



U.S. Department of the Interior
**BUREAU OF LAND
MANAGEMENT**

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Programmatic EIS for Fuels Reduction and Rangeland Restoration in the Great Basin

Record of Decision



The Bureau of Land Management's multiple-use mission is to sustain the health and productivity of the public lands for the use and enjoyment of present and future generations. The Bureau accomplishes this by managing such activities as outdoor recreation, livestock grazing, mineral development, and energy production, and by conserving natural, historical, cultural, and other resources on public lands.

Executive Summary

This Record of Decision (ROD) represents a final decision for the U.S. Department of the Interior, Bureau of Land Management's (BLM) Final Programmatic Environmental Impact Statement for Fuels Reduction and Rangeland Restoration in the Great Basin (PEIS) which proposed use of manual, mechanical, and chemical treatments, targeted grazing, and prescribed fire to carry out fuels reduction and rangeland restoration projects on BLM-administered lands in the Great Basin.

The BLM initially invited the public to respond to BLM's scoping request in December 2017. The PEIS analyzed four alternatives in detail and another three alternatives were considered but not carried forward for detailed analysis. The Draft PEIS was released for public comment in April 2020 and the Final PEIS was released November 27, 2020.

Chapter I. Record of Decision

I.1 INTRODUCTION

Intact sagebrush communities are disappearing within the Great Basin due to the interplay of increased wildfire, the spread of invasive annual grasses, and the encroachment of pinyon-juniper. Restoration treatments such as fuels reduction and revegetation are needed to increase intact sagebrush communities and improve their ability to resist annual grass invasion and recover from disturbance such as wildfire.

Fuels reduction and rangeland restoration projects will enhance the long-term function, viability, resistance and resilience of sagebrush communities through vegetation treatments to protect, conserve, and restore sagebrush communities in the project area. Functioning and viable sagebrush communities provide multiple-use opportunities for all user groups as well as habitat for sagebrush-dependent species.

This document comprises two chapters. Chapter I contains background and introductory material, a summary of the decision, rationale for the decision, and a brief description of the NEPA process to this point. Chapter 2 contains the complete text of the decision including design features and conservation measures to avoid and minimize impacts. All references to Maps, Appendices, and Tables refer to locations in the PEIS unless the map or table is embedded in the text of this document.

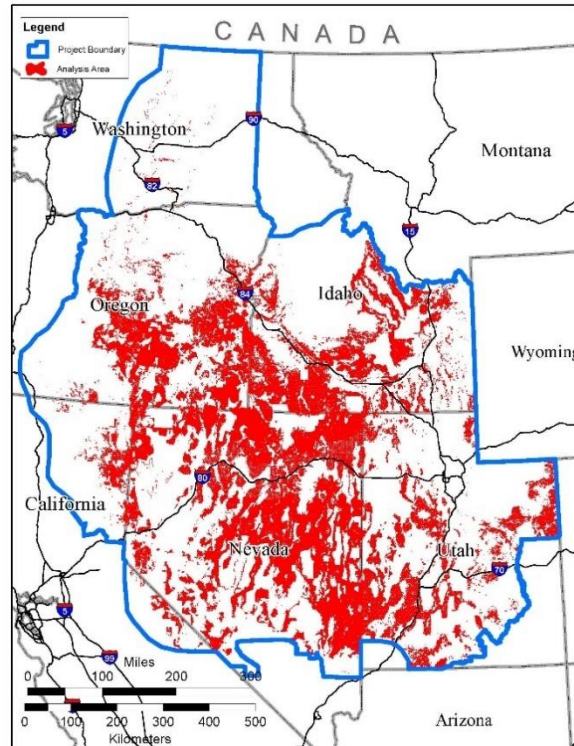
I.2 PROJECT AREA

The project area boundary includes portions of California, Idaho, Nevada, Oregon, Utah, and Washington. It includes all surface management and covers approximately 223 million acres; of these acres, BLM-administered lands cover approximately 90 million acres.

The potential treatment area is a subset of the project area boundary. It represents the area in which treatments would be allowed under that alternative. The potential treatment area under the selected alternative is defined by the current and historical presence of sagebrush on BLM-administered lands within the project area boundary. The potential treatment area was further refined by excluding areas described in **Section 2.2.1** of the Final PEIS. The potential treatment area covers approximately 38.5 million acres on BLM-administered lands within a subset of the project area boundary (**Map I**). The

emphasis area for the selected alternative represents a subset of the potential treatment area where the BLM expects the bulk of projects to occur. This expectation is based on past prioritization efforts like the Fire and Invasives Assessment Tool (FIAT) and designation of priority sage-grouse habitats and recovery sage-grouse habitats. The emphasis area (~26.3 million acres) for the selected alternative is the potential treatment area clipped to a 25-kilometer buffer around the FIAT Proposed Project Areas, the sage-grouse Recovery Habitat in Washington State, the Sage-grouse Priority Habitat Areas in Utah, and the Bi-State Critical Habitat and Coates Data in California (USFWS 2019; USFS 2015).

Map 1. Project Boundary and Analysis Area



I.3 DECISION

Alternative B is hereby selected as described in the November 27, 2020 Final PEIS. The selected alternative provides a framework under which BLM offices may work to develop fuels reduction and rangeland restoration treatments within the project area. Treatments may occur within the 38.5-million-acre potential treatment area and are expected to occur within the 26.3-million-acre emphasis area in accordance with the limitations and design features identified in the PEIS. The exclusion areas, treatment options by vegetation state, design features, and conservation measures included in the selected alternative avoid or minimize impacts to important resources. This decision is made acknowledging the level of impact disclosed in the PEIS and considers the necessity of evaluating site-specific avoidance measures on a project-by-project basis. This ROD applies to BLM administered land within the approximate 38.5-million-acre potential treatment area. Chapter 2 of this ROD contains the complete description of the decision.

No surface disturbing activities are authorized through this ROD without additional site-specific consideration (Determination of NEPA Adequacy or focused EA) and a site-specific decision record.

Where necessary, compliance with Section 106 of the National Historic Preservation Act must be completed prior to issuing a site-specific decision record.

A BLM office will propose and develop individual projects consistent with the selected alternative. For each individual project the field office will complete a Determination of NEPA Adequacy (DNA) that describes the project, ensures that it is consistent with the selected alternative from the PEIS, and confirms that the effects of the proposed activities do not exceed the effects disclosed in the PEIS. Section 106 consultation will be completed as part of the DNA process. If the DNA determines that the effects will exceed those described in the PEIS, then a separate NEPA analysis, tiered to the PEIS where appropriate, will be required. After the completion of the DNA or additional NEPA analysis the field office will prepare a project level Decision Record and Finding of No New Significant Impact (FONSI), if appropriate, to authorize site specific treatments. The Decision Record will be appealable under 43 CFR Part 4. Coordination with Tribal, state and local governments, affected parties, and the public will still be required, but the degree of coordination and outreach will be at the discretion of the Authorized Officer.

I.4 RATIONALE

The decision provides the most flexibility for offices to strategically plan and implement effective fuels reduction and rangeland restoration treatments across the Great Basin. Using the treatment options available for each vegetation state and following design features in **Appendix D** of the PEIS, fuels reduction or rangeland restoration treatments could be implemented throughout the 38.5-million-acre potential treatment area; giving local offices more options for selecting the most effective locations while minimizing the impacts to other resources.

The decision provides a full suite of treatment methods to effectively implement fuels reduction and rangeland restoration treatments including manual, mechanical, chemical, targeted grazing, and prescribed fire. This allows offices to select the most effective treatment for a specific site. The decision is based on the analysis within the PEIS which disclosed the impacts of all treatment methods that would be appropriate in each vegetation state, allowing field offices to select the most appropriate treatment method or methods for each specific location. The decision also includes a suite of exclusion areas and design features to avoid or minimize impacts to important resources.

The flexibility provided in this decision will provide the best opportunity for effective fuels reduction and rangeland restoration treatments to enhance the long-term function, viability, resistance, and resilience of sagebrush communities. Such enhancements would protect, conserve, and restore sagebrush communities and habitat for sagebrush-dependent species in the Great Basin and maintain multiple-use opportunities for all user groups. Successful fuels reduction and rangeland restoration treatments should lead to increased intact sagebrush communities that are better able to resist annual grass invasion and recover from disturbance such as wildfire. Programmatic analysis of tools would allow for project flexibility to protect resources when modifications are necessary due to drought or other unforeseen circumstances.

Some commenters during the NEPA process questioned the potential effectiveness of fuels reduction and rangeland restoration treatments in the Great Basin. The treatments proposed in the PEIS are established practices implemented throughout the Great Basin and are recommended by numerous sources, such as Restoring Western Ranges and Wildlands (Monsen et al. 2004) and the FIAT as well as BLM policy (e.g., BLM Handbook H-1740-2, Integrated Vegetation Handbook (BLM 2008). To ensure treatment efficacy, the BLM will monitor fuel treatments and apply adaptive management at the local level, as required by

BLM policy (see Section 2.2.8 of the Final PEIS, which references Manual 9214-1 and H-1740-2). The Final PEIS in Section 2.2.8 describes the guidance and reference material to be utilized for maintenance, monitoring, and adaptive management actions to ensure the purpose and need is met and the treatments meet project objectives. The Final PEIS includes a monitoring plan (Appendix E) to guide evaluations of treatment effectiveness, and examples of successful fuels reduction and restoration treatments have been added to that appendix.

I.5 ALTERNATIVES

I.5.1 Summary of Alternatives Evaluated in Detail in the PEIS

Alternative A - No Action Alternative

The No Action Alternative analyzed the implementation of individual fuels reduction and rangeland restoration projects with site-specific NEPA.

Alternative B – Selected Alternative

See Chapter 2, Selected Alternative, for a detailed description of Alternative B.

Alternative C

Alternative C analyzed the effects of using only manual and mechanical methods to address degraded vegetation states within the 26.8-million-acre potential treatment area. No chemical treatments, prescribed fire, targeted grazing, or nonnative plant material would be used. No sagebrush would be removed and no treatments would occur in Phase III Pinyon-Juniper or in areas of high resistance and resilience.

Alternative D

Alternative D analyzed the same treatment methods and flexibility described in Alternative B, but in a more limited geographic area. The potential treatment area consisted of the 5.6 million acres within the FIAT Planned Treatment Areas. The FIAT did not evaluate treatments in Phase III Pinyon-Juniper so it is unlikely that they would occur under this alternative. The FIAT emphasis area was the same as the potential treatment area in Alternative D.

I.5.2 Alternatives Considered but Eliminated from Detailed Analysis

Fuels reduction only: Given the increasing trend in the number and size of wildfires in the Great Basin, an alternative focused on fuels reduction treatments to achieve desired conditions was considered. This alternative was dismissed after assessing treatment objectives and determining that desired outcome for the vegetation states within the analysis area was more likely achievable through both fuels reduction and restoration treatments.

Use of wild horses and burros to reduce vegetation: During scoping, commenters suggested the use of wild horses and burros to manage vegetation, noting that, since wild horses eat cheatgrass, they could remove invasive annual grasses. This alternative was dismissed because it would not meet the purpose and need in its entirety and would be inconsistent with policy (BLM Handbook H-4700-1). Wild horses and burros may not be restored outside of existing herd management areas (HMAs) or in HMAs that are at or above appropriate management levels (AMLs); therefore, this alternative would be restricted only to HMAs below minimum AMLs. Furthermore, herding wild horses and burros would be necessary

to meet the purpose and need. This would be contrary to the Wild Free-Roaming Horses and Burros Act of 1971, as amended.

Use excess wild horses and burros (through transfer of ownership) to mitigate or prevent wildfire: Transferring excess horses from government ownership to private, state, or county ownership is out of the scope of this project. Horses managed by a grazing operator could be considered for targeted grazing under the alternatives analyzed in this document; however, it is unlikely that the BLM could realistically transfer ownership of excess wild horses and burros to enough willing and capable partners to reduce fuel loading (See Section 2(b) of PL 92-195). Under such a scenario, privately managed horses or burros would need to be completely removed from the treatment area once the treatment is concluded. As a result, this alternative was eliminated from detailed analysis.

Reduction in livestock grazing: Several commenters on the Draft PEIS suggested reductions in livestock grazing to better address one of the causes of rangeland degradation and disturbance. This alternative was dismissed because it is not within the scope of this PEIS. Reducing livestock grazing would not necessarily meet the purpose and need (Section 1.2), which states "The purpose of the project is to enhance the long-term function, viability, resistance and resilience of sagebrush communities **through vegetation treatments** to protect, conserve, and restore sagebrush communities in the project area." The Draft PEIS does include Design Feature 15 (see Appendix D), which requires providing adequate rest from livestock grazing after restoration projects.

Livestock grazing management is comprehensively regulated by 43 CFR Part 4100 and includes a variety of considerations in addition to vegetation management to determine stocking levels for a particular allotment. BLM elected to focus on those actions that could be authorized through a DNA or tiered NEPA in this PEIS rather than expand its focus to include all potential avenues to treat vegetation.

Activities proposed to facilitate rangeland restoration are intended to complement existing direction mandated in other programs. As such, this analysis does not directly address livestock. BLM anticipates that field offices will manage its programs to address sources of rangeland degradation while planning restoration projects to ensure desired conditions are achieved.

1.5.3 Environmentally Preferred Alternative

Alternative B, the Preferred Alternative in the Final PEIS, is the environmentally preferred alternative in this ROD. Alternative B will result in the largest potential treatment and emphasis areas combined with the availability of the full range of treatment methods. As a result, it will offer BLM the most flexibility in implementing fuels reduction and rangeland restoration treatments. While other alternatives may have fewer short-term adverse impacts by restricting certain tools such as chemical treatments, Alternative B will have the fewest long-term adverse impacts through the greatest reduction in potential threats. Over the long-term, Alternative B has the greatest potential for long-term beneficial impacts through lengthening fire return intervals, shifting fire regimes to more historical conditions, and reducing departure from desired vegetation states.

1.6 MANAGEMENT CONSIDERATIONS

The Selected Alternative meets the intent of Secretarial Order 3372, *Reducing Wildfire Risks on Department of the Interior Land Through Active Management*. It provides opportunities for streamlined NEPA compliance,

reducing administrative costs, and will lead to more rapid implementation of fuels reduction and rangeland restoration treatments. Such treatments will:

- Reduce fine fuels and reestablish perennial grasses, forbs, and sagebrush
- Contribute to longer fire return intervals and mosaic burn patterns
- Shift fire regimes to more historical conditions

This ROD conforms to the Department of the Interior's commitment to create a conservation stewardship legacy, as fuels reduction and rangeland restoration treatments across the Great Basin will reestablish desired native vegetation while reducing invasive annual grass cover and pinyon-juniper encroachment. Reducing departure from desired vegetative conditions would improve vegetation communities' resistance to invasive species and resilience after disturbance, such as wildfire. This ROD also furthers the Department of the Interior's priority to restore trust with local communities, as the regional programmatic analysis facilitates a strategic and consistent approach to planning and implementing projects within the Great Basin region. Opportunities will be available to outside sources for implementing fuels reduction and rangeland restoration projects, such as through contracting with local rural resources and offering the potential for stewardship efforts with stakeholders.

The BLM finalized a new categorical exclusion for the management of encroaching pinyon pine and juniper trees for the benefit of mule deer and sage-grouse habitats on December 11, 2020. No conflicts are expected with this ROD and the categorical exclusion; while there is some overlap in the types of projects that can be completed through both efforts, this ROD is more expansive to include other projects that would enhance the long-term function, viability, resistance, and resilience of sagebrush communities, such as those that would improve their ability to resist annual grass invasion. Projects using the categorical exclusion are not expected to be additive to projects that would tier to this ROD since the need for treatment, BLM's operational capacity, and budget constraints limit the level of treatment that occurs annually.

1.7 MITIGATION MEASURES

This ROD incorporates design features to minimize or eliminate adverse impacts of the Selected Alternative on identified resources (see Chapter 2 of this ROD). BLM district and/or field office resource specialists will determine the locations of avoidance areas and where to apply design features to protect resources during fuels reduction and rangeland restoration treatments.

Any subsequent site-specific NEPA compliance will also adhere to all BLM policies, plans, and programs, including applicable resource management plans; BLM Manual 9211, *Fire Planning Manual*; BLM Manual 9200, *Fire Program Management*; BLM Manual 6840, *Special Status Species Management*; BLM Manuals 8110, *Identifying and Evaluating Cultural Resources* and 8140, *Protecting Cultural Resources*; and BLM Manual 1780, *Tribal Relations* (See **Appendix C**). The BLM will also consider any applicable non-BLM policies, plans, and programs during this project as well as subsequent site-specific NEPA compliance.

1.8 PUBLIC INVOLVEMENT

1.8.1 Public Scoping

The scoping period began with the publication of the Notice of Intent to Prepare Two Great Basin-Wide Programmatic Environmental Impact Statements to Reduce the Threat of Wildfire and Support Rangeland Productivity in the *Federal Register* on December 22, 2017. During the scoping period, the BLM sought

public comments to determine relevant issues that could influence the scope of the environmental analysis, including alternatives, and guide the process for developing the PEIS for Fuels Reduction and Rangeland Restoration in the Great Basin as well as the PEIS for Fuel Breaks in the Great Basin. The latter PEIS had a separate ROD, issued in April 2020. The BLM hosted 15 public scoping meetings throughout the six-state project area in January and February of 2018. The BLM received 98 unique written submissions during the public scoping period, comprising 1,484 substantive comments. A summary of each of these comments and the BLM's consideration of those comments can be found in the scoping report located on the Project ePlanning site.

A majority of the comments received related to:

- The need for implementation of a monitoring program to quantify the effectiveness and maximize the treatment success
- The need to ensure the recovery of habitat components for species
- The treatment components and treatment area to include or exclude from the PEIS alternatives in order to successfully implement fuels reduction and rangeland restoration treatments
- The potential for impacts to permitted livestock grazing and impacts from livestock grazing on the Great Basin ecosystem
- Evaluation of the impacts of fugitive dust associated with proposed treatments
- Evaluation of past, present, and ongoing treatments currently affecting the project area

1.8.2 Public Comment

The BLM released a Draft EIS for a 60-day public comment period, from April 3, 2020, to June 2, 2020. The BLM hosted a virtual public meeting website to share information about the proposed project and alternatives and to answer frequently asked questions. The public was able to comment online through ePlanning, through the virtual public meeting website, via the project email address, or by postal mail. The BLM received 1,270 comment form letters and 144 unique comment letters. Comments were grouped by topic and were summarized, and then the BLM responded to those comments. Comment responses can be found in the Final PEIS, **Appendix O**.

1.8.3 Native American Consultation

Various federal laws require the BLM to consult with Native American Tribes during the planning/NEPA decision-making process. This section documents the specific consultation and coordination undertaken throughout the process of developing the PEIS. BLM offices in the six states in the project area sent letters to Tribes, inviting the Tribes listed in the table below to consult with the BLM during development of the PEIS or participate as cooperators:

Alturas Indian Rancheria, California
Bridgeport Indian Colony
Burns Paiute Tribe
California Native American Heritage Commission
Cedarville Rancheria, California
Coeur d'Alene Tribe
Confederated Salish and Kootenai Tribes of the Flathead Reservation
Confederated Tribes and Bands of the Yakama Nation

Confederated Tribes of the Colville Reservation
Confederated Tribes of the Goshute Reservation, Nevada and Utah
Confederated Tribes of the Umatilla Reservation
Confederated Tribes of the Warm Springs Reservation of Oregon
Death Valley Timbi-sha Shoshone Tribe
Duckwater Shoshone Tribe of the Duckwater Reservation, Nevada
Eastern Shoshone Tribe of the Wind River Reservation, Wyoming
Ely Shoshone Tribe of Nevada
Fort Bidwell Indian Community of the Fort Bidwell Reservation of California
Fort McDermitt Paiute and Shoshone Tribes of the Fort McDermitt Indian Reservation, Nevada and Oregon
Greenville Rancheria
Hopi Tribe of Arizona
Kaibab Band of Paiute Indians of the Kaibab Indian Reservation, Arizona
Kalispel Indian Community of the Kalispel Reservation
Klamath Tribes
Kootenai Tribe of Idaho
Las Vegas Tribe of Paiute Indians of the Las Vegas Indian Colony, Nevada
Lovelock Paiute Tribe of the Lovelock Indian Colony, Nevada
Moapa Band of Paiute Indians of the Moapa River Indian Reservation, Nevada
Navajo Nation, Arizona, New Mexico & Utah
Nevada Indian Commission
Nez Perce Tribe
Northwestern Band of Shoshone Nation
Paiute Indian Tribe of Utah
Paiute Indian Tribe of Utah - Cedar Band of Paiutes
Paiute Indian Tribe of Utah - Indian Peaks Band of Paiutes
Paiute Tribe of Utah - Kanosh Band of Paiutes
Paiute Indian Tribe of Utah - Koosharem Band of Paiutes
Paiute Indian Tribe of Utah - Shivwits Band of Paiutes
Paiute-Shoshone Tribe of the Fallon Reservation and Colony, Nevada
Pit River Tribe
Pyramid Lake Paiute Tribe of the Pyramid Lake Reservation, Nevada
Reno-Sparks Indian Colony
Shoshone-Bannock Tribes of the Fort Hall Reservation
Shoshone-Paiute Tribes of the Duck Valley Reservation, Nevada
Skull Valley Band of Goshute Indians of Utah
Southern Ute Indian Tribe
Spokane Tribe of the Spokane Reservation
Summit Lake Paiute Tribe
Susanville Indian Rancheria, California
Te-Moak Tribe of Western Shoshone Indians of Nevada

Te-Moak Tribe of Western Shoshone Indians of Nevada - Battle Mountain Band
Te-Moak Tribe of Western Shoshone Indians of Nevada - Elko Band
Te-Moak Tribe of Western Shoshone Indians of Nevada - South Fork Band
Te-Moak Tribe of Western Shoshone Indians of Nevada - Wells Band
The Modoc Tribe of Oklahoma
Ute Indian Tribe of the Uintah and Ouray Reservation, Utah
Ute Mountain Ute Tribe
Walker River Paiute Tribe of the Walker River Reservation, Utah
Washoe Tribe of Nevada and California
Winnemucca Indian Colony of Nevada c/o Reno Law Group
Yerington Paiute Tribe of the Yerington Colony & Campbell Ranch, Nevada
Yomba Shoshone Tribe of the Yomba Reservation, Nevada

Of the Tribes contacted, the Burns Paiute Tribe responded stating that it would like to engage in formal consultation. The Tribe also responded with a concern letter and requested continuing formal consultation as projects are developed. In addition, the BLM engaged in formal government-to-government and staff-to-staff consultation with the Shoshone-Paiute Tribes of the Duck Valley Indian Reservation (Sho-Pai) through Wings and Roots meetings, where the Sho-Pai requested continuing consultation as local projects are developed. The BLM met with the Shoshone-Paiute Tribes of the Duck Valley Reservation on July 21, 2016, November 17, 2016, February 16, 2017, October 19, 2017, March 15, 2018, October 24, 2019 and January 16, 2020 to keep them updated on the status of the PEIS through the Wings and Roots Campfire consultation process. The BLM made changes to the PEIS based on their input.

1.8.4 Consultation with the U.S. Fish and Wildlife Service (FWS)

The BLM consulted informally with the FWS on the potential impacts of this proposal on species listed or proposed for listing under the Endangered Species Act of 1973. The BLM received a letter of concurrence from the FWS on November 13, 2020. In addition to including design features and conservation measures proposed through the consultation and coordination process, USFWS proposed additional conservation recommendations in their letter of concurrence. BLM adopted these as conservation measures in the Final PEIS.

1.8.5 Cooperating Agencies

The cooperating agency relationships established during this project facilitated the exchange of views and expertise between BLM personnel and other government officials and staff. This form of consultation, unique to planning and the NEPA process, was crucial to shaping the PEIS. The BLM formalized cooperating agency relationships with 18 governmental parties:

- Idaho National Guard
- Idaho Department of Lands
- Blaine County, Idaho
- Cassia County, Idaho
- Lemhi County, Idaho
- Nevada Department of Wildlife

- Elko County, Nevada
- Eureka County, Nevada
- Humboldt County, Nevada
- Lincoln County, Nevada
- Storey County, Nevada
- Carbon County, Utah
- Duchesne County, Utah
- State of Utah, Governor's Public Lands Policy Coordination Office
- Beaver County, Utah
- Natural Resources Conservation Service, Nevada, Utah, Idaho, and Oregon
- National Trails Intermountain Region, National Park Service
- US Bureau of Reclamation

I.9 AVAILABILITY OF THE SELECTED ALTERNATIVE

Copies of the ROD and the Selected Alternative may be obtained by viewing or downloading the document from the BLM website located at: <https://go.usa.gov/xdfgV>.

I.10 APPROVAL

I hereby approve this decision. My approval of this decision constitutes a final decision of the Department of Interior and in accordance with the regulations at 43 CFR 4.410(a)(3), is not subject to appeal under Department regulations at 43 CFR Part 4. Any challenge to this decision must be brought in Federal District Court.



David L. Bernhardt
Secretary of the Interior

11/19/2020
Date

Chapter 2. Selected Alternative

Alternative B has been selected as described in the November 27, 2020 Final PEIS. This chapter describes the selected alternative in detail. References to maps and appendices in this chapter are to the PEIS maps and appendices.

2.1 VEGETATION STATES AND DESIRED CONDITIONS

This section describes the desired conditions associated with treatments and treatment method selection for site specific projects is expected to be based on an expectation of achieving desired conditions within site specific project areas. Desired conditions will further be defined at the site level using goal setting and analysis following Pyke et al. (2018) or other relevant sources (see Appendix E of the Final PEIS). Vegetation states developed for the PEIS are introduced and described in **Section 3.1.3** and are shown in **Map 5** (shrub and grassland vegetation states) and **Map 6** (pinyon-juniper states) in the Final PEIS. This section also describes in further depth the desired condition as a result of restoration treatments. Supporting information on the development of the vegetation states is provided in **Appendix F** of the Final PEIS.

Vegetation restoration treatments will move vegetation states in the project area toward the overall desired condition, which is a natural mosaic of two native perennial vegetation states: perennial grasses, forbs, and shrubs and perennial grasses and forbs. Both vegetation states are characterized by a diversity of native species and interspaces, with or without biological soil crust cover. As disturbance removes shrubs from one vegetation state, perennial grasses and forbs colonize vacated areas. Over time, shrub 'islands' remaining post-disturbance within the sea of perennial grasses and forbs provide recruitment and opportunity for transition back to the more structurally complex vegetation state of perennial grasses, forbs, and shrubs.

Moving the vegetation states in the project area toward the desired condition will help maintain diverse plant communities with the capacity to better persist. It will also stabilize ecosystem function threatened by altered disturbance regimes and pressure from invasive species. This balanced ecosystem function is reflected in an appropriate complement of grasses, forbs, and shrubs that support a diverse plant community. Such a community can maintain its vegetation structure, function, and plant vigor over time, as indicated by plant growth, seed production, and species recruitment in the vegetation community. When these conditions exist, nutrient and hydrologic cycling lead to adequate litter and standing dead plant material for site protection, water capture, and decomposition. Minimal, if any, cover of invasive annual grasses or encroaching pinyon-juniper will be present in the vegetation states under the desired condition. These highly resilient and resistant communities have the capacity to reorganize and regain their basic characteristics when altered by stressors such as invasive plants, livestock grazing and altered fire regime - resilience - and retain their functional structure processes and functioning when exposed to stresses, disturbances, or invasive species - resistance.

The desired condition exhibits all necessary attributes for proper ecological function in the face of disturbance. The ecological balance of the desired condition allows for a dynamic response to threats (e.g., invasive annual grass invasion, pinyon-juniper encroachment, wildland fire). For example, when the desired condition of perennial grasses, forbs, and shrubs is subject to a wildfire, the likely result is a mosaic of the two desired vegetation states, Perennial Grasses and Forbs intermixed with areas of perennial grasses,

forbs, and shrubs (Crist et al. 2019, Pyke 2011, Romme et al 2009). Remaining intact shrub refugia provide a seed source for recruitment into the adjacent burned perennial grass and forb vegetation state. The shift to a perennial grass and forb vegetation state is reversible and occurs as shrubs recolonize and shift back towards a more structurally complex community with shrubs.

The margins of these desired vegetation states can be transition zones between pinyon-juniper woodland and sagebrush communities (Romme et al 2009, Fig. 3). When ecological function of the plant community is balanced, there is a natural ebb and flow of pinyon-juniper encroachment within the transition zone that is mitigated by the natural fire return interval (Romme et al 2009, p. 213. Pinyon-juniper naturally spreads into sagebrush and perennial grass communities (Crist et al. 2019, page 89, Miller and Tausch 2001). However, wildfire is naturally more frequent in sagebrush and grassland communities and periodically removes encroaching pinyon-juniper. This ebb and flow along the margins of the sagebrush and grassland communities provides valuable habitat to a variety of species but also reduces the value of those areas for sagebrush and grassland dependent species when pinyon-juniper are not staved off. Wildfire suppression and livestock grazing practices have reduced the role of wildfire in these transition zones, allowing, in some areas, encroachment of pinyon-juniper beyond what is expected to occur naturally (Miller and Tausch 2001). Romme et al. 2009 is incorporated as a resource for site-specific tools that may be available to better understand historical occupancy of pinyon-juniper as persistent or a former shrub or grassland converted to woodland from pinyon-juniper expansion.

Changes in sagebrush communities are not only correlated to ecological function of the plant community but also to environmental conditions. Elevation and moisture are strong affiliates with a plant community's resilience to stress/disturbance and resistance to invasive species (Chambers et al. 2014a). At mid- to high-elevations, higher amounts of precipitation and cooler temperatures can result in higher resource availability promoting increased plant vigor (as indicated by plant growth, seed production, and recruitment). High resistance and resilience often occurs in cool and moist areas within intact systems. In contrast, there is a shift at lower elevations to a decrease in resource availability resulting in lower plant vigor. In general, as a sagebrush community's ecological function decreases the response to disturbance and invasion moves along the resistance and resilient gradient with areas of low resistance and resilience (low elevation, warm/dry) exhibiting a greater risk to threats of invasive species and decreased recovery from disturbances. As resistance and resilience increases, this risk subsides. Low elevation, warm and dry sites can be intact or diverging from healthy function.

Low- to mid-elevation (warm/dry) sagebrush communities subjected to threats of invasion or disturbance often lack the potential to recover without significant intervention. This is evident in the many warm/dry sites in the Great Basin Region that have crossed a threshold to alternate states dominated by invasive annuals such as cheatgrass (*Bromus tectorum*). An estimated 17 million acres in the Great Basin are currently dominated by the invasive annual grass cheatgrass and it has established itself as a component of the broader plant community in an additional 62 million acres (Diamond et al. 2012 in Ielmini et al. 2015). Some areas will have crossed a threshold where it may not be technologically or financially feasible to restore them to the desired conditions. In these locations, native or nonnative plant material may be established (per BLM Handbook H-1740-2) to stabilize the location until it becomes technologically or financially feasible to fully restore to desired condition.

2.2 ACTIONS NOT INCLUDED IN THIS DECISION

2.2.1 Road Creation and Maintenance

No new roads will be created. Existing roads may be maintained within their current maintenance level. Improving roads beyond the designation or maintenance level will require additional site-specific analysis. Necessary road closures will be temporary and established to ensure public safety. Temporary closures will be coordinated with local governments as appropriate.

2.2.2 Analysis Exclusion Areas

Treatments associated with this analysis are not being proposed for the following areas. If treatments are proposed to be constructed in these areas, site-specific analysis will be required.

- Riparian exclusion areas (adapted from [Forest Service 1995](#))
 - Perennial streams—300 feet on each side of the active channel, measured from the bank full edge of the stream, or the outer extent of riparian vegetation, whichever is greater
 - Seasonally flowing streams (including intermittent and ephemeral streams with riparian vegetation)—150 feet on each side of the active channel, measured from the bank full edge of the stream, or the outer extent of riparian vegetation, whichever is greater
 - Streams in inner gorge (defined by adjacent stream slopes greater than 70 percent gradient)—Top of inner gorge
 - Special aquatic features (including lakes, ponds, playas, seasonal wetlands, wetlands, seeps, wet meadows, vernal pools, and springs)—300 feet from the edge of feature or the outer extent of riparian vegetation, whichever width is greater
- Areas within mapped Canada lynx distribution and/or wolverine primary habitat
- Wilderness
- Wilderness Study Areas
- Lands with wilderness characteristics that are managed to maintain or enhance those characteristics, including natural areas managed to protect their wilderness character
- National Conservation Areas and National Monuments
- Areas designated through the John D. Dingell Jr. Conservation, Management, and Recreation Act, Pub. L. 116-9 (2019)
- Visual Resource Management Class I areas
- Areas within a quarter-mile of a Wild and Scenic River (including rivers found eligible and/or suitable)
- Within National Scenic and Historic Trails and trail rights-of-way (ROWs)/corridors as identified in the Trailwide Comprehensive Plan and applicable land use plans
- *Pinus edulis* – *Juniperus osteosperma* / Cushion plant woodland

2.3 ACTIONS INCLUDED IN THIS DECISION

The BLM will use manual, mechanical, and chemical treatments, prescribed fire, and targeted grazing to restore degraded vegetation states to the desired vegetation communities, where possible, within the 38.5-million-acre potential treatment area. Chemical treatments may be used in accordance with the Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statements and the Final PEIS on using Aminopyralid, Fluroxypyr, and

Rimsulfuron (BLM 2007, 2016a) and existing local guidance. The suite of tools will allow for flexibility to protect resources when modifications are necessary due to drought or other unforeseen circumstances.

The emphasis area consists of the area that is most likely to receive treatment based on past planning efforts such as the FIAT and sage-grouse management designation process. While projects may occur anywhere within the potential treatment area most projects are expected to occur within the emphasis area.

Native plant species will be prioritized for use in restoration treatments, however; in areas where full restoration is unlikely but may be improved, nonnative plant material is an option to stabilize sites until adequate technology and/or funding for full restoration is available (BLM 2008b).

Manual, mechanical, chemical, prescribed fire, and targeted grazing, alone or in combination, will be used to remove undesirable vegetation and to establish and or encourage the expansion of desirable vegetation. The flexibility to use multiple treatment methods improves opportunities to use appropriate treatments based on a given vegetation state; however, having a variety of available treatment methods does not necessarily guarantee treatment success.

Treatments to improve degraded conditions are allowed in all vegetation states. Treatments are also allowed in low, moderate, and high resistance and resilience areas. Treatments in high resistance and resilience areas are limited to increasing native perennial grasses, forbs or shrubs. Intact communities of all resistance and resilience levels are a high priority for protection while degraded areas in moderate resistance and resilience areas are a high priority for restoration actions. **Table 1** shows which treatments are allowed in each of the vegetation states.

Table 1
Alternative B Treatment Options

Vegetation State	Typical Needs¹	Treatment Options²
Invasive Annual Grasses	Remove invasive annual grasses and revegetate with perennial grasses (preferably native), forbs, and shrubs.	All Methods
Invasive Annual Grasses and Shrubs	Remove invasive annual grasses and revegetate with perennial grasses (preferably native), forbs, and shrubs.	All Methods
Perennial Grasses and Forbs (Desired Condition)	Typically none ⁴	MEC ³ , CH ^{3,5} , TG ⁶ , MAN/REV ⁷
Perennial Grasses, Forbs, and Shrubs (Desired Condition)	Typically none ⁴	MAN/REV ⁷
Perennial Grasses, Forbs, and Invasive Annual Grasses	Increase perennial grass and forb component and remove invasive annual grasses	MAN, MECH, CH ⁵ , TG ⁶ , REV
Shrubs, Perennial Grasses, Forbs, and Invasive Annual Grasses	Increase perennial grass and forb component and remove invasive annual grasses	MAN, MECH, CH ⁵ , TG ⁶ , REV
Shrub with Depleted Understory	Remove invasive annual grasses and revegetate with (preferably native) perennial grasses, forbs, and shrubs	All Methods

Vegetation State	Typical Needs ¹	Treatment Options ²
	as needed. Sagebrush may need to be thinned to allow for understory reestablishment.	
Pinyon-Juniper Phase I ^{8,9}	Remove juniper	MAN, MECH, PF, REV
Pinyon-Juniper Phases II and III ^{8,9}	Remove juniper and increase perennial grasses and forbs in the understory. Control invasive annual grasses	MAN, MECH, PF, REV

Source: BLM Interdisciplinary Team input

1. 'Needs' represents what is necessary to move degraded vegetation states towards desired condition. However, these needs may not be effectively met by the available treatment methods or current technology.

2. Treatment options: CH = chemical, MAN = manual, MECH = mechanical, PF = prescribed fire, TG = targeted grazing, REV = revegetation/seeding

3. In nonnative seedings, the nonnative perennial grasses may be removed and replaced with native perennial grasses and forbs or if invasive annual grasses are increasing and become a threat.

4. Areas where perennial grasses, forbs or shrubs are reduced, additional desirable vegetation may be planted using manual methods.

5. All BLM-approved chemical treatments (herbicides), application methods, and conditions of use are incorporated by reference from the Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (EIS) and the Final PEIS on using Aminopyralid, Fluroxypyr, and Rimsulfuron (BLM 2007a, pp. 4-1 to 4-11, and 2016, pp. 4-1 to 4-6), including all standard operating procedures (SOPs) contained therein.

6. Targeted grazing will be limited to areas where invasive or nonnative grasses (e.g., crested wheatgrass) are dominant or co-dominant in these vegetation states.

7. Permissible if the vegetation state shows a functional plant group is decreasing or diversity is lacking; revegetation through manual methods of planting may be implemented to improve diversity and function.

8. Pinyon-Juniper Phases include both living and dead stands

9. In sage-grouse habitat, pinyon-juniper will be removed to enhance the habitat. However, in areas unlikely to be used by sage-grouse, (e.g. steep slopes and narrow rocky ravines) stringers, groups, and clumps of trees may be left to provide habitat for mule deer. Outside sage-grouse habitat, not all Phase I will be treated and Phase II or III will be thinned while retaining adequate hiding and thermal cover.

2.3.1 Native Plant Material Policy

It is the policy of the BLM to manage for biologically diverse, resilient, and productive native plant communities to sustain the health and productivity of the public lands. This policy in BLM Handbook H-1740-2, *Integrated Vegetation Management Handbook*, and the *National Seed Strategy for Rehabilitation and Restoration* ([Plant Conservation Alliance 2015](#)), requires that native plant material be used, except under limited circumstances, and provides the necessary procedures for compliance. It may be necessary to introduce nonnative plant materials to break unnatural disturbance cycles or to prevent further site degradation by invasive species. However, native seed mixes can establish, persist, and suppress invasive annuals nearly as effectively as seed mixes with nonnative plant materials (Ott et al. 2019). Using nonnative seeds as part of a seeding mixture are appropriate only if done under the following circumstances:

1. suitable native plant material is not available,
2. the natural biological diversity of the proposed management area would not be diminished,
3. exotic and naturalized species can be confined in the proposed management area,
4. analysis of ecological site inventory information indicates that a site would not support reestablishment of a species that historically was part of the natural environment, and

5. resource management objectives cannot be met with native species. For example, nonnative plant material may potentially be used in areas with low resistance and resilience that are invaded by invasive annual grasses.

2.3.2 Technical References

Vegetation treatment objectives must be specific, measurable, achievable, and relate to land use plan goals and objectives with definite time frames for achievement, monitoring, and evaluation. The BLM policies require all field units with fuels management programs to monitor and report on the treatment effectiveness (Manual-9214-1, Fuels Management and Community Assistance Manual; Instruction Memorandum No. FA IM 2019-012).

Vegetation management actions will be organized around phases of inventory, assessment, planning, implementation, monitoring, evaluation, and reassessment, as described in BLM Manual H-1740-2, Integrated Vegetation Management Handbook, and Incorporating Assessment Inventory and Monitoring (AIM) for Monitoring Fuels Project Effectiveness Guidebook (BLM 2018a), Measuring and Monitoring Plant Populations (Elzinga et al. 1998), Sampling Vegetation Attributes (USDA and USDO I 1999), and local RMP guidance or policy. In addition, the following (or successor guidance) will be relied upon: Resistance and Resilience Concepts to Reduce Impacts of Invasive Annual Grasses and Altered Fire Regimes on Sagebrush Ecosystem and Greater Sage-Grouse: A Strategic Multi-Scale Approach (Chambers et al. 2014b) will be used as a decision support tool to determine priority areas for management and to identify effective management strategies. Best Management Practices for Pollinators on Western Rangelands (Xerces 2018) will be used to incorporate pollinator conservation into management decisions; the reference also describes associated monitoring practices for pollinator populations. Best Management Practices for Pollinators on Western Rangelands describes general considerations for restoration projects (p. 17), as well as best management practices related to grazing (p. 22), mowing (p. 33), prescribed fire and wildfire (p. 37), restoration (p. 44), invasive nonnative plants (p. 67), pesticides (p. 70), recreation (p. 83), and climate change (p. 84).

In planning for and conducting treatments, the BLM will consider resilience to disturbance, resistance to invasive species, and the predominant threats to that particular vegetation community. The Landscape Cover of Sagebrush and Ecosystem Resilience and Resistance Matrix can be used as a decision support tool to provide better evaluation of risks and to decide where to focus specific activities to promote desired species and ecosystem conditions (Chambers et al. 2014b, Tables 2, 3, and 4). The tables in the matrix identify various management strategies based on threats to the sagebrush community and the associated tradeoffs based on resilience, resistance and resource value. When determining the appropriate vegetation management strategies, all relevant agency program areas would be consulted, such as invasive plant management, fuels management, range management, and wildlife.

Monitoring is the key to adaptive management. Monitoring will be used to gauge the effectiveness of the treatments and to identify where maintenance would be needed. When treatments are not meeting objectives, modifications will be considered through adaptive management (per Chapter 5 of H-1740-2, Crist et al. 2019). Maintenance may require re-treating certain areas, using the methods described in this chapter, to maintain effectiveness of treatments. A sample monitoring plan is provided in Appendix E of the Final PEIS.

The BLM will manage invasive annual plants and noxious weeds in accordance with local weed program monitoring protocol, along with any additional land use plan guidance, through manual, mechanical, targeted grazing, prescribed fire, and chemical methods. This will minimize the spread of invasive annual plants and noxious weeds in the treatment area. Noxious weed and invasive plant monitoring and management will be incorporated into all activities that disturb the soil and will include evaluation and avoidance before work begins and when retreatment is needed.

2.4 METHODS AND TOOLS

Methods described in *Restoring Western Ranges and Wildlands* ([Monsen et al. 2004](#), pp. 57–294) and in *BLM Handbook H-1740-2, Integrated Vegetation Management Handbook* ([BLM 2008b](#), pp. 64–71) are incorporated by reference.

2.4.1 Manual and Mechanical Methods

Restoration treatments using manual or mechanical tools can be applied independently or in combination to accomplish project objectives.

Manual methods involve the use of hand tools and hand-operated power tools. Hand planting of bareroot or container stock, and hand broadcasting seed are common restoration methods.

Mechanical treatment involves the use of vehicles such as wheeled tractors, crawler-type tractors, or specially designed vehicles with attached implements designed to cut, uproot, or chop existing vegetation. The selection of a particular mechanical method is based upon characteristics of the vegetation, seedbed preparation and re-vegetation needs, topography and terrain and soil characteristics.

Monsen et al. (2004) groups mechanical equipment used for rangeland restoration into three categories. Specific tools, within each category, are further described (pp. 65-67, including Table 1).

1. Seedbed preparation equipment
2. Seeding equipment
3. Special use equipment

Preparation of a project area for seeding is accomplished by removing existing vegetation and preparing the soil for seeding. Plows or disks, chains, and harrows or drags are the common types of tools. Plows are pulled or drug behind equipment like tractors or bulldozers. Plows and disks are designed to remove plants by turning over or mixing, commonly referred to as tilling, the soil while leaving some plant residue on the soil surface.

Chains are pulled or drug behind dozers or tractors. Their primary use is to remove existing vegetation mainly shrubs and trees by either uprooting or cutting of the aboveground portion of existing vegetation by dragging the tool along the surface of the soil.

Similar in nature to chains, harrows or drags are pulled behind tractors or dozers along the surface of the soil. They prepare a seedbed through scarifying or roughing the soil surface and uprooting or removing existing vegetation.

The next step in revegetating a project area is applying seed. The typical methods to deliver seed are through drilling or broadcasting. Within the broader categories of drilling or broadcasting a variety of

tools can be utilized as described in Monsen et al. (2004). Seed drills are either pulled behind or mounted to tractors and can place seed at a variety of depths in the soil. Rangeland drills are commonly used and will open a small furrow in the prepared seedbed, deposit the seed at a prescribed depth, and cover the seed by closing the furrow.

Broadcast seeding is a common method of dispersing seed on the soil surface. It can be accomplished by using ground-based equipment or aerially with fixed wing aircraft or helicopters. This type of seeding method often requires prior soil surface scarification to ensure seed is incorporated into the soil.

The land imprinter can be used as a tool for seedbed preparation and broadcasting seed. It is another tool that is pulled or dragged behind equipment (tractors and bulldozers). The imprinter is a heavy drum with metal edges that firm the soil while creating depressions into the soil surface. A broadcast seeder can be attached to the frame of the imprinter allowing for seed to be broadcast during seedbed preparation. This method will crush or compact standing vegetation as it firms the soil surface and creates micro-site depressions. It can operate on steeper rockier terrain than rangeland drills.

Transplanters can be used to plant container-grown seedlings and bareroot nursery stock. They are pulled behind or attached to a tractor. The transplanter opens a furrow in a prepared seedbed, the operator places the seedlings directly into the open furrow, and a packing wheel closes the furrow and firms the seedbed by compacting the soil around the roots of the transplanted plant material.

Manual and Mechanical Methods used for Removal of Pinyon-Juniper

The use of handsaws, chainsaws or lopping with hand pruners are common methods to remove pinyon-juniper. A masticator is an implement used to shred or grind vegetation and can be attached to either tracked or tired equipment. Types of equipment can range in size from skid steers to large excavators. This type of equipment allows the operator the ability to remove specific species or individual trees within a treatment area. The operation of the equipment can crush or rip nontarget species during the removal of the target species. Shredding or grinding of pinyon-juniper produces woody slash that varies in depth, dependent on the amount of standing vegetation.

2.4.2 Chemical Treatment Methods

The BLM will use chemical treatment (herbicides) to manage undesirable species in the project area, alone or in conjunction with other treatment methods. All BLM-approved chemical treatments (herbicides), application methods, and conditions of use are incorporated by reference from the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (EIS)* and the *Final PEIS on using Aminopyralid, Fluroxypyr, and Rimsulfuron* (BLM 2007a, pp. 4-1 to 4-11, and 2016, pp. 4-1 to 4-6), including all standard operating procedures (SOPs) contained therein. The BLM-approved chemical treatments are 2,4-D, bromacil, chlorsulfuron, clopyralid, dicamba, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, sulfometuron methyl, tebuthiuron, triclopyr, imazapic, diquat, diflufenzopyr (in formulation with dicamba), fluridone, aminopyralid, fluroxypyr, and rimsulfuron. Chemicals can be applied on the ground using vehicles or manual application devices, or they can be applied from the air using helicopters or fixed-wing aircraft (Monsen et al. 2004 pp. 85-87, BLM 2007a, pp. 2-13 to 2-14). The success of any method or tool is subject to a variety of uncontrollable environmental factors; given this uncertainty, it is sometimes necessary to treat an area multiple times to achieve the desired objectives.

2.4.3 Prescribed Fire

Prescribed fire can be used in conjunction with other treatments to reduce or modify existing fuel loads or prepare the ground for seeding. In vegetation states with shrubs where invasive species occupy the plant community, prescribed fire will be used on a limited basis while retaining patches of sagebrush for a seed source. Qualified personnel will implement prescribed fire under specific weather and wind conditions. They would comply with direction from the Departmental Manual 620, *Wildland Fire Management*, the BLM Manual 9214, *Fuels Management and Community Assistance Manual*, and the 9214 Manual and Handbook, *Prescribed Fire Management*.

Examples of prescribed fire are broadcast, jackpot, and pile burning. Before broadcast burning begins, a fire line may be constructed via digging, using wet line, or other means around the perimeter to assist in containment. The need for a fire line, how it is constructed, and its width and length are based on site-specific conditions. The BLM will develop a prescribed fire burn plan in accordance with guidance in the PMS-484 *Interagency Prescribed Fire Planning and Implementation Procedures Guide* (NWCG 2017). For a detailed description of prescribed fire treatments and techniques, see Monsen et al. (2004, pp. 101–120).

Specialized use equipment or equipment that was not discussed above is described in Monsen et al. (2004).

2.4.4 Targeted Grazing

Targeted grazing uses goats, sheep, or cattle or a combination thereof, intensively managed by a grazing operator, to consume targeted vegetation, such as cheatgrass, medusahead rye (*Taeniatherum caput-medusae*), ventenata (*Ventenata dubia*) and nonnative perennial grasses such as crested wheatgrass (*Agropyron cristatum*). The objectives of targeted grazing are to:

- Reduce fine fuel loading
- Reduce cover and seed bank of invasive annual grasses to decrease competition against native plants; and
- Prepare a site for seeding through biomass removal

Targeted grazing used as a fuels reduction treatment manipulates vegetation (composition, fuel continuity, or fuel loading) in areas with over 10 percent invasive annual grass or nonnative perennial grass cover and when native perennial bunchgrass cover is below 20 percent.¹ Targeted grazing used to prepare a site for seeding reduces cover in the treatment area through consuming and trampling of above-ground biomass. Grazing is strategically applied across the project area. Land managers decide, on a site-specific basis, when and where to apply targeted grazing. They base this on a number of factors, including vegetation type, desired vegetation objectives, terrain, and current year growing conditions (see **Appendix D**). Although Smith et al. (2012) primarily addresses control of invasive annual grasses to provide a competitive advantage to perennial grasses, the chart on pages 6 and 7 in *Grazing Invasive Annual Grasses: The Green and Brown Guide* (Smith et al. 2012) is helpful to illustrate how timing of grazing is used to affect annual grasses and to minimize effects on nontarget perennial grasses. If targeted grazing is used to reduce all annual aboveground biomass in the spring, the timing of grazing may need to extend past the time when desired perennial plants initiate current year growth. Fall grazing may also be used to reduce invasive annual grass fuel loads (Foster et al. 2015).

¹ David Pyke, email message to Justin Shirley, BLM Range Specialist. November 15, 2019.

To meet project objectives, the methods used to manage livestock, such as monitoring their numbers, fencing versus herding, and using water and mineral supplements, are determined at the site-specific level. These methods will also be documented in the targeted grazing plan (see **Chapter 3**).

Temporary fencing may be used to limit grazing to the footprint of a proposed treatment area. Where temporary fencing is not used, the targeted grazing plan identifies the method(s) used to control livestock. This ensures that targeted grazing is confined to the treatment area.

2.4.5 Revegetation

The BLM selects sites for new seeding in areas where desired species have been replaced by undesirable species, such as noxious weeds or invasive annual grasses or nonnative perennial grasses. Manual, mechanical, chemical, prescribed fire, and targeted grazing methods may be used to remove undesirable vegetation and to establish and or encourage the expansion of desirable vegetation.

To replace existing vegetation, the BLM prepares a seedbed using tools such as prescribed fire, targeted grazing, chemical treatments, tilling, or a combination of methods. After seedbed preparation, sites will either be drill seeded or broadcast seeded from the ground or air. Where additional soil contact is necessary to achieve successful establishment, this will be followed by a mechanical cover treatment, such as harrowing or chaining. In cases where retaining some or all vegetation is desired, seeding can be done by air or ground broadcasting. The use of a rangeland implement, such as a land imprinter, after seeding can ensure seed-to-soil contact. In some cases, surface broadcast seeding will require rangeland implements, such as an aerator, harrow, or chain, to ensure seed-to-soil contact.

Seedling planting, such as bare root plugs or containerized, stock plant material, may be used to enhance vegetation. When implemented in conjunction with reseeding or other methods, seedlings will be planted after desirable perennial understory vegetation becomes established. Sites selected for interplanting typically have reduced biological and structural diversity, such as areas with decreased shrub or perennial forb cover. Seedlings will be planted directly into the ground by hand or by machine (**Section 2.3.1**). Widely spacing individuals or scattering islands of species are cost-effective approaches to establishing desired species and providing a seed source from parent plants for future establishment and spread.

Treatment methods used in the pinyon-juniper group of vegetation states will include a combination of manual and mechanical tools to remove or reduce targeted species within a project site. Restoration of project sites will vary from passive in areas with intact sagebrush communities to active in areas dominated by nonnative species or areas that are predominately Pinyon-Juniper Phase II and III sites.

2.4.6 Design Features

The BLM developed design features to minimize or eliminate adverse impacts of the action on identified resources (see **Design features below**). BLM resource specialists will determine the locations for avoidance and where to apply design features to protect resources during site-specific analyses. Additional design features may be relevant to a given project on a site-specific basis, such as design features included in land use plans. Design features will be implemented in accordance with applicable land use plans. The impact analysis in the PEIS assumed that the Design Features and Conservation Measures on the following pages are incorporated as necessary to reduce or avoid impacts. As part of adaptive management, Design Features may be modified in the future to reduce environmental effects, incorporate new information,

achieve new regulatory requirements. Where design features will lead to effects that are not disclosed in the PEIS, BLM will undertake the appropriate NEPA analysis.

Chapter 3. Design Features

**Table 3-1
Fuels Reduction and Rangeland Restoration
Design Features**

#	Design Feature	Applicable Resources ¹
1.	Monitor to determine if project objectives are being met.	GEN
2.	Prioritize the placement of equipment (e.g., vehicles and mechanical treatment equipment) in previously disturbed areas.	GEN
3.	Apply restrictions and design features in applicable land use plans and land use plan amendments. Develop resource-specific buffer distances and apply seasonal restrictions based on site-specific conditions, best available science, applicable land use plan guidance, and professional judgement. If any design features in this PEIS conflict with state or local BLM guidance, defer to state or local guidance. Coordinate with state or local governments to develop conservation practices if none exist. Conduct Tribal outreach and consultation early in the planning process for projects with the potential to affect Tribal resources, including vegetation and other natural and cultural resources.	GEN
4.	Use best available science when designing and implementing fuels reduction and rangeland restoration projects.	GEN
5.	Install signs in treatment areas during activities for public safety.	AIR, REC, TM
6.	Require applicable Standard Operating Procedures and Mitigation Measures from the Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement and Record of Decision (BLM 2007, PEIS Table 2-8 and Record of Decision Appendix B) and the Final PEIS on using Aminopyralid, Fluroxypyr, and Rimsulfuron (BLM 2016, Table 2-5) .	GEN
7.	Consider on a project-by-project basis potential impacts on heritage resources from proposed project activities, including re-treatments. Compliance with Section 106 of the NHPA and other cultural resource authorities must be evaluated to determine the need for Tribal and SHPO consultations, archaeological inventory, and mitigation to avoid or minimize impacts to archaeological, historic, and Tribal resources.	GEN
8.	Prior to project implementation, ensure cadastral monument markers are flagged and other cadastral features are identified (e.g., bearing trees).	GEN
9.	Conduct prescribed fire operations when prescription parameters as defined in the burn plans are met.	GEN
10.	Ignite debris piles created during thinning treatments when soils are wet or frozen.	AIR, SD
11.	Through site-specific smoke analysis, the BLM would comply with their respective state department of environmental quality or other state air monitoring group to ensure that smoke emissions from treatments remain below the National Ambient Air Quality Standard for PM2.5. The BLM would identify smoke-sensitive receptors at the site-specific project level.	AIR, SD
12.	Post warning signs on primary routes accessing the areas being burned to alert drivers of the potential for reduced visibility due to smoke.	AIR, SD

#	Design Feature	Applicable Resources ¹
13.	Ensure atmospheric conditions are within prescriptions when a prescribed burn is ignited, and monitor smoke throughout the ignition.	AIR, SD
14.	If smoke threatens unacceptable impacts on transportation safety or communities, stop the ignition, provided burn control is not compromised.	AIR, SD
15.	<p>Before targeted grazing begins, complete a targeted grazing plan that optimizes successful reduction or control of the target nonnative species, while avoiding damaging native desired plants. The plan would include the following:</p> <ul style="list-style-type: none"> ● Objectives that specify target nonnative species, grazing duration, intensity, stocking level, type of livestock, and measurable outcomes ● A monitoring plan ● Stipulations, including the following: <ul style="list-style-type: none"> – To minimize the risk of introducing or spreading invasive plant species through livestock manure, a quarantine period may be needed before livestock are turned out into an area for targeted grazing and when they are removed from such an area. – Coordinate with applicable permittees, state agencies, or other landowners in advance of targeted grazing treatment. This is to identify and minimize any potential conflicts of targeted grazing with regularly permitted livestock grazing. In case-specific situations, rest from regularly permitted grazing may be necessary in order to accomplish targeted grazing objectives (Hendrickson and Olson 2006). – Construct all fencing using proper wildlife specifications contained in BLM handbook 1741-1 Fencing and applicable approved land use plans. – Use of domestic sheep or goats for targeted grazing will not occur within 30 miles of Sierra Nevada bighorn sheep critical habitat. Use of domestic sheep or goats for targeted grazing will be avoided within 30 miles of bighorn sheep habitat. If targeted grazing is desired within this area, BLM would prepare a separation and response plan, included in the targeted grazing plan, coordinated with the appropriate state agency to provide sufficient separation to minimize the risk of contact and disease transmission of domestic sheep or goats from bighorn sheep (does not apply to Sierra Nevada bighorn sheep). USFWS would be consulted if listed bighorn sheep may be affected. – Target-graze sites dominated by invasive annual grasses. Targeted grazing used as a fuels reduction treatment will manipulate vegetation (composition, fuel continuity, or fuel loading) in areas with over 10 percent invasive annual grass or nonnative perennial grass cover and when native perennial bunchgrass cover is below 20 percent. Where there are substantial areas of desirable perennial herbaceous species, consider targeted grazing strategies that will maintain perennial plant vigor. – Carefully consider using supplements for livestock during targeted grazing during site-specific planning. Supplements would be 	FW, LG, SD, SOIL, SSS, VEG

#	Design Feature	Applicable Resources ¹
	<p>nontoxic to wildlife and would be placed to minimize impacts on wildlife and/or native vegetation.</p> <ul style="list-style-type: none"> – Rely on portable water tanks and install wildlife escape ramps in temporary tanks to facilitate the use of and escape from livestock watering troughs by greater sage-grouse and other wildlife. Placement and use of temporary watering facilities will meet site specific conditions and treatment objectives. They will be removed following the targeted grazing treatment. <p>In drought years with little invasive annual grass production, grazing should not be used as it could create too much bare ground.</p> <p>Provide adequate rest from livestock grazing: to allow desired vegetation to recover naturally; in suitable habitat for threatened and endangered plants; and for seeded species in treated areas to successfully become established. All animals must be removed prior to growth by desired perennial plants. All new seedlings of grasses and forbs should not be grazed until, at least, after the end of the second growing season, or when treatment objectives are met (for example, 5 perennial plants per square meter), to allow plants to mature and develop robust root systems. This would stabilize the site, compete effectively against cheatgrass and other invasive annuals, and remain sustainable under long-term grazing management. Adjust other management activities to meet project objectives.</p>	
16.	Manage targeted grazing to conserve suitable habitat conditions for special status species, while implementing rangeland health standards and guidelines (BLM 2014).	CULT, FW, SD, SSS, VEG
17.	All prescribed soil disturbance would need to incorporate noxious and invasive weed management, including pre-work evaluation or avoidance.	CULT, FW, SD, SSS, VEG
18.	Noxious weeds and invasive plants would be monitored to track changes in populations over time, and corrective action would be prescribed where needed, in accordance with local weed programs. Thresholds and responses for noxious weeds and invasive plants (particularly invasive annual grasses) will be included in restoration implementation and monitoring plans.	CULT, FW, SD, SSS, VEG
19.	Power wash all vehicles and equipment prior to allowing them to enter the project area and between sites where invasive and noxious weed species are different to minimize the introduction and spread of invasive plant species.	SD, VEG, VIS
20.	If revegetation is necessary, apply an appropriate mixture of locally adapted or genetically appropriate forbs and grass seed (adapted to the site) at jackpot burn sites and pile burn sites to facilitate vegetation establishment.	CULT, FW, SD, SSS, VEG
21.	Avoid removal or disturbance to trees with old growth characteristics, such as old growth pinyon or juniper.	CULT, FW, SD, SSS, VEG
22.	Make cultural and paleontological inventories and consultations appropriate to the scale and level of disturbance in advance of project activities. Use the results early in project planning to determine the need for project redesign or other mitigation.	CULT, SD

#	Design Feature	Applicable Resources ¹
23.	If cultural or paleontological resources are encountered during project implementation, cease all ground-disturbing activity in the vicinity of the find until the resource is evaluated by the appropriate BLM resource specialist. The BLM would follow the procedures outlined in 36 CFR 800. If human remains or objects covered by the Native American Graves Protection and Repatriation Act are encountered, cease all work and contact the BLM Authorized Officer immediately by phone, with written follow-up. Follow other guidelines set forth in 43 CFR 10.	CULT, SD
24.	Conduct archaeological inventories and assessments of potential significance under the National Historic Preservation Act (NHPA), in accordance with the National Programmatic Agreement between the Advisory Council on Historic Preservation (ACHP) and the BLM, state protocol agreements with respective State Historic Preservation Offices (SHPOs), guidelines set forth in BLM 8100 Manual and Handbook, and according to other relevant authorities listed in the above documents, including Section 106 of the NHPA.	CULT, SD
25.	Avoid historic properties during ground-disturbing activities. A cultural resource specialist would identify avoidance areas before treatment and subsequent retreatments. If protection of resources compromises the effectiveness of a given treatment and life, safety, or other resources are threatened, maintain flexibility to allow for project redesign, while protecting cultural resources. If adverse effects cannot be avoided without significantly compromising the success of a treatment, minimize the effects, in consultation with SHPO, ACHP, tribes, or interested public, as applicable.	CULT, SD
26.	Consult with potentially affected tribes, according to guidance set forth in BLM Manual and Handbook 1780, and relevant authorities listed therein, before herbicide spraying or other treatments begin that are likely to affect the access or availability of resources or locations important to traditional lifeways, including subsistence, economy, ritual, and religion.	CULT, SD, VEG
27.	Determine the need for paleontological inventory, based on criteria set forth in IM 2016-124 and using potential fossil yield classification, if available, or geologic characteristics and previous study data, if not. Ground-disturbing and chemical treatments in areas with paleontological resources would be addressed on a site-by-site basis. Project activities at significant paleontological sites would be coordinated with the regional BLM paleontologist to determine mitigation or monitoring needs in areas with a high potential for fossil resources. This is to minimize adverse effects per IM 2009-011, Assessment and Mitigation of Potential Impacts to Paleontological Resources.	CULT, SD, VEG
28.	Minimize ground-disturbing treatments in areas with highly erosive soils, as defined in Chapter 3.	FW, SD, SOIL, SSS, VEG, WR
29.	For safety and to protect site resources, treatment methods involving equipment generally would not be applied on slopes exceeding 35 percent unless local land use plans require additional limitations.	SD, SOIL
30.	Avoid or minimize potential ground-disturbing activities when soils are saturated.	SOIL, SSS, VEG

#	Design Feature	Applicable Resources ¹
31.	Soils, site factors, and timing of application must be suitable for any ground-based equipment used for treatments. This is to avoid excessive compaction, rutting, or damage to the soil surface layer. Equipment would be used on the contour, where feasible.	SD, SOIL, VIS
32.	Use best management practices and soil conservation practices during project design and implementation to minimize sediment discharge into streams, lands, and wetlands from such treatments as mowing, disking, and seeding. This is to protect designated beneficial uses.	FW, SSS
33.	If special status plant or animal populations and their habitats occur in a proposed treatment area, assess the area for habitat quality and base the need for treatment on special status species present. Conduct appropriately timed surveys within suitable or potential habitats for federally listed, proposed, and BLM special status species prior to treatment in accordance with BLM Manual 6840. For plant species, appropriate timing may vary by species but is directly related to phenological stages (for example flowering or fruiting stages) that provide confidence in identification. Federally listed species and BLM special status species with the potential to occur in the project area are presented in Chapter 3; the current BLM special status species list is found in Appendix J.	SSS
34.	Implement restrictions and conservation strategies for special status species, including federally listed, proposed, candidate, and BLM sensitive species, as contained in approved recovery and conservation plans, cooperative agreements, and other instruments in whose development the BLM has participated. If none are available, coordinate with the USFWS and/or state wildlife agencies to develop appropriate restrictions.	SSS
35.	Avoid creating new barriers to big game movement in migratory corridors.	FW
36.	In sage-grouse Biologically Significant Units occurring within Priority and Important Habitat Management Areas, ensure that sagebrush treatments do not lead to tripping PHMA or IHMA soft or hard triggers and are conservative relative to available sagebrush habitat.	SSS
37.	Restrict activities in big game habitat during the following periods, unless short-term exemption is granted by the BLM field office manager, in coordination with the appropriate state wildlife agency (dates may be determined based on local conditions): big game wintering; elk/deer calving/fawning; pronghorn calving/fawning; and bighorn sheep lambing (see Design Feature 50 relating to Sierra Nevada bighorn). To ensure the most appropriate maps are used for site-specific projects, conduct mapping in coordination with state wildlife agencies.	FW
38.	Manage domestic sheep grazing to minimize contact between domestic sheep and bighorn sheep, using the currently accepted peer-reviewed modeling techniques and best available data, such as the Bighorn/Domestic Sheep Risk of Contact Model, in accordance with BLM Manual 1730, Management of Domestic Sheep and Goats to Sustain Wild Sheep.	FW, SSS

#	Design Feature	Applicable Resources ¹
39.	<p>In local mule deer winter range areas, as noted in the applicable BLM land use plan or as identified based on close coordination with the appropriate state wildlife agency office:</p> <ul style="list-style-type: none"> treatments would not reduce thermal or vegetative hiding cover below acceptable levels, as determined in coordination with the state wildlife agency 	FW
40.	<p>Complete surveys for migratory bird and raptor nesting activity and establish a seasonal buffer around raptor nests. Avoid treatments during the peak of the local nesting season in the project area for priority migratory land bird species (e.g., Birds of Conservation Concern, BLM sensitive species). Specific dates and buffer distances for seasonal restrictions may be determined in coordination with the USFWS Migratory Bird Division and/or state wildlife management agency, and should be based on species, variations in nesting chronology of particular species locally, topographic considerations, such as an intervening ridge between the treatment activities and a nest, or other factors that are biologically reasonable.</p>	FW, SSS
41.	<p>Aerial seeding treatments and aerial application of herbicides would be avoided within one mile of active American bald and ½ mile of active golden eagle nests during the nesting season. Avoidance distances would be determined by the amount of screening provided by vegetation or topographic features.</p>	SSS
42.	<p>Avoid disturbance within 0.5 mile of communal bald eagle winter concentration sites during the winter roosting season.</p>	SSS
43.	<p>Aerial treatment applications will be avoided within 0.5 mile of bald eagle winter concentration sites during the winter roosting season.</p>	SSS
44.	<p>Surveys would take place in potential known pygmy rabbit habitats (non-listed populations). Select treatment locations with the least density of active burrows.</p>	SSS
45.	<p>If special status plant species and their habitats occur in or are adjacent to a proposed treatment area, apply an appropriate mixture of locally adapted or genetically appropriate forbs and grass seed (adapted to the site) in accordance with standards outlined in Handbook 1740-2 and the National Seed Strategy.</p>	SSS
46.	<p>Treatments would consider the habitat needs of sensitive wildlife species; input from local wildlife agencies would be solicited to ensure that the scale of treatments would maintain habitat at a level to support regional wildlife populations.</p>	FW, SSS
47.	<p>Aerial herbicide treatments would be designed to avoid chemical drift into the riparian exclusion area or other aquatic species-specific buffers.</p>	FW, SSS
48.	<p>Comply with any additional conservation measures developed during ESA Section 7 consultation for this PEIS (see Section D.I below).</p>	SSS
49.	<p>No activities would occur in Sierra Nevada bighorn sheep critical habitat during lambing periods (April – July).</p>	SSS
50.	<p>Design projects so facilitating practices (e.g. staging areas or travel routes) avoid affecting USFWS listed Threatened, Endangered or Proposed species.</p>	SSS

#	Design Feature	Applicable Resources ¹
51.	During treatment design and implementation, for all visual resource classes, use careful location (e.g., use topography for project screening), minimal disturbance, and consideration of visual contrasts with the surrounding landscapes. For example, drill seed vegetation in a serpentine pattern or modify drilling, for example by using minimum-or-no-till drills, slick discs, and drag chain, so that drill rows are not apparent.	SD, VIS
52.	If necessary, erect temporary fences to exclude wild horses and burros from treated areas, particularly where restoration treatments occur in horse management areas (HMAs).	WHB
53.	Based on site-specific conditions, minimize fugitive dust during implementation activities.	AIR, VIS

Source: BLM interdisciplinary team input

¹ Resource codes

GEN: General design feature that is not resource-specific

AIR: Air quality

CULT: Cultural, Tribal, and paleontological resources

FF: Fire and fuels

FW: Fish and wildlife

LG: Livestock grazing

REC: Recreation

SD: Special designations

SOC: Socioeconomics

SOIL: Soil resources

SSS: Special status species

TM: Travel management

VEG: Vegetation resources

VIS: Visual resources

WR: Water resources

WHB: Wild horses and burros

3.1 LISTED SPECIES CONSERVATION MEASURES

Table 3-2
Listed Species Conservation Measures

Conservation Measure Number	Conservation Measure Text
Conservation Measure Listed Species 1	Report to the appropriate USFWS office or state agency within 48 hours of making a positive identification or sightings of federally or state-listed species during any phase of fuels reduction and rangeland restoration projects, such as species surveys and pretreatment surveys, and during treatment activities and monitoring. Cease treatment until a qualified biologist determines that treatments would result in no potential for harm to a federally listed species.
Conservation Measure Listed Species 2	All staff, contractors, and practitioners involved in implementing on-the-ground fuels reduction and rangeland restoration projects will be trained on and provided information on listed, proposed, and or candidate species and critical habitats that may occur in the project area.
Conservation Measure Carson Wandering Skipper 1	No treatments would occur within 10 mi of known occupied Carson wandering skipper population sites during the adult flight season (late May to mid-July).
Conservation Measure Carson Wandering Skipper 2	No treatments would occur within 5 mi of known Carson wandering skipper population sites at any time of year.
Conservation Measure Pygmy Rabbit 1	Survey all potential Columbia Basin pygmy rabbit habitat in areas considered for restoration treatment. Surveys will follow state survey protocols for establishing presence of pygmy rabbits and will be coordinated with the Washington Department of Fish and Wildlife (WDFW). Do not conduct restoration treatments within Recovery Areas (REAs plus a 5-mile buffer). Surveys will be conducted by a qualified biologist.
Conservation Measure Pygmy Rabbit 2	Use of prescribed fire would not occur within 1 mile of RAs or occupied pygmy rabbit habitat outside of RAs.
Conservation Measure Pygmy Rabbit 3	Have a qualified biologist conduct pre-treatment surveys for burrows within 14 days of treatment within potentially occupied habitat and in the range of Columbia Basin pygmy rabbits. If a burrow is discovered, an avoidance buffer of 1 mile will be established around the burrow.
Conservation Measure Pygmy Rabbit 4	Solicit and consider expertise and ideas from local landowners, working groups, and other federal, state, county, and private organizations during development of restoration projects.
Conservation Measure Pygmy Rabbit 5	Incorporate key habitats or important restoration areas (such as where investments in habitat restoration have already been made or protection of the Columbia Basin pygmy rabbit Recovery Emphasis Area) into restoration project design.
Conservation Measure Pygmy Rabbit 6	Where applicable, design restoration treatment objectives to protect sagebrush ecosystems, modify fire behavior, restore/maintain native plants, and create landscape patterns that most benefit pygmy rabbits.

Conservation Measure Number	Conservation Measure Text
Conservation Measure Pygmy Rabbit 7	Locate on-site work/project camps and staging areas 0.25 miles away from REAs and occupied burrows. Establish a temporary “no entry” zone to protect rabbits from human disturbance. Do not allow dogs in the camps. Monitor workers on-site to keep them out of occupied habitat.
Conservation Measure Pygmy Rabbit 8	Power wash all vehicles and equipment, including dozers, discs, engines, water tenders, personnel vehicles, and all-terrain vehicles (ATVs) before deploying them in or near pygmy rabbit habitat areas, to minimize spread of noxious weeds.
Conservation Measure Pygmy Rabbit 9	Use vegetation management prescriptions in restoration treatments that minimize undesirable effects on vegetation or soils; for example, minimize destruction of desirable perennial plant species and reduce risk of annual grass invasion by retaining biological crusts.
Conservation Measure Pygmy Rabbit 10	In restoration projects, emphasize the use of native plant species.
Conservation Measure Pygmy Rabbit 11	Use post-treatment control of annual grass and other invasive species.
Conservation Measure Gray Wolf 1	Vegetation treatments would be designed and implemented to minimize noise disturbance or habitat modifications within one mile of wolf dens or rendezvous sites from March 15 until June 30.
Conservation Measure Grizzly Bear 1	Avoid treatments in grizzly bear occupied range.
Conservation Measure Grizzly Bear 2	No targeted grazing would be allowed within grizzly bear habitat.
Conservation Measure Spotted Owl 1	Within 0.5 mile of project activity, habitat suitability will be assessed for nesting and foraging using accepted habitat models in conjunction with field reviews.
Conservation Measure Spotted Owl 2	Protocol level surveys will be required prior to activity unless species occupancy and distribution information are complete and available. All surveys must be conducted by qualified individual(s).
Conservation Measure Spotted Owl 3	Activities will be monitored for compliance with conservation measures throughout the duration of the project.
Conservation Measure Spotted Owl 4	All Mexican spotted owl final critical habitat will be avoided and buffered as determined by local conditions, a qualified biologist, and treatment method.
Conservation Measure Spotted Owl 5	Activity will not occur within 0.5 mile of an identified nest site or within a designated Protected Activity Center (PAC).
Conservation Measure Spotted Owl 6	Avoid noise-generating activity and permanent structures within 0.5 mi of suitable habitat unless surveyed and not occupied.

Conservation Measure Number	Conservation Measure Text
Conservation Measure Spotted Owl 7	Reduce noise emissions (e.g., use hospital-grade mufflers, electric pump motors) to 45 dBA at 0.5 mile from suitable habitat, including canyon rims. Placement of permanent noise-generating facilities should be determined by a noise analysis to ensure noise does not encroach upon a 0.5-mile buffer for suitable habitat, including canyon rims.
Conservation Measure Spotted Owl 8	Limit disturbances to suitable habitat by staying on approved routes.
Conservation Measure Spotted Owl 9	Limit new access routes created by the project.
Conservation Measure Spotted Owl 10	Limit habitat loss by locating new facilities within existing rights of way.
Conservation Measure Spotted Owl 11	Additional measures to avoid or minimize effects to the Mexican spotted owl may be developed and implemented in consultation with the U.S. Fish and Wildlife Service.
Conservation Measure Utah Prairie Dog 1	Proposed treatments in suitable Utah prairie dog habitat would be surveyed by certified individuals in accordance with USFWS protocols and in coordination with BLM and USFWS before implementation.
Conservation Measure Utah Prairie Dog 2	All staging areas for vehicles, trailers, and materials would be outside of a 350-foot disturbance buffer of Utah prairie dog habitat.
Conservation Measure Utah Prairie Dog 3	Project-related vehicles would not exceed 15 miles per hour in occupied Utah prairie dog habitat.
Conservation Measure Utah Prairie Dog 4	A qualified Utah prairie dog biologist, approved by the BLM and USFWS, would be required to be on-site during all work in occupied Utah prairie dog habitat. The biologist would document compliance with design features and any take that may occur and would have the authority to halt activities that may be in violation of these stipulations.
Conservation Measure Utah Prairie Dog 5	All vehicles would be maintained in maintenance facilities or, in the event of emergency, at least 350 feet from mapped Utah prairie dog habitat in previously disturbed areas. Precautions would be taken to ensure that contamination of maintenance sites by fuels, motor oils, and grease does not occur and that such materials are contained and properly disposed of off-site. Inadvertent spills of petroleum-based or other toxic materials would be cleaned up and removed immediately or on completion of the project. In coordination with USFWS and Utah Division of Wildlife Resources, habitat treatments in occupied Utah prairie dog habitat would occur during the extended active season (April 1 to September 30).

Conservation Measure Number	Conservation Measure Text
Conservation Measure Utah Prairie Dog 6	All project employees would be informed of any Utah prairie dogs in the general area and the threatened status of the species. Employees would be advised of the definition of take and the potential penalties (up to \$200,000 in fines and 1 year in prison) for taking a species listed under the ESA. Project personnel would not be permitted to have firearms or pets in their possession while on the project site. The rules on firearms and pets would be explained to all personnel involved with the project.
Conservation Measure Utah Prairie Dog 7	If a dead or injured Utah prairie dog is located, initial notification must be made to the USFWS Division of Law Enforcement, Salt Lake City, Utah, at (801) 975-3330; to the Utah Division of Wildlife Resources at (435) 865-6100; and to the BLM Authorized Officer at (435) 865-3000. Instruction for proper handling and disposition of such specimens would be issued by the Division of Law Enforcement. Care must be taken in handling sick or injured animals to ensure effective treatment and care and in handling dead specimens to preserve biological material in the best possible state.
Conservation Measure Utah Prairie Dog 8	Spot applications would be used to apply herbicides in Utah prairie dog habitat, where possible, to limit the probability of contaminating nontarget food and water sources and the elimination of vegetation necessary to support the species, especially vegetation over large areas.
Conservation Measure Cuckoo 1	No treatments would occur within 0.5 mile of proposed yellow-billed cuckoo critical habitat.
Conservation Measure Cuckoo 2	No treatment within 0.5 mile of yellow-billed cuckoo suitable habitat during the breeding season.
Conservation Measure Cuckoo 3	Prescribed fire would not be used within 0.5 mile of suitable yellow-billed cuckoo habitat. Suitable yellow-billed cuckoo habitat will be determined using the Utah Field Office August 2017 Guidelines for the identification of suitable habitat for the western yellow-billed cuckoo.
Conservation Measure Flycatcher 1	No treatment within 0.5 miles of southwestern willow flycatcher suitable habitat during the breeding season (April 15-September 1).
Conservation Measure Flycatcher 3	Prescribed fire would not be used within 0.5 mile of suitable southwestern willow flycatcher habitat.
Conservation Measure Flycatcher 4	No targeted grazing will be implemented within 12 mi of suitable southwestern willow flycatcher habitat or final critical habitat during the southwestern willow flycatcher breeding season.
Conservation Measure Flycatcher 5	Avoid treatments in more than 25 percent of a suitable habitat patches for southwestern willow-flycatchers in any given year.
Conservation Measure Ferret 1	Within the range of the black-footed ferret, proposed treatments in prairie dog habitat would be surveyed in accordance with USFWS protocols. Avoid activities in prairie dog habitat whenever possible. Otherwise, design activities to impact the smallest area possible and/or those areas with the lowest prairie dog densities

Conservation Measure Number	Conservation Measure Text
Conservation Measure Ferret 2	Prohibit fuels reduction and rangeland restoration treatments within 1/8 mile of known home ranges of female ferrets during the "critical" period from May 1 thru July 15. The home ranges will be determined from data obtained from radio collared animals
Conservation Measure Condor 1	Within the range of the California condor, survey potential habitat within 2 weeks prior to treatments and establish a buffer of 1/2 mile around roosting habitat and 1 mile around nesting habitat. This applies to Endangered and non-essential experimental populations.
Conservation Measure Desert Tortoise 1	No treatments will occur in occupied or potential desert tortoise habitat.
Conservation Measure Listed Fish 1	Avoid all treatments within 400 meters from the edge of bonytail chub, Colorado pikeminnow, humpback chub, razorback sucker, June sucker critical habitat or occupied habitat and Lahontan cutthroat trout occupied habitat.
Conservation Measure Barneby Reed-Mustard 1	Establish a treatment avoidance buffer around individuals or populations to protect pollinator habitat. Individuals or populations would be avoided with a treatment buffer of 1,640 feet (Dawson 2012).
Conservation Measure Barneby Reed-Mustard 2	To protect this species from adverse effects from livestock grazing, temporary fencing to prevent livestock entry would be placed 1,640 ft from individuals or populations within targeted grazing treatment areas.
Conservation Measure Clay Phacelia 1	Establish a treatment avoidance buffer around individuals or populations to protect pollinator habitat. Individuals or populations would be avoided with a treatment buffer of 1,640 feet (Dawson 2012).
Conservation Measure Clay Phacelia 2	To protect this species from adverse effects from livestock grazing, temporary fencing to prevent livestock entry would be placed 1640 ft from individuals or populations within targeted grazing treatment areas.
Conservation Measure Clay Reed-Mustard 1	Site inventories would be conducted within suitable habitat to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc., suitable habitat would be assessed and mapped for avoidance; in such cases, 300-foot avoidance buffers would be maintained between surface disturbance and avoidance areas. However, site specific distances would be approved by USFWS and BLM when disturbance would occur upslope of habitat. To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices would be incorporated into the project design.
Conservation Measure Clay Reed-Mustard 2	Establish a treatment avoidance buffer around individuals or populations to protect pollinator habitat. Individuals or populations would be avoided with a treatment buffer of 1,640 feet (Dawson 2012).
Conservation Measure Jones Cycladenia 1	Establish a treatment avoidance buffer around individuals or populations to protect pollinator habitat. Individuals or populations would be avoided with a treatment buffer of 1,640 feet (Dawson 2012).
Conservation Measure Jones Cycladenia 2	To protect this species from adverse effects from livestock grazing, temporary fencing to prevent livestock entry would be placed 1640 ft from individuals or populations within targeted grazing treatment areas.

Conservation Measure Number	Conservation Measure Text
Conservation Measure Kodachrome Bladderpod 1	Establish a treatment avoidance buffer around individuals or populations to protect pollinator habitat. Individuals or populations would be avoided with a treatment buffer of 1,640 feet (Dawson 2012).
Conservation Measure Kodachrome Bladderpod 2	To protect this species from adverse effects from livestock grazing, temporary fencing to prevent livestock entry would be placed 1,640 feet from individuals or populations within targeted grazing treatment areas.
Conservation Measure Last Chance Townsendia 1	Establish a treatment avoidance buffer around individuals or populations to protect pollinator habitat. Individuals or populations would be avoided with a treatment buffer of 1,640 feet (Dawson 2012).
Conservation Measure Last Chance Townsendia 2	To protect this species from adverse effects from livestock grazing, temporary fencing to prevent livestock entry would be placed 1,640 feet from individuals or populations within the targeted grazing treatment areas.
Conservation Measure Pariette Cactus 1	Establish a treatment avoidance buffer around individuals or populations to protect pollinator habitat. Individuals or populations would be avoided with a treatment buffer of 1,640 feet (Dawson 2012).
Conservation Measure Pariette Cactus 2	To protect this species from adverse effects from livestock grazing, temporary fencing to prevent livestock entry would be placed 1,640 feet from individuals or populations within the targeted grazing treatment areas.
Conservation Measure San Rafael Cactus 1	Establish a treatment avoidance buffer around individuals or populations to protect pollinator habitat. Individuals or populations would be avoided with a treatment buffer of 1,640 feet (Dawson 2012).
Conservation Measure San Rafael Cactus 2	To protect this species from adverse effects from livestock grazing, temporary fencing to prevent livestock entry would be placed 1,640 feet from individuals or populations within the targeted grazing treatment areas.
Conservation Measure Shrubby Reed-Mustard 1	Establish a treatment avoidance buffer around individuals or populations to protect pollinator habitat. Individuals or populations would be avoided with a treatment buffer of 1,640 feet (Dawson 2012).
Conservation Measure Shrubby Reed-Mustard 2	To protect this species from adverse effects from livestock grazing, temporary fencing to prevent livestock entry would be placed 1,640 feet from individuals or populations within the targeted grazing treatment areas.
Conservation Measure Slickspot Peppergrass 1	A qualified biologist would conduct pretreatment slickspot habitat surveys in accordance with slickspot peppergrass inventory guidelines (BLM 2010). If suitable or occupied slickspots are identified, a treatment avoidance buffer of 1,640 feet, would be established to protect the slickspots and potential slickspot peppergrass seed bank. Fencing, flagging, signs or other methods to denote or exclude the avoidance buffer would be implemented. No treatments or actions would occur within the avoidance buffer.

Conservation Measure Number	Conservation Measure Text
Conservation Measure Slickspot Peppergrass 2	Within the range of slickspot peppergrass only native plant material would be used for revegetation.
Conservation Measure Slickspot Peppergrass 3	If prescribed fire treatments occur within the range of slickspot peppergrass, follow-up native seeding or revegetation would be implemented to suppress nonnative, invasive species occupancy.
Conservation Measure Slickspot Peppergrass 4	All slickspot peppergrass proposed critical habitat will be avoided and buffered as per Conservation Measure Slickspot Peppergrass 1.
Conservation Measure Slickspot Peppergrass 5	Establish a treatment avoidance buffer around suitable or occupied habitat to protect pollinator habitat. Individuals or populations would be avoided with a treatment buffer of 1,640 feet (Dawson 2012).
Conservation Measure Spalding's Catchfly 1	Establish a treatment avoidance buffer around individuals or populations to protect pollinator habitat. Individuals or populations would be avoided with a treatment buffer of 1,640 feet (Dawson 2012).
Conservation Measure Spalding's Catchfly 2	To protect this species from adverse effects from livestock grazing, temporary fencing to prevent livestock entry would be placed 1,640 feet from individuals or populations within targeted grazing treatment areas.
Conservation Measure Spalding's Catchfly 3	Where prescribed fire treatments are proposed in suitable habitat in the species range, treatments would mimic historical fire behavior to the extent that this is known. Prescribed burning should occur during times when Spalding's catchfly is typically dormant to prevent adverse effects on reproduction. Where invasive annual grasses are present in a prescribed fire treatment area in the species range, revegetation, weed control, and monitoring would be conducted to prevent invasive annual grass germination to the extent possible.
Conservation Measure Uinta Basin Hookless Cactus 1	Establish a treatment avoidance buffer around individuals or populations to protect pollinator habitat. Individuals or populations would be avoided with a treatment buffer of 1,640 feet (Dawson 2012).
Conservation Measure Uinta Basin Hookless Cactus 2	To protect this species from adverse effects from livestock grazing, temporary fencing to prevent livestock entry would be placed 1,640 feet from individuals or populations within the targeted grazing treatment areas.
Conservation Measure Webber's Ivesia 1	Establish a treatment avoidance buffer around individuals or populations to protect pollinator habitat. Individuals or populations would be avoided with a treatment buffer of 1,640 feet (Dawson 2012).
Conservation Measure Webber's Ivesia 2	To protect this species from adverse effects from livestock grazing, temporary fencing to prevent livestock entry would be placed 1,640 feet from individuals or populations within targeted grazing treatment areas.

Conservation Measure Number	Conservation Measure Text
Conservation Measure Webber's Ivesia 3	All Webber's ivesia designated critical habitat will be avoided and buffered with an avoidance buffer of 1,640 feet, to protect the PCEs. Fencing, flagging, signs or other methods to denote or exclude the avoidance buffer would be implemented. No treatments or actions would occur within the avoidance buffer.
Conservation Measure Winkler Cactus 1	Establish a treatment avoidance buffer around individuals or populations to protect pollinator habitat. Individuals or populations would be avoided with a treatment buffer of 1,640 feet (Dawson 2012).
Conservation Measure Winkler Cactus 2	To protect this species from adverse effects from livestock grazing, temporary fencing to prevent livestock entry would be placed 1,640 feet from individuals or populations within targeted grazing treatment areas.
Conservation Measure Wright Fishhook Cactus 1	Establish a treatment avoidance buffer around individuals or populations to protect pollinator habitat. Individuals or populations would be avoided with a treatment buffer of 1,640 feet (Dawson 2012).
Conservation Measure Wright Fishhook Cactus 2	To protect this species from adverse effects from livestock grazing, temporary fencing to prevent livestock entry would be placed 1,640 feet from individuals or populations within targeted grazing treatment areas.
Conservation Measures for Vegetation Treatments	The BLM would also adhere to applicable conservation measures identified in the BA for the Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (BLM 2005, 2007) species.