have been previously analyzed in Section 3.6 and will not be discussed further.

3.7.2 Environmental Impacts

3.7.2.1 Impacts of Alternative A – Proposed Action

Table 11 – Migratory Bird Species Analyzed for Impacts from the Proposed Action

***RP** = Riparian / **PJ** = Piñon-Juniper / **PP** = Ponderosa Pine/ **S** = Sagebrush

Species	Habitat Type*	Important Features and Life History Considerations	Effects of the Proposed Action

Brewer's sparrow (*Spizella breweri*)	S	• Strongly associated with sagebrush, in areas with scattered shrubs and short grass. • Preferred habitat correlated to shrub cover and horizontal habitat heterogeneity	• No direct impacts would be incurred to breeding and nesting sparrows. • RX fire and herbicide treatments would be done selectively and in a manner that promotes ecotones and mosaics of grass, forb, and sage vegetation in the greater treatment area, thereby increasing habitat heterogeneity. • 19,580 acres of sagebrush treatment across multiple patches in a mosaic fashion - is not anticipated to have a measurable impact on the sparrow population. The patches of old, dense untreated sagebrush between grassland openings will still be available and suitable for the sparrow, Though unlikely, temporary displacement of individual sparrows could occur - to adjacent, abundant sagebrush habitats outside of the project area. • The scale and nature of the proposed treatments may impact individual sparrows, but is not expected to negatively impact the local population.
Golden eagle (*Aquila chrysaetos*)	S	• Roost and nest on large cliffs or steep hills • Foraging habitat is highly variable, but includes mostly barren or semi-barren areas in sagebrush, prairies and sparse woodlands, generally in reasonable proximity to nest sites.	• No direct impacts would be incurred to breeding and nesting eagles. • Temporary disturbance to foraging eagles in the form of noise from equipment and project personnel may displace eagles in the short-term. • The Proposed Action seeks to create mosaics of habitats across the landscape, increasing the percentage of edge habitat, promoting and fostering diversity in size/age classes, and improving the vigor of existing stands, a beneficial impact that could increase prey for the species. • Habitat for golden eagles would be enhanced through meadow restoration efforts as part of the Proposed Action, which would remove encroaching younger trees on the edges of meadows, thereby expanding those areas. • The scale and nature of the proposed treatments may impact individual eagles, but is not expected to negatively impact the local population.

			Some individuals may be temporarily displaced by project activities, though they would likely relocate to adjacent comparable habitat.
Grace's warbler (*Dendroica graciae*)	PP	• Known to inhabit and breed in a variety of pine forests, including Douglas fir and ponderosa pine. • Tall pines seem to be of particular importance. • Also use Gambel oak, mountain meadow and mountain shrub habitats.	• No direct impacts would be incurred to breeding and nesting Grace's warblers. • Thinning in ponderosa pine could reduce available habitat for Grace's warbler. However, these impacts are expected to be minimal, given the expansive availability of adjacent habitat. Impacts would be expected to be temporary, and mostly in the form of noise associated with the presence of equipment and project personnel. • Treatments would focus on unhealthy stands of forest that lack structural and age diversity, which would promote large mature trees. Forest thinning would create openings, and allow establishment of oak and shrub species, improving habitat for warblers. • The scale and nature of the proposed treatments may impact individual warblers, but is not expected to negatively impact the local population. Some individuals may be temporarily displaced by project activities (i.e. noise), though they would likely relocate to adjacent comparable habitat.
Lewis's woodpecker (*Melanerpes lewis*)	PP/PJ/R	• In New Mexico, most commonly associated with ponderosa and piñon-juniper woodlands, and near open water and riparian regions. • Most often uses snags ≥ 17" dbh for cavity nesting. • Primary winter foods include oak acorns and corn.	• No direct impacts would be incurred to breeding and nesting Lewis's woodpeckers. • The Proposed Action could contribute to short term, temporary impacts to individual woodpeckers if they occur within treatment areas. • Impacts would primarily be in the form of noise associated with the use of machinery, chain saws, and presence of project personnel. Removal of trees within the project area could also reduce the amount of available foraging habitat. • The scale and nature of the proposed treatments may impact individual woodpeckers, but is not expected to

			negatively impact the local population. Some individuals may be temporarily displaced by project activities, though they would likely relocate to adjacent comparable habitat.
Olive-sided flycatcher (*Contopus cooperi*)	PP	• Subalpine forest with Engelmann spruce, ponderosa pine, Douglas-fir and aspen. • Need forest edges for foraging and increases in density with a decrease in canopy cover. Needs snags or treetops near open areas or above canopy as diet consists mainly of larger flying insects, primarily bees. • Nests in coniferous trees generally far out from the trunk.	• No direct impacts would be incurred to breeding and nesting Olive-sided flycatchers. • Removal of ponderosa pine would reduce available forest habitat for the species. However, these impacts are expected to be minimal, given the expansive availability of adjacent habitat. • Removal of ponderosa would contribute to short term impacts, mostly in the form of noise associated with the presence of equipment and project personnel. • Treatments would focus on unhealthy stands of ponderosa that lack structural and age diversity, which would promote large mature trees. Forest thinning would further allow establishment of shrub species, improving habitat for flycatchers. • The scale and nature of the proposed treatments may impact individuals, but is not expected to negatively impact the local population. Some individuals may be temporarily displaced by project activities (i.e. noise), though they would likely relocate to adjacent comparable habitat.
Rufous hummingbird (*Selasphorus rufus*)	PP	• Occurs in coniferous forest, secondary growth, thickets, and brush hillsides and forages out into adjacent scrubby areas and meadows with nectar flowers • Primary habitat is successional communities with forest openings • Prefers thinned and post-fire forests over uncut and unburned forest	• No direct impacts would be incurred to breeding and nesting Rufous hummingbirds. • Removal of ponderosa pine would reduce available forest habitat for the species. However, these impacts are expected to be minimal, given the expansive availability of adjacent habitat. • Removal of ponderosa would contribute to short term impacts, mostly in the form of noise associated with the presence of equipment and project personnel. • Treatments would focus on unhealthy stands of ponderosa that lack

			structural and age diversity, which would promote large mature trees. Forest thinning would further allow establishment of understory species including nectar flowers, improving habitat for hummingbirds. • The project area would exist in an improved condition following treatments, as the species prefers thinned and burned forest. • The scale and nature of the proposed treatments may impact individuals, but is not expected to negatively impact the local population. Some individuals may be temporarily displaced by project activities (i.e. noise), though they would likely relocate to adjacent comparable habitat.

The Proposed Action includes the design feature to avoid work during the primary nesting season, unless a pre-treatment nest search is conducted – which prevents impacts to breeding and nesting birds. Another design feature - retention of trees with nest cavities - would further minimize impacts. Efforts would also be made to retain old-growth stands and mature stands in piñon pine and oak zones

With implementation of the design features, negative impacts to migratory birds would be avoided from the Proposed Action. Further, chainsaw treatments and RX efforts would positively impact migratory birds in the long-term through creation of a mosaic of habitats across the landscape, increasing the percentage of edge habitat, promoting and fostering diversity in size/age classes, and improving the vigor of existing stands. Mosaics would be outlined before treatment to ensure adequate amounts of intact sagebrush shrublands remain to support avian sagebrush obligates (i.e. Brewer's sparrow) and near obligates while increasing grassland openings and edge habitat that would slowly begin the successional process back to State II sagebrush shrublands.

Habitat for golden eagles would be enhanced through meadow restoration efforts as part of the Proposed Action, which would remove encroaching younger trees on the edges of meadows, thereby expanding those areas. Snags and cavities would be retained, which would benefit Lewis's woodpeckers. Olive-sided flycatchers and rufous hummingbirds would benefit from creation of additional edge habitat. Pinyon jays would benefit from retention of mast producing piñon trees. Retention of some oak stands and thinning of others would benefit Virginia's warbler.

3.7.2.2 Impacts of Alternative B – No Action

The no action alternative would have no chainsaw thinning treatments, nor follow-up harvest or Rx burning which would result in no changes to baseline conditions for migratory birds in the short-term. Without implementation of fuel treatments, RX fire or FFRB in the surrounding landscape, migratory bird habitats would continue to be threatened by catastrophic wildfire, in the long-term (≥ 5 years). At present, thousands of acres across the project area are covered by unnaturally high densities of trees; this creates conditions for large and excessively hot wildfires, that could negatively impact habitat conditions, as described above. 3,000 acres of previously authorized and ongoing fuels/fire management activities would continue under the No Action Alternative, which would result in impacts to migratory birds similar

to the Proposed Action, however, at a much smaller scale. This would primarily consist of short-term negative impacts to some species, followed by long-term beneficial impacts.

3.8 Issue 7: How would chainsaw treatment, herbicide application, RX fire and FFRB impact cultural resources and their management?

3.8.1 Affected Environment

The proposed project area encompasses the largest documented concentration of cultural resources known to be present within the RGNNM (Dicks et al 2016). The likelihood that the Proposed Action would spatially co-occur with the locations of significant cultural resources may therefore be assessed as extremely high. Values analysis for cultural resources located within the RGNNM and within the current project area are generally calculated as very high for multiple attributes (BLM and Argonne 2016b). Risks analysis for cultural resources in this area, however, based on an assessment of multiple potential change agents and their combined convergence, is generally ranked very low because of the enhanced protections that cultural resources are afforded by the National Landscape Conservation Service (NLCS) and other policy and legal prescriptions attendant to the National Monument the (BLM and Argonne 2016b). Approximately 30,000 acres has been subject to Class III inventory (100% coverage). All treatments would be in compliance with Section 106 of the National Historic Preservation Act prior to implementation.

The RGNNM was created to "*preserve its cultural, prehistoric, and historic legacy and maintain its diverse array of natural and scientific resources, ensuring that the historic and scientific values of this area remain for the benefit of all Americans*" ... (The White House, March 25, 2013). The RGNNM is, as directed by the President of the United States under the authority of the American Antiquities Act of 1906 (54 U.S.C. 320301 et seq.) managed as a component of the NLCS (White House, March 25, 2013). Objective "A" of the NLCS states that management "*Comply with designating Acts of Congress and presidential proclamations by conserving, protecting, and restoring the objects and values for which Monuments and NCAs were designated for the benefit of present and future generations*" (BLM Manual 6220:1-1, 2012). Furthermore, "*National program policies that are generally applicable to BLM public lands apply to NLCS components to the extent that they are consistent with the designating proclamations or legislation, other applicable law, and BLM policy*" (BLM Manual 6220:1-1, 2012). Cultural resources are identified in the enabling legislation (American Antiquities Act of 1906, 34 Stat. 225, 16 U.S.C. 431) and the designating proclamation (The White House, March 25, 2013) as an "*object*" and "*value*" to be "*preserved and protected*" (Omnibus Public Land Management Act of 2009; 16 U.S.C. 7202). Furthermore, "*Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of the monument", which includes "cultural resources*" (The White House, March 25, 2013; American Antiquities Act 1906).

Cultural resources recorded within the proposed project area include prehistoric and historic "*petroglyphs...hunting blinds, pit houses, chipping stations, potsherds, tools...projectile points...large ceramic vessels...* [historic] *homesteads, root cellars, cistern-style water catchments...cast metal toys...*[and] *World War I brass uniform buttons.*" Also present is "a *unique cultural landscape"* that is expansive and well preserved within the largely undeveloped, unaltered, and unimproved setting the RGNNM that is "*of extreme beauty and daunting harshness,"* and that testifies to the "*imprints of human passage through the landscape over the past 10,000 years...*" (The White House, March 25, 2013).

To date, approximately 30,000 acres (ca. 28%) of the Proposed Action's 106,634 acre "project area" has been surveyed for cultural resources. Almost all of this surveyed acreage is contained in a comparatively small (28%) part of the larger project area, where it is concentrated on 30,000 contiguous and inventoried acres that are in and around Cerro Montoso and Cerro de la Olla (Dicks et al. 2016). Additional surveys

are being conducted in the Cerro del Aire portion of the project area, but these are ongoing and not yet complete. Compliance with Section 106 (54 U.S.C. 306108) of the NHPA (54 U.S.C. 300101 et. seq.) and with the 2015 Programmatic Agreement between the New Mexico BLM and the New Mexico State Historic Preservation Officer (NM SHPO) would be adhered to.

The already completed cultural resources survey of the 30,000-acre area (Dicks et al. 2016), provides a record of National Register of Historic Places (NRHP) eligibility determinations for 267 cultural resources that would potentially be affected by the presently Proposed Action. The survey was conducted in response to a previously developed (2009) proposal to treat vegetation in the attendant project acreage under BLM Environmental Assessment NM-220-08-053 (U.S Department of the Interior 2009). Recommendations and stipulations prescribed as mitigations of "potential effects" to the 267 cultural resources located in this project area were composed and forwarded to the NM SHPO, along with the attendant cultural documentation and reporting, to facilitate compliance with Section 106 of the NHPA. A letter of concurrence on the proposed findings of the cultural survey, the NRHP determinations, and the recommended stipulations and mitigations was received from NM SHPO in March 2017.

Consultation requirements under Section 106 of the NHPA and the 2015 NM BLM-SHPO PA are not covered by this EA and these will need to be completed as the project proceeds and as additional decisions and stipulations become necessary attendant specifically to cultural resources discovered in areas not currently inventoried. It is recommended, however, that the management prescriptions detailed in Dicks (et al. 2017) with regard to cultural resources be extrapolated to the management of newly discovered cultural resources in other, previously un-surveyed areas, since concurrence has already been reached in consultation with NM SHPO on the implementation of mitigation measures for all Proposed Actions in the current EA.

3.8.2 Environmental Impacts

3.8.2.1 Impacts of Alternative A – Proposed Action

A. Herbicide Treatments (Tebuthiuron): The proposed direct effect of herbicide applications on cultural resources is considered negligible provided that only aerial applications are adhered to. Aerial applications eliminate the potential ground disturbances that may result in direct effects to cultural resources from terrestrial vehicle applications of herbicide.

Indirect effects are posed, however, by the ensuing interval of fire potential following treatment applications. In contrast, the potential for untreated sagebrush to sustain and carry fire is considerably less except where a combination of drought, winds, and high temperatures foster the potential for sustained combustion and spread and thus higher fire intensities and severity. The intended outcome of treatment applications is a return to a "functional ecosystem" with natural fires being an integral component of the system. The most threatened cultural resources in this kind of environment are the combustible remnants of early 20th century homesteads which are present, but widely scattered, within the project area. The period of significance for these sites post-dates the apparent disruption of the natural, functional ecosystem.

Project implementation would avoid all cultural resources sites that are eligible for or listed on the National Register of Historic Places or sites for which the eligibility is undetermined. Appropriate mitigations detailed in Section 2.1.1, facilitate the selection of this Alternative by eliminating or minimizing the potential effects of this treatment method on combustible cultural resources.

B. Thinning Treatments: Minimal effects to most cultural resources are anticipated from the implementation of this Proposed Action. Sites classified as lithic scatters are known to dominate most

woodland settings within the project area based upon previous and extant survey data (primarily Dicks et. al 2016). This site type is generally not highly susceptible to adverse effects from thinning activities. Combustible cultural resources are, however, susceptible in thinned environments where wildfire or prescribe fire may spread into this kind of cultural resource setting. Conversely, the extant nature of enhanced fuel loading in most woodland settings, as a result of past policies related to fire suppression, has created a similarly hazardous environment with regard to the potential for combustible and non-combustible cultural resources to be adversely affected by wildland fire. Overall, analysis suggests a balanced approach where thinning is allowed in some site environments but excluded or mitigated in other environments.

C. Public Collection: Public collection of firewood is permitted by the BLM. The Presidential Proclamation for the RGNNM states that "*Nothing in this proclamation shall be construed to preclude the traditional collection of firewood...in the Monument for personal non-commercial use consistent with the purposes of this Proclamation*" (The White House March 25, 2013). Where conflicts are identified or potentially arise between the purposes of this proclamation, the BLM may be required to mitigate that use to protect and preserve cultural resources identified as an object and value (FLPMA 1977, Section 302a; Omnibus Land Management Act 2009; The White House 2013; BLM Manual 6220). Ultimately, the BLM would first avoid planning any treatments that may overlap cultural resources sites that are eligible for or listed on the National Register of Historic Places or sites for which the eligibility is undetermined. This would, in turn, minimize public collection from impacting those resources.

The observed effect of firewood collection is primarily the proliferation of user-created routes. Driving motor vehicles (usually large, weighted down trucks) over cultural resources can, and has been observed (Dicks 2015) to directly (physically), damage cultural resources. User created routes can provide easy motor vehicle access to sensitive cultural resources that are otherwise better managed, preserved and protected because of their remoteness from drivable routes. These same user-created routes can result in ground disturbance and accelerated erosion that sometimes results in exponential gullying.

Under Section 106 of NHPA, as it pertains to NRHP, an analysis of potential visual effects with respect to the eligibility of cultural resources may be warranted. The Sand Luis Valley-Taos Plateau Landscape Assessment (BLM 2016: Figure 4-10, 4-11,) identified cultural resources visual values as among the highest in the entire Ecoregion. Because the condition of this largely undeveloped landscape ranks high for visual, the potential adverse effects to cultural resources posed by certain actions and activities also ranks very high. Aside from the direct physical impacts to cultural resources posed by accelerated erosion, the attendant "scaring" of the landscape by off-road vehicle travel may compromise the integrity of those cultural sites and cultural landscape settings whose "period of significance" pre-dates the proliferation of automobile routes within the National Monument. The integrity of individual cultural sites and the attendant cultural landscapes are components of the National Monument objects that are to be preserved and protected (American Antiquities Act of 1906; FLPMA 1976, Section 301a; 2009 Omnibus Land Management Act; BLM Manual 6220, The White House March 25, 2013).

D. Hand Piling/Pile Burning: Hand piling within archaeological sites possesses the potential to adversely affect cultural resources. Piling and burning profoundly increases heavy fuel loading in localized areas where piles are manually situated. The threat to cultural resources is primarily from concentrated and sustained high temperatures that persist over prolonged interval of time due to piling. Monitoring (especially Dicks 2015) and independent studies have consistently demonstrated that sustained heat in concentrated areas possesses the potential to profoundly alter and destroy cultural artifacts, cultural features, and cultural deposits where these are present on, or just below the ground surface. This includes not only combustible materials but materials such as stone, ceramic, metal, glass and other objects and archaeological features whose chemical and physical properties may be profoundly altered or even destroyed by sustained exposure to high temperatures. In general, pile burning is

considered an adverse effect to cultural resources that is mitigated by avoidance of piling within the boundaries of cultural sites. Management prescriptions detailed in Dicks (et al. 2017) for which consultation and concurrence with NMS SHPO has been completed in select portions of the project area, disallows pile burning within site environments and requires a 50' buffer for this activity around cultural site perimeters.

F. Broadcast may require the manual reduction of heavy fuels to avoid adverse effects to combustible or otherwise fragile/sensitive cultural resources. Other potential mitigation measures may be imposed such as blacklining and monitoring site perimeters as well.

3.8.2.2 Impacts of Alternative B – No Action

The primary potential effect of the No Action alternative is the potential for wildfire and emergency wildfire suppression to adversely affect cultural resources within the project area. Under this alternative extant vegetation conditions within the project area would persist and continue to change or remain stable in response to natural processes and limited human actions. Analysis of extant and projected wildfire potential within the project area is derived from the generalized San Luis Valley-Taos Plateau Ecoregion study and also the more specific Cultural Resources Landscape ecoregion studies that were solicited by the BLM and completed in 2016 (BLM and Argonne 2016a, 2016b).

The San Luis Valley-Taos Plateau Ecoregion study specific to cultural resources provides sophisticated analysis of the potential effects of a range of extant and predicted change agents on cultural resources within the ecoregion that includes the proposed project area and the RGNNM. As indicated, "*The assessment condition and trends for the cultural conservation elements evaluates natural and anthropogenic factors to understand the potential risk the cultural conservation elements may be facing from change agents"* (BLM and Argonne 2016a: A-111; BLM and Argonne 2016b:6). For wildfire in general ("Fire Density"), data indicates that most of the project area ranks "Very Low" with regard to extant fire activity. This "Very Low" ranked area corresponds to the extent of sagebrush dominated communities within the Taos Plateau. Conversely, woodland environments that correlate with upland volcanic features within the Taos Plateau and Taos Volcanic Field rank "Very High" for extant Fire Density.

Projected (years 2015-2030) Fire Density values for the Taos Plateau and current project area rank "High" to "Very High", except in the extreme northern portion of the RGNNM where this predicted value ranks "Low" (Figure 5-4). A graphic comparison of this future trend, relative to extant conditions, is also demonstrated by Figure 5-5. In general, "*The resulting trend evaluations show certain areas in the ecoregion that have both high cultural value and high levels of risk of change from one or more of the change agents...These areas are potentially at greatest risk for possible loss or degradation and may require near term actions, such as: fencing, data recovery, erosion control, administrative protections, law enforcement, etc...*"(BLM and Argonne 2016b: 103)."

For the project area the departure of current vegetation conditions from historic vegetation is broadly ranked as moderate (BLM and Argonne 2016b: A-76; A-114). Projected departures of extant vegetation, coupled with projected changes in regional climate, are key factors in predicting these drastic increases in fire potential within the project area (BLM and Argonne 2016a: A-118; 2016b: A-79). Factors (change agents) such as human development, remain constant for the project area on the assumption that management for this area will remain consistent with the purposes for which the RGNNM was created under the authority of the American Antiquities Act.

Cultural Resources Summary of Alternatives Analysis

Although a combination of factors and a range of generalizations affect the observations and predictions referenced above, modeling consistently points to increases in fire potential within the project area in the

near future (years 2015-2030). Under Alternative B, much of this increase is projected to be the combined result of regional climate change predictions with extant vegetation shifting over time to lighter fuels as sagebrush becomes increasingly vulnerable to projected drought conditions and higher annual temperatures. Alternative A, as proposed, is oriented towards introducing fire back into this setting as a natural component of a functioning ecosystem. The potential effects to cultural resources in this area are qualitatively the same: an increase in the potential for wildfire to affect cultural resources. The fire return potential (interval between fires) in different settings and the severity of fire as a gauge of potential effects to cultural resources is impossible to accurately predict. It is clear, however, that fuel reduction projects in heavy fuels (woodland) environments would reduce the effects of stand replacing wildfires in these areas where this fuel type is present. These fuel reduction projects would also reduce the potential for drastic canopy loss which would otherwise result in accelerated erosion in upland slope environments where the effects to shallow soils and sediments would potentially adversely affect cultural resources on a landscape scale. For light fuels environments it is concluded that the potential effects of both Alternatives A and B are largely negligible provided that the appropriate mitigation measures are imposed in the implementation of Alternative A.

3.9 Issue 8: How would chainsaw treatment, herbicide application, RX fire and FFRB impact public safety within the Wildland Urban Interface?

3.9.1 Affected Environment

Portions of the project area are adjacent to communities and WUI areas (Appendix A - Maps). Specifically, the project area contains the Cerro del Aire (Wind Mountain) (Unincorporated Subdivision) WUI, the Cerro WUI, and the Wild Rivers Recreation Area WUI, which are all at risk of catastrophic wildfire.

3.9.2 Environmental Impacts

3.9.2.1 Impacts of Alternative A – Proposed Action

RX fire and chainsaw treatment operations would serve to promote public safety by reducing risk of catastrophic fire and thereby decreasing potential for area community members and infrastructure to be affected by such events. With implementation of, and adherence to a Burn Plan and Smoke Management Plan, potential effects to the public (both operational staff and area public) would be significantly reduced. All safety measures outlined within the Burn Plan would be followed, decreasing potential for members of the burn team(s) to be impacted by the Proposed Action. Furthermore, areas subject to treatment would be closed to public access during implementation of RX fire.

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.

3.9.2.2 Impacts of Alternative B – No Action

The communities within the WUI would continue to be at high risk of catastrophic crown fires, under the No Action Alternative. Potential wildfire ignitions in the uplands would remain at an elevated risk of rapid spread, and would ultimately result in high smoke and ash content impacting air quality, should fires occur without preliminary thinning and RX efforts proposed herein.

CHAPTER 4. CONSULTATION AND COORDINATION

4.1 Summary of Consultation and Coordination

Agencies, Organizations, and Persons Consulted
This section includes organizations from the public, public land users, interdisciplinary team, and permittees that were contacted during the development of this document. The interdisciplinary team includes personnel from various agencies and organizations identified at the onset of the CFRP grant funding.

Table 12. Project Collaborators and Their Roles.

Collaborator
BLM - Taos Field Office (Lead Agency)
Rocky Mountain Ecology, LLC
U.S. Fish & Wildlife Service

Native American Consultation
This section includes the list of tribes consulted as part of the scoping process and would be consulted as part of the Section 106 process.

Rio Arriba County:

- Comanche Indian Nation
- Jicarilla Apache Nation
- Hopi Tribe
- Navajo Nation
- Pueblo of Picuris
- Pueblo of Ohkay Owingeh
- Pueblo of Tesuque
- Pueblo of Pojoaque
- Pueblo of Santa Clara
- Pueblo of San Ildefonso
- Pueblo of Taos
- Kiowa Tribe of Oklahoma
- Pueblo of Zia
- Southern Ute Tribe

Taos County
- Comanche Indian Nation
- Hopi Tribe
- Jicarilla Apache Nation
- Kiowa Tribe of Oklahoma
- Navajo Nation
- Pueblo of Isleta
- Pueblo of Ohkay Owingeh
- Pueblo of Picuris
- Pueblo of Taos
- Pueblo of Tesuque

- Southern Ute Tribe

4.2 Summary of Public Participation

[To be completed after this EA is made available for public review and comment.]

4.2.1 Public Comment Analysis

[To be completed after this EA is made available for public review and comment.]

4.3 List of Preparers

Clay Bowers, Lead Preparer, Rocky Mountain Ecology (Contractor)
Kyle Sahd, Fire Management Specialist, Farmington District
Elyssa Durán, Forester, Taos Field Office
Pam Herrera-Olivas, Wildlife Biologist, Taos Field Office
Ryan Besser, Riparian/Fisheries Biologist, Taos Field Office
Chris Anderson, Archaeologist, Taos Field Office
Brad Higdon, Planning and Environmental Specialist, Taos Field Office
Johnathan LeBlanc, Assistant Field Manager Multi-Resources, Taos Field Office
Marc Jackson, Field Manager, Taos Field Office

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