Wyoming Greater Sage-Grouse

Draft Resource Management Plan Amendment

and

Environmental Impact Statement

US Department of the Interior,
Bureau of Land Management
May 2018

BLM

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.

Cover Photo: Steve Ting

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Wyoming State Office
P.O. Box 1828
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www.blm.gov/wy

In Reply Refer To:
1610 (930)

Dear Reader:

The Wyoming Draft Resource Management Plan Amendment (RMPA) and Draft Environmental Impact Statement (EIS) for Greater Sage-Grouse Conservation is available for your review and comment. The Bureau of Land Management (BLM) prepared this document in consultation with cooperating agencies and in accordance with the National Environmental Policy Act of 1969, as amended, the Federal Land Policy and Management Act of 1976, as amended, implementing regulations, the BLM's Land Use Planning Handbook (H-1601-1), and other applicable law and policy.

The planning area includes all the BLM Field Offices within Wyoming, encompassing approximately 18 million surface acres administered by the BLM and 40 million acres of Federal mineral estate.

As directed by the BLM Planning Regulations, Alternative B has been identified in the Draft EIS as the preferred alternative. Identification of the preferred alternative does not indicate any commitments on the part of the BLM with regard to a final decision. In developing the Proposed RMPA/Final EIS, which is the next phase of the planning process, the decision maker may select various management actions from each of the alternatives analyzed in the Draft RMPA/Draft EIS for the purpose of creating a management strategy that best meets the needs of the resources and values in this area under the BLM multiple use and sustained yield mandate.

The BLM encourages the public to review and provide comments on the Draft RMPA/Draft EIS. The Draft RMPA/Draft EIS is available on the project website at: https://goo.gl/FoqAn9. Hard copies of the document are available in the Wyoming State Office public room at the address listed below.

Public comments will be accepted for ninety (90) calendar days following the Environmental Protection Agency's (EPA) publication of its Notice of Availability in the *Federal Register*. The BLM can best utilize your comments and resource information submissions if received within the review period.

Written comments may be submitted as follows (submittal of electronic comments is encouraged):

1. Written comments may be submitted electronically via the project website at: https://goo.gl/FoqAn9

2. Written comments may also be mailed directly, or delivered to, the BLM at:
   Bureau of Land Management Wyoming State Office
   Attn: Greater Sage-Grouse EIS
   5353 Yellowstone Road
   Cheyenne, WY 82009

To facilitate analysis of comments and information submitted, we encourage you to submit comments in an electronic format. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

Public meetings may be held around the planning area to provide the public with opportunities to submit comments and seek additional information. The locations, dates, and times of any public meetings would be announced at least 15 days prior to the first meeting via a press release and on the project website.

Thank you for your continued interest in the Greater Sage-Grouse RMPA. We appreciate the information and suggestions you contribute to the process.

Sincerely,

Mary Jo Rugwell
State Director

Wyoming Greater Sage-Grouse
Draft Resource Management Plan Amendment and
Draft Environmental Impact Statement

Responsible Agency: United States Department of the Interior
Bureau of Land Management

Abstract: This draft resource management plan (RMP) amendment and draft environmental impact statement (EIS) has been prepared by the United States Department of the Interior (DOI), Bureau of Land Management (BLM) with input from cooperating agencies. The purpose of this RMP amendment (RMPA) is to enhance cooperation with the States by modifying the approach to Greater Sage-Grouse management in existing RMPs to better align with individual state plans and/or conservation measures and DOI and BLM policy. This document is considering amendments to ten BLM RMPs in Wyoming. The EIS describes and analyzes two alternatives for managing Greater Sage-Grouse habitat on approximately 18 million acres of BLM-administered surface estate and 40 million acres of BLM subsurface federal mineral estate. The No-Action Alternative is a continuation of current management; use of public lands and resources would continue to be managed under the current BLM RMPs, as amended or revised in 2014 and 2015. The Management Plan Alignment Alternative was derived through coordination with the State and cooperating agencies to align with the State conservation plan and to support conservation outcomes for Greater Sage-Grouse. This is the agency's preferred alternative, though this does not constitute a final decision and there is no requirement that the preferred alternative identified in the draft EIS be selected as the agency's decision in the Record of Decision. Major planning issues addressed include Sagebrush Focal Area designations, habitat boundary designations, habitat objectives, compensatory mitigation strategy, livestock grazing, and adaptive management process.

Review Period: Comments on the Wyoming Greater Sage-Grouse Draft Resource Management Plan Amendment and Draft Environmental Impact Statement will be accepted for 90 calendar days following publication of the United States Environmental Protection Agency's Notice of Availability in the *Federal Register*.

For further information, contact:

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ACRONYMS AND ABBREVIATIONS

	Full Phrase
ARMPA	approved resource management plan amendment
BFO	Buffalo Field Office
BLM	Bureau of Land Management
BMP	best management practice
BSU	biologically significant unit
CEQ	Council on Environmental Quality
COA	condition of approval
CSU	controlled surface use
DOI	US Department of the Interior
EIS	environmental impact statement
FLMPA	Federal Land Management and Policy Act
GHMA	General Habitat Management Area
HMA	habitat management area
LUPA	Land Use Plan Amendment
NEPA	National Environmental Policy Act
NSO	no surface occupancy
PHMA	Priority Habitat Management Area
RDF	required design feature
RMP	resource management plan
RMPA	resource management plan amendment
ROD	record of decision
ROW	right of way
SO	Secretarial Order
TL	timing limitation
USGS	US Geological Survey
USFWS	US Fish and Wildlife Service
WGFD	Wyoming Game and Fish Department

Executive Summary

ES.1 INTRODUCTION

Greater Sage-Grouse is a state-managed species that is dependent on sagebrush steppe ecosystems. These ecosystems are managed in partnership across the range of the Greater Sage-Grouse by federal, state, and local authorities. Efforts to conserve the species and its habitat date back to the 1950s. Over the past two decades, state wildlife agencies, federal agencies, and many others in the range of the species have been collaborating to conserve Greater Sage-Grouse and its habitats. The United States (US) Department of the Interior (DOI) and the Bureau of Land Management (BLM) have broad responsibilities to manage federal lands and resources for the public benefit. Nearly half of Greater Sage-Grouse habitat is managed by the BLM.

In September 2015, the US Fish and Wildlife Service (USFWS) determined that the Greater Sage-Grouse did not warrant listing under the Endangered Species Act of 1973. In its "not warranted" determination, the USFWS based its decision in part on regulatory certainty from the conservation commitments and management actions in the BLM and US Forest Service (Forest Service) Greater Sage-Grouse land use plan amendments (LUPAs) and revisions, as well as on other private, state, and federal conservation efforts. Since 2015 the BLM, in discussion with partners, recognized that several refinements and policy updates would help strengthen conservation efforts, while providing increased economic opportunity to local communities.

The BLM continues to build upon its commitment to on-the-ground management to promote conservation through close collaboration with State governments, local communities, private landowners, and other stakeholders. **Table ES-1** shows the acres of on-the-ground treatment activity between 2015 and 2017 and planned for 2018, based upon annual budgets allocated by Congress. BLM's accomplishments reflect contributions from programs other than Greater Sage-Grouse, including fuels, riparian, and range management.

Table ES-1
Acres of On-The-Ground Treatment Activity for Fiscal Years 2015 to 2017 and Planned for 2018

Fiscal Year	Conifer Removal	Fuelbreaks	Invasive Species Removal	Habitat Protection	Habitat Restoration	Total
2015	98,876	15,000	63,612	41,003	75,952	294,443
2016	165,963	14,614	66,621	42,305	95,748	385,251
2017	185,032	65,455	124,582	10,428	93,474	479,000
2018[1]	118,384	65,442	68,512	9,240	54,509	316,087

[1]Planned

The BLM is now engaged in a planning effort to further enhance its continued cooperation with western states by ensuring greater consistency between individual state plans and the BLM's multiple-use mission. This executive summary highlights the major components of this planning document and outlines the potential impacts from the proposed management changes. The BLM's efforts seek to improve

management alignment in ways that will increase management flexibility, maintain access to public resources, and promote conservation outcomes.

ES.2 Purpose of and Need for Action

The BLM's purpose and need for this planning action helps define the scope of proposed alternative actions and issues the agency must analyze. In the Federal Land Policy and Management Act (FLPMA), Congress provided the BLM with discretion and authority to manage public lands for multiple use and sustained yield, and declared it the policy of the United States to coordinate the land use planning process with other federal and state plans. Further, FLPMA specifically provides that it neither enlarges nor diminishes the authority of the states in managing fish and wildlife. As the sovereign with the lead role in managing game species, including Greater Sage-Grouse, states play a critical role in conserving and restoring the Greater Sage-Grouse and its habitat.

The purpose of this land use plan amendment process is to enhance cooperation with the states by modifying the approach to Greater Sage-Grouse management in existing land use plans to better align with individual state plans and/or conservation measures and DOI and BLM policy.

ES.3 Issues and Related Resource Topics Identified Through Scoping

When deciding which issues to address related to the purpose and need, the BLM considers points of disagreement, debate, or dispute regarding an anticipated outcome from a proposed action. Issues are based on anticipated environmental impacts; as such, they can help shape the proposal and alternatives.

The BLM used internal, agency, and public scoping to identify issues to consider in the environmental analysis. A summary of the scoping process is presented in Potential Amendments to Land Use Plans Regarding Greater Sage-Grouse Conservation Scoping Report (https://goo.gl/FopNgW).

The sections below lay out how issues raised during scoping, as well as related resource topics, are considered in this RMPA/EIS. Generally, they fall into the following categories:

- Issues and related resource topics retained for further consideration in this RMPA/EIS—These were issues raised during scoping for which alternatives were developed to address the issues.
- Clarification of decisions in the 2015 approved resource management plan amendment (ARMPA)—These are decisions or frameworks in the 2015 ARMPA that require clarification as to their application or implementation. No new analysis is required, as the intentions behind the decisions were analyzed in the 2015 Final EISs.
- Issues and resource topics not carried forward for additional consideration or analysis are those brought up during scoping that were not carried forward in this RMPA/EIS—While some of these issues are considered in this EIS, they do not require additional analysis because they were analyzed in the 2015 Final EISs, and no new information has been identified that would warrant further analysis. Others are not carried forward in this RMPA/EIS because they do not further the purpose of aligning with the state's conservation plan.

ES.3.1 Issues and Related Resource Topics Retained for Further Consideration in this Draft RMPA/EIS

The issues identified in **Table ES-2**, below, were previously analyzed; however, based on the proposed changes, the resource topics and potential impacts that may require additional analysis are as follows: Greater Sage-Grouse, fluid minerals, locatable minerals, and livestock grazing; therefore, these resource topics are carried forward for analysis.

Table ES-2 identifies the corresponding resource topics to which the issues relate. The level of detail in the description of each resource topic and the impacts from implementing any of the alternatives also are described in **Chapters 3** and **4**.

Table ES-2
Issues and Related Resource Topics

Issues	Resource Topics Related to the Issues
Modifying Habitat Management Area Designations • Integration of flexibility into the plans to be able to adjust habitat management area boundaries without the need for a plan amendment	Greater Sage-Grouse
Sagebrush Focal Areas • Do SFAs contribute to achieving conservation outcomes? • Relevance of this habitat designation in the absence of a mineral withdrawal • Constraints on mineral development within SFAs	Greater Sage-Grouse
Mineral Withdrawal • What would occur as a result of not moving forward with the recommended withdrawal?	Greater Sage-Grouse
Managing Noise Standards Outside PHMA • Are noise standards being applied consistent with the state management?	Greater Sage-Grouse, locatable minerals
Habitat Objectives • Use in assessing rangeland health standards • Consideration of localized ecological site potential • Habitat objectives tables	Greater Sage-Grouse
Livestock Management • Management of existing range improvement structures • Riparian area management	Greater Sage-Grouse
Modifying Adaptive Management Strategies • What should be the process for changing or reverting an adaptive management response?	Greater Sage-Grouse, livestock grazing management
Compensatory Mitigation • What are the impacts of following the state's mitigation framework?	Greater Sage-Grouse
Managing Impacts from Recreation Facilities • What would be the result of not requiring net conservation gain for recreation facilities?	Greater Sage-Grouse
Prioritization of Fluid Mineral Leasing • Prioritize oil and gas development outside of PHMA	Greater Sage-Grouse

ES.3.2 Clarification of Planning Decisions in the 2015 Approved Resource Management Plan Amendment

The following issues with existing planning decisions were raised during scoping. These issues require clarification to language in the 2015 amendments and revisions but do not require new analysis or a planning-level decision. The language below identifies how these issues will be addressed by the BLM outside of the land use planning process.

- Clarification is required for implementation-level actions on restrictions that should only be applied to PHMA. Based on language in the existing land use plans, there has been some confusion regarding application of PHMA-type restrictions in non-PHMA. The BLM will clarify this with step-down guidance for implementation-level actions.
- Currently, there is no direction on how the BLM and State of Wyoming could work to incentivize development outside of PHMA. The BLM will work with the State of Wyoming in determining the appropriate path forward in incentivizing development outside of PHMA.
- The State of Wyoming has identified several "de minimis" activities that are exempt from the requirements and restrictions of the Governor's executive order for Greater Sage-Grouse Core Area Protection (Executive Order 2015-4). These include activities such as residential and agricultural electric utilities, fence modifications, and small impoundment development, among other activities. Currently, the BLM has several categorical exclusions that may be used to satisfy the requirements of NEPA when such proposals are received on BLM-administered lands. Other "de minimis" activities are not covered by an appropriate categorical exclusion and, therefore, the BLM must comply with NEPA by preparing an environmental assessment or, as appropriate, EIS. BLM Wyoming will issue guidance to field offices regarding the appropriate use of categorical exclusions for those actions where categorical exclusions exist. BLM Wyoming will also explore the development of a programmatic NEPA analysis for other activities that the State of Wyoming considers "de minimis" in order to enable, as appropriate, field offices to use other tools, such as a determination of NEPA adequacy, to authorize projects.
- BLM Wyoming will develop guidance and clarification on the use of required design features (RDFs) when they are applied at the implementation level. RDFs are to be used as appropriate at the site-specific level and should not be assumed to apply to all projects.

ES.3.3 Issues and Resource Topics not Carried Forward for Additional Analysis (Scoping Issues Outside the Scope and Scoping Issues Previously Analyzed)

The following issues were raised during scoping and are not carried forward for a variety of reasons. For example, population-based management is not carried forward for detailed analysis because the BLM does not manage species populations; that authority falls under the jurisdiction of the State of Wyoming's Game and Fish Department.

Other issues were analyzed in the 2015 Final EISs, and no significant new information related to these issues has emerged since that time. Therefore, the following issues do not require additional analysis in this RMPA/EIS.

- Restrictions on rights-of-way (ROWs) and infrastructure
- Wind energy development in PHMA
- ROW avoidance in PHMA and GHMA

- Retention of lands as identified as PHMA or GHMA in federal ownership
- Varying stipulations applied to oil, gas, and, geothermal development
- Effects of NSO stipulations on Greater Sage-Grouse habitat on non-BLM-administered land
- Mitigation for oil and gas development
- Prioritization of fluid mineral leases outside of PHMA and GHMA
- Numerical noise limitations within PHMA
- Contribution of disturbance caps toward Greater Sage-Grouse conservation objectives
- Vegetation treatments and wildfire response

The resource topics below are dismissed from detailed analysis. While these resource topics may have impacts related to Greater Sage-Grouse conservation that were analyzed in the 2015 Final EISs, they are dismissed from detailed analysis because they have no potentially significant impacts from actions proposed in this RMPA/EIS:

- Air quality
- Cultural resources
- Forestry
- Lands and realty
- Lands with wilderness characteristics
- Minerals and energy
- Paleontology
- Recreation resources
- Socioeconomics
- Soils
- Special designations and management areas
- Transportation and access management
- Visual resources
- Watershed and water quality
- Wild horses
- Wildland fire and fuels
- Wildlife (other than Greater Sage-Grouse) and fisheries

ES.4 ALTERNATIVES CONSIDERED

Alternatives development and analysis is the heart of an EIS. The alternatives considered in this document address all the issues brought forward by the public and considered by BLM. The comparative analysis between alternatives establishes a framework for decision makers to understand important trade-offs and identify the most effective way to meet the purpose and need and BLM's multiple use mission. The alternatives analysis can support the BLM in adapting its management when information and circumstances change.

ES.4.1 No-Action Alternative

Under the No-Action Alternative, the BLM would not amend the existing RMPs regarding Greater Sage-Grouse habitat management. Greater Sage-Grouse habitat would continue to be managed under current management direction. Goals and objectives for BLM-administered lands and federal mineral estate would not change. Allowable uses and restrictions pertaining to activities such as mineral leasing and development, recreation, lands and realty, and livestock grazing would also remain the same.

ES.4.2 Management Alignment Alternative (Preferred Alternative)

This alternative, identified herein as the BLM's Preferred Alternative, was developed through coordination with the state to align with the state conservation plan and to support conservation

outcomes for Greater Sage-Grouse. The BLM continues to build upon the 2015 planning effort as envisioned in SO 3353 by collaborating with states and stakeholders to improve alignment between federal management plans and other plans and programs at the state level, while ensuring consistency with the BLM's multiple use mission. This enhanced cooperation between the BLM and the Governor's office would lead to improved management and coordination across the range of Greater Sage-Grouse in Wyoming. At the request of the State, the Management Alignment Alternative in this Draft RMPA/EIS proposes a change to compensatory mitigation by modifying the net conservation gain standard that the BLM incorporated into its plans in 2015. The DOI and the BLM have also modified their mitigation policies since the 2015 plans were finalized. The public did not have the opportunity to comment specifically on a net conservation gain approach to compensatory mitigation during the 2015 land use planning process. In addition, the DOI and the BLM are evaluating whether the implementation of a compensatory mitigation standard on public lands is appropriate and consistent with applicable legal authorities. We request public comment about how the BLM should consider and implement mitigation with respect to the Greater Sage-Grouse, including alternative approaches to requiring compensatory mitigation in BLM land use plans.

Key aspects of this alternative include the following:

- Ensure that the BLM has the flexibility to update habitat management areas based on information consistent with the State of Wyoming's core areas
- Remove the sagebrush focal area designation
- Clarify the use of the Habitat Objectives Tables
- Ensure that noise thresholds and monitoring outlined in EO 2015-4 are only applicable to leks inside PHMA/core
- Define a process to review and reverse adaptive management actions once the identified causal factor is resolved
- Follow the State of Wyoming's Greater Sage-Grouse Compensatory Mitigation Framework

The Management Alignment Alternative does not propose to change any other decisions or objectives in the existing plans, other than those identified in **Table 2-1**. For example, in the 2015 ARMPA, Management Decision Special Status Species #11 describes how the BLM will support other agencies in their efforts to minimize impacts from predators. This management decision is in the existing plans and is not proposed to change; therefore, all other existing management decisions that are not being proposed for change in this Draft RMPA/EIS will remain the same, and remain in full force and effect.

Consistent with the Notice of Cancellation, which canceled the BLM's application to withdraw SFA from locatable mineral entry (82 *Federal Register* 195, October 11, 2017, p. 47248), this alternative would remove the recommendation for withdrawal. The effects of such an action are included in Chapter 4.

ES.5 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

This section includes a summary comparison of environmental consequences from implementing the No-Action Alternative and the Management Alignment Alternative. A detailed description of environmental consequences is included in **Chapter 4**.

No-Action Alternative	Management Alignment Alternative
Greater Sage-Grouse	
Impacts on Greater Sage-Grouse as a result of the No-Action Alternative are detailed in Chapter 4 of the FEIS for the RMPAs and RMP revisions, and the analysis from those documents are incorporated by reference in this document.	The impacts on Greater Sage-Grouse as a result of this alternative would mostly be similar to those identified in the 2014 and 2015 amendments and revisions; the analyses from those documents are incorporated by reference in this document. There would be minimal change between the No-Action and Management Alignment Alternative. Although adverse effects on local populations may occur as a result of the management actions, no impacts on Greater Sage-Grouse conservation in Wyoming have been identified, and consistent management will be achieved across the state.
Solid Minerals	
Impacts on Greater Sage-Grouse as a result of decisions associated with solid minerals as a result of the No-Action Alternative are detailed in Chapter 4 of the FEIS for the RMPAs and RMP revisions.	Impacts on Greater Sage-Grouse as a result of removing the SFA designation and removing the recommendation to withdraw the SFAs from location and entry under the Mining Law would be minimal and would not affect Greater Sage-Grouse conservation in Wyoming.
Fluid Minerals	
Impacts on Greater Sage-Grouse as a result of decisions associated with fluid minerals as a result of the No-Action Alternative are detailed in Chapter 4 of the FEIS for the RMPAs and RMP revisions.	Impacts on Greater Sage-Grouse as a result of proposed decisions associated with fluid mineral leasing and development would not affect Greater Sage-Grouse conservation in Wyoming. A fluid mineral lease does not authorize surface-disturbing activities; therefore, impacts related to changes in the prioritization of leasing outside of PHMA would be likely to beneficially affect Greater Sage-Grouse conservation in Wyoming. Site-specific impacts would be identified at the time a project-level application is received.
Livestock Grazing	
Impacts on Greater Sage-Grouse as a result of decisions associated with livestock grazing as a result of the No-Action Alternative are detailed in Chapter 4 of the FEIS for the RMPAs and RMP revisions.	Impacts on Greater Sage-Grouse as a result of proposed decisions associated with livestock grazing would not affect Greater Sage-Grouse conservation in Wyoming. Proposed changes to the habitat objectives and livestock grazing would result in impacts similar to those that would have occurred under previous management.

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Chapter 1. Purpose of and Need for Action

1.1 Introduction

Greater Sage-Grouse is a state-managed species that depends on sagebrush steppe ecosystems. These ecosystems are managed in partnership across its range by federal, state, and local authorities. State agencies responsible for fish and wildlife management possess broad responsibility for protecting and managing fish, wildlife, and plants within their borders, except where preempted by federal law. Similarly, the DOI has broad responsibilities to manage federal lands and resources for the public's benefit. Approximately half of Greater Sage-Grouse habitat is managed by the BLM and US Forest Service (Forest Service).

State agencies are at the forefront of efforts to maintain healthy fish and wildlife populations and to conserve at-risk species. State-led efforts to conserve the species and its habitat date back to the 1950s. For the past two decades, state wildlife agencies, federal agencies, and many others in the range of the species have been collaborating to conserve Greater Sage-Grouse and its habitats.

In 2010 the US Fish and Wildlife Service (USFWS) determined that listing the Greater Sage-Grouse under the Endangered Species Act was "warranted, but precluded" by other priorities. In response, the BLM, in coordination with the DOI and the US Department of Agriculture, developed a management strategy that included targeted Greater Sage-Grouse management actions. In 2015, the agencies adopted land use plan amendments (LUPAs) and revisions to 98 BLM and Forest Service land use plans (LUPs) across ten western states. These LUPAs addressed, in part, threats to the Greater Sage-Grouse and its habitat. The amended LUPs govern the management of 67 million acres of Greater Sage-Grouse habitat on federal lands.

In September 2015, the USFWS determined that the Greater Sage-Grouse did not warrant listing under the Endangered Species Act of 1973. The USFWS attributed its 2010 "warranted, but precluded" determination primarily to "inadequate regulatory mechanisms." In its 2015 conclusion of "not warranted," the USFWS based its decision in part on regulatory certainty from the conservation commitments and management actions in the federal land use plan amendments (LUPAs) and revisions, as well as on other private, state, and federal conservation efforts.

The BLM is currently implementing the 2015 Greater Sage-Grouse plans. The plans recommended that SFAs be proposed for withdrawal; however, this proposed withdrawal was cancelled on October 11, 2017.

On March 29, 2017, the Secretary of the Interior (Secretary) issued Secretarial Order (SO) 3349. It ordered agencies to reexamine practices "to better balance conservation strategies and policies with the equally legitimate need of creating jobs for hard-working Americans families."

On June 7, 2017, the Secretary issued SO 3353, with a purpose of enhancing cooperation among 11 western states and the BLM in managing and conserving Greater Sage-Grouse. SO 3353 directed an interior review team, consisting of the BLM, the USFWS, and the US Geological Survey (USGS), to coordinate with the Greater Sage-Grouse Task Force. They also were directed to review the 2015 Greater Sage-Grouse plans and associated policies to identify provisions that may require modification

to make the plans more consistent with the individual state plans and to better balance the BLM's multiple-use mission, as directed by SO 3349, American Energy Independence.

On August 4, 2017, the interior review team submitted its report in response to Secretarial Order 3353. In this report the team recommended modifying the Greater Sage-Grouse plans and associated policies to better align with the individual state plans. On August 4, 2017, the Secretary issued a memo to the Deputy Secretary directing the BLM to implement the recommendations found in the report.

In the *Federal Register* of October 11, 2017, the BLM published the Notice of Intent to Amend Land Use Plans Regarding Greater Sage-Grouse Conservation and Prepare Associated Environmental Impact Statements or Environmental Assessments.

During the public scoping period, the BLM sought public comments on whether all, some, or none of the 2015 Greater Sage-Grouse plans should be amended, what issues should be considered, and if plans should be completed at the state level rather than at the national level. In addition, the BLM recognizes that Greater Sage-Grouse is a state-managed species that depends on sagebrush steppe habitats managed in partnership by federal, state, and local authorities. Input from state governors would weigh heavily when the BLM considers what management changes should be made and when ensuring consistency with the BLM's multiple-use mission.

1.2 Purpose of and Need for Action

In the Federal Land Policy and Management Act (FLPMA), Congress provided the BLM with discretion and authority to manage public lands for multiple use and sustained yield and declared it the policy of the United States to coordinate the land use planning process with other federal and state plans. Further, FLPMA specifically provides that it neither enlarges nor diminishes the authority of the states in managing fish and wildlife. As the sovereign with the lead role in managing game species, including Greater Sage-Grouse, states play a critical role in conserving and restoring the Greater Sage-Grouse and its habitat.

The purpose of this land use plan amendment is to enhance cooperation with the states by modifying the approach to Greater Sage-Grouse management in existing land use plans to better align with individual state plans and/or conservation measures and DOI and BLM policy.

1.3 Planning Area and Current Management

The planning area for these Greater Sage-Grouse resource management plan (RMP) amendments consists of lands managed by all of the BLM Wyoming Field Offices: Buffalo, Casper, Cody, Kemmerer, Lander, Newcastle, Pinedale, Rawlins, Rock Springs, and Worland. It includes all lands and federal mineral estate managed by the BLM within these areas. The decision area for the RMP Amendment (RMPA) is BLM-administered lands in Greater Sage-Grouse habitat, as defined by the State of Wyoming's Core Area Strategy.

The BLM manages approximately 17,494,000 acres of surface estate and 40,700,000 acres of federal mineral estate in Wyoming. The decision area encompasses approximately 17 million acres of surface land and 28 million acres of federal mineral estate. **Table 1-1**, below, identifies the acreage for Priority Habitat Management Areas (PHMA) and General Habitat Management Areas (GHMA) for federal surface and federal mineral estate in each field office across the decision area. Approximately 1,915,990 acres are designated as sagebrush focal areas (SFAs), which are managed as PHMA in Wyoming.

Table 1-1
Acres of Greater Sage-Grouse Habitat by BLM Field Office in the Decision Area

BLM Office	PHMA Acres		GHMA Acres		Total Habitat Acres	
	BLM Surface	Federal Mineral	BLM Surface	Federal Mineral	BLM Surface	Federal Mineral
Buffalo Field Office	136,877	840,465	627,579	3,994,864	764,456	4,835,329
Casper Field Office	726,376	1,561,575	531,643	2,281,859	1,258,019	3,843,434
Cody Field Office	317,262	435,451	769,356	1,101,459	1,086,618	1,536,910
Kemmerer Field Office	632,810	686,546	768,146	910,615	1,400,956	1,597,161
Lander Field Office*	1,686,648	1,888,629	685,289	882,057	2,371,937	2,770,686
Newcastle Field Office	81,468	529,358	169,349	1,150,165	250,817	1,679,523
Pinedale Field Office	421,079	675,858	491,028	818,530	912,107	1,494,388
Rawlins Field Office	1,520,006	1,920,060	1,916,257	2,384,409	3,436,263	4,304,469
Rock Springs Field Office	1,731,730	1,808,975	1,865,180	1,920,425	3,596,910	3,729,400
Worland Field Office	797,448	1,019,544	1,301,942	1,670,110	2,099,390	2,689,654
Total decision area acres	**8,051,704**	**11,366,461**	**9,125,769**	**17,114,493**	**17,177,473**	**28,480,954**

*The Lander Field Office does not contain PHMA/GHMA designations but rather uses the terminology of core and non-core areas, similar to the State of Wyoming's Executive Orders.

Figures 1-1 and **1-2** identify the planning (analysis) area for this RMPA/EIS and the decision area for this document, respectively. These maps depict the existing habitat management areas that are being considered in this RMPA/EIS.

Current management for Greater Sage-Grouse conservation in Wyoming is provided in the Resource Management Plan Amendments for Greater Sage-Grouse in the Casper, Kemmerer, Newcastle, Pinedale, Rawlins, and Rock Springs Field Offices, as well as the RMPs for Buffalo, Cody, Worland, and Lander; however, proposed management actions would not be universally applied across all RMPs. There are various management decisions in the ROD/ARMPA), for example, that apply only to the ARMPA decision area and not to the Lander, Buffalo, Cody, or Worland RMPs because those RMPs were developed independently as land use plan revisions.

The Lander RMP revision, although completed in 2014, is being included in this RMPA/EIS because there are some proposed management actions that would apply to the Lander RMP. For example, one of the actions the BLM proposes is to update its Greater Sage-Grouse habitat management area designations when the State of Wyoming updates its core areas. This should apply to Lander, along with the other plans; however, there are several actions (identified by No Similar Action in **Table 1-2**) that would *not* apply to the Lander RMP. See **Chapter 2** for more information.

Figure 1-1
Wyoming Greater Sage-Grouse Habitat Management Area Designations (Planning Area)

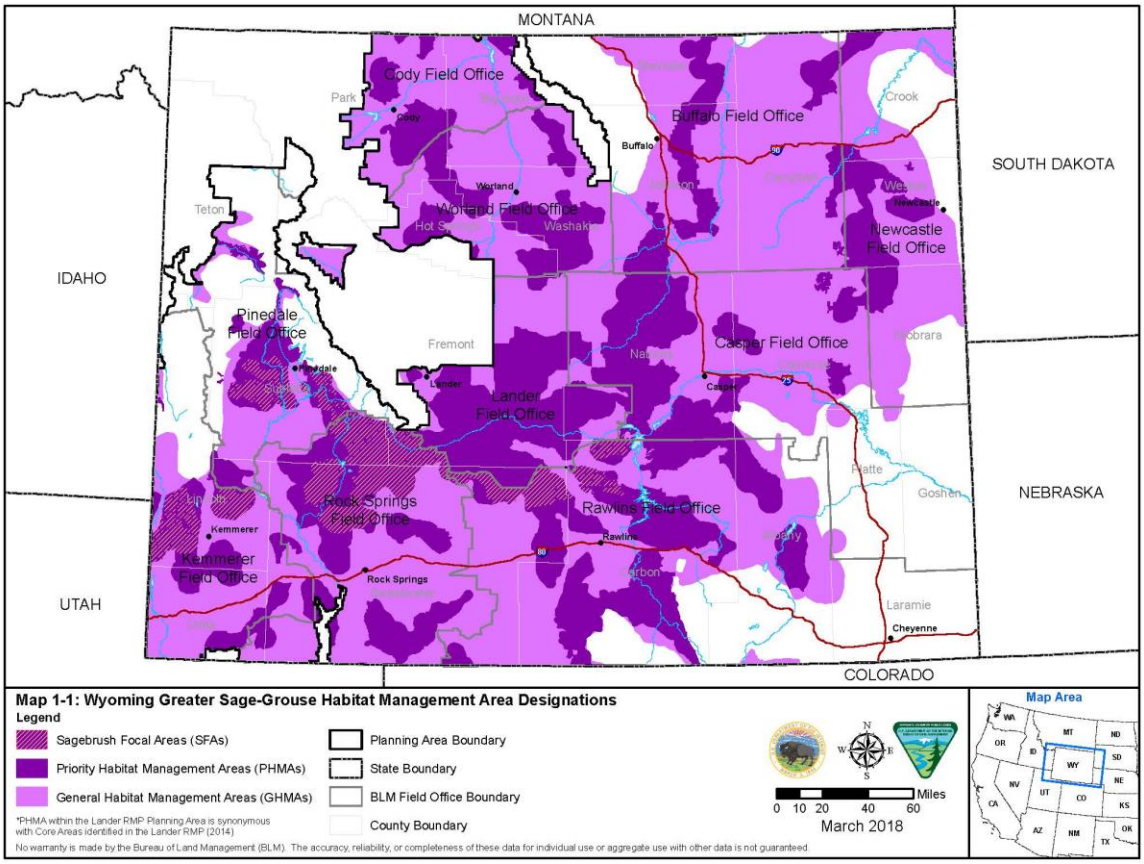
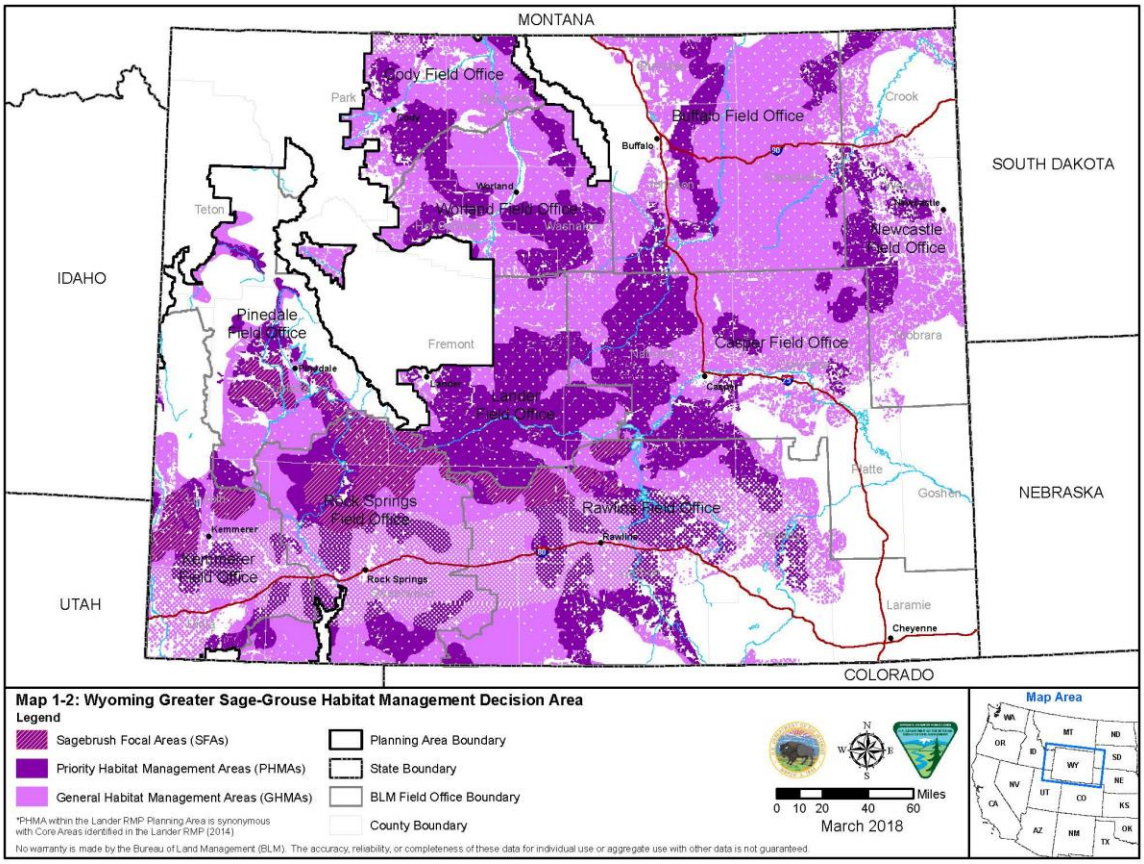


Figure 1-2
Wyoming Greater Sage-Grouse Habitat Management Decision Area



PHMA are areas that meet some stage of the Greater Sage-Grouse life-cycle requirements, based on best available science. These broad habitat maps are necessary at the resource management plan-scale of planning in order to include a variety of important seasonal habitats and movement corridors that are spread across geographically diverse and naturally fragmented landscapes. Greater Sage-Grouse use multiple areas to meet seasonal habitat needs throughout the year and the resulting mosaic of habitats (e.g., winter, breeding, nesting, early brood-rearing, late brood-rearing, transitional, and movement corridor habitats) can encompass large areas. Broad habitat maps increase the likelihood that all seasonal habitats (including transition and movement corridors) are included. While areas of non-habitat, in and of themselves, may not provide direct habitat value for Greater Sage-Grouse (e.g., canyons, water bodies, and human disturbances), these areas may be crossed by birds when moving between seasonal habitats. Therefore, these habitat management areas are not strictly about managing habitat but are about providing those large landscapes that are necessary to meet the life-stage requirements for Greater Sage-Grouse. These areas will include areas that do not meet the habitat requirements described in the Seasonal Habitat Objectives tables in the 2015 Final EISs for Bighorn and Buffalo RMP revisions and the 2015 Final EIS for Greater Sage-Grouse. These areas meet Greater Sage-

Grouse habitat needs by maintaining large, contiguous expanses of relatively intact sagebrush vegetation community.

The BLM will continue to implement other decisions in the existing RMPs, until otherwise amended.

1.4 PLANNING CRITERIA

Planning criteria establish constraints, guidelines, and standards for the planning process and help the BLM define the scope of planning and analysis.

The following criteria are based on standards prescribed by applicable laws and regulations, agency guidance, analysis pertinent to the planning area, professional judgment, and results of consultation and coordination with the public and other federal, state, and local agencies.

The BLM has identified the following planning criteria:

- It will comply with all laws, regulations, policies, and guidance related to public lands management and implementing the National Environmental Policy Act (NEPA) on BLM-administered lands.
- Greater Sage-Grouse is a state-managed species that depends on sagebrush steppe habitats managed in partnership by federal, state, and local authorities. In making management determinations on BLM-administered lands, the BLM will use, to the fullest extent practicable, state game and fish agencies' Greater Sage-Grouse data and expertise.
- Lands addressed in the RMPA/EIS will be BLM-administered land in Greater Sage-Grouse habitats, including surface and split-estate lands with federal subsurface mineral rights. Any decisions in the RMPA/EIS will apply only to BLM-administered lands.
- This RMPA/EIS will comply with orders of the Secretary, including SO 3353 (Greater Sage-Grouse Conservation and Cooperation with Western States), which strives for compatibility with state conservation plans.
- This RMPA/EIS will incorporate, as appropriate, information in a USGS report that identified and annotated Greater Sage-Grouse science published since January 2015 (Carter et al. 2018) and a report that synthesized and outlined the potential management implications of this new science (Hanser et al. 2018).
- This RMPA/EIS will comply with BLM Manual 6840, Special Status Species Management.
- This RMPA/EIS will recognize valid existing rights.
- All activities and uses in Greater Sage-Grouse habitats will be managed to achieve Greater Sage-Grouse objectives and existing land health standards.
- This RMPA/EIS will not amend more restrictive land use allocations or decisions for other resources under existing RMPs, such as wilderness study areas, areas of critical concern, cultural resources, and riparian areas.

1.5 ISSUES AND RELATED RESOURCE TOPICS IDENTIFIED THROUGH SCOPING

When deciding which issues to address related to the purpose and need, BLM considers points of disagreement, debate, or dispute regarding an anticipated outcome from a proposed action. Issues are based on anticipated environmental effects; as such, issues can help shape the proposal and alternatives. The BLM used internal, agency, and public scoping to identify issues to consider in the environmental

analysis. A summary of the scoping process is presented in a report titled Potential Amendments to Land Use Plans Regarding Greater Sage-Grouse Conservation Scoping Report (https://goo.gl/FopNgW).

When determining whether to retain an issue for more detailed analysis in this RMPA/EIS, the interdisciplinary team considered, among other things, the following:

- The environmental impacts associated with the issue and the threats to species and habitat associated with the issue are central to development of a Greater Sage-Grouse management plan or of critical importance.
- A detailed analysis of environmental impacts related to the issue is necessary to make a reasoned choice between alternatives.
- The environmental impacts associated with the issue are a significant point of contention among the public or other agencies.
- There are potentially significant impacts on resources associated with the issue.

Ultimately, it is important for decision-makers and the public to understand the impacts that each of the alternatives would have on specific resources; therefore, the BLM uses resource topics as a heading to indicate which resources would be affected by a management change. Importantly, resource topics will help organize the discussions of the affected environment (**Chapter 3**) and environmental consequences (**Chapter 4**).

The sections below lay out how issues raised during scoping, as well as related resource topics, are considered in this EIS. Generally, they fall into the following categories:

- Issues and related resource topics retained for further consideration in this RMPA/EIS—These are issues raised during scoping that are retained in this RMPA/EIS and for which alternatives were developed to address the issues. In some cases, the alternatives were previously analyzed in the 2015 Final EISs. In other cases, additional analysis is needed in this RMPA/EIS. Because the issues were analyzed under resource topics in 2015, the resource topics corresponding with those retained for further analysis are also considered in this RMPA/EIS. Just like issues, they may have been analyzed in the 2015 Final EISs for those decisions being included in this RMPA/EIS.
- Clarification of decisions in the 2015 amendments and revisions—These are decisions or frameworks in the 2015 amendments and revisions that require clarification as to their application or implementation. No new analysis is required, as the intentions behind the decisions were analyzed in the 2015 Final EISs.
- Issues and resource topics not carried forward for additional consideration or analysis—These are issues brought up during scoping that are not carried forward in this RMPA/EIS. While some of these issues are considered, they do not require additional analysis because they were analyzed in the 2015 Final EISs. Others are not carried forward because they do not further the purpose of aligning with the State of Wyoming's conservation plan.

  Similar to issues, there are resource topics that are not retained for further analysis in this RMPA/EIS. This is because either they are not affected by the changes proposed in **Chapter 2** or because the effect was analyzed in the 2015 Final EISs.

1.5.1 Issues and Related Resource Topics Retained for Further Consideration in this RMPA/EIS

Table 1-2 summarizes those issues identified through scoping and that have been retained for consideration and additional discussion in **Chapters 3** and **4**.

Based on the issues identified in **Table 1-2** that have not been previously analyzed, the resource topics that have the potential to be significantly impacted are Greater Sage-Grouse, livestock grazing management, locatable minerals, and fluid minerals; therefore, this resource topic is carried forward for detailed analysis.

Table 1-2 identifies the corresponding resource topics to which the issues relate. The level of detail in the description of each resource topic and the effects from implementing any of the alternatives also are described in **Chapters 3** and **4**.

Table 1-2
Issues and Related Resource Topics

Issues	Resource Topics Related to the Issues
Modifying Habitat Management Area Designations • Integration of flexibility into the plans to be able to adjust habitat management areas without the need for a plan amendment	Greater Sage-Grouse
Sagebrush Focal Areas • Do SFAs contribute to achieving conservation outcomes? • Relevance of this habitat designation in the absence of a mineral withdrawal • Constraints on mineral development within SFAs	Greater Sage-Grouse
Mineral Withdrawal • What would occur as a result of not moving forward with the recommended withdrawal?	Greater Sage-Grouse, locatable minerals
Managing noise standards outside PHMA • Are noise standards being applied consistent with the state management?	Greater Sage-Grouse
Habitat Objectives • Use in assessing rangeland health standards • Consideration of localized ecological site potential • Habitat objectives tables	Greater Sage-Grouse
Livestock Management • Management of existing range improvement structures • Riparian area management	Greater Sage-Grouse, livestock grazing management
Modifying Adaptive Management Strategies • What should be the process for changing or reverting to an adaptive management response?	Greater Sage-Grouse
Compensatory Mitigation • What are the impacts of following the State's mitigation framework?	Greater Sage-Grouse
Managing Impacts from Recreation Facilities • What would be the result of not requiring net conservation gain for recreation facilities?	Greater Sage-Grouse
Prioritization of Fluid Mineral Leasing • Prioritize oil and gas development outside of PHMA	Greater Sage-Grouse, fluid mineral leasing

1.5.2 Clarification of Planning Decisions in the 2015 Amendments and Revisions

The following issues with existing planning decisions were raised during scoping. These issues require clarification to language in the 2015 amendments and revisions but do not require new analysis or a planning level decision. The language below identifies how these issues would be addressed by the BLM outside of the land use planning process.

- Clarification is required for implementation level actions on restrictions that should be applied only to PHMA. Based on language in the existing land use plans, there has been some confusion regarding application of PHMA-type restrictions in non-PHMA areas. The BLM will clarify this with step-down guidance for implementation level actions.
- Currently, there is no direction on how the BLM and the State of Wyoming could work to incentivize development outside PHMA. The BLM will work with the State of Wyoming in determining the appropriate path forward in incentivizing development outside PHMAs.
- The State of Wyoming has identified several de minimis activities that are exempt from the requirements and restrictions of the Governor's Executive Order for Greater Sage-Grouse Core Area Protection (Executive Order 2015-4). These include activities such as residential and agricultural electric utilities, fence modifications, and small impoundment development, among other activities.

Currently, the BLM has several categorical exclusions that may be used to satisfy the requirements of NEPA when some such proposals are received on BLM-administered lands. Other de minimis activities are not covered by an appropriate categorical exclusion, so the BLM must comply with NEPA by preparing an environmental assessment or, as appropriate, an EIS. BLM Wyoming will issue guidance to field offices regarding the appropriate use of categorical exclusions for those actions where categorical exclusions exist. BLM Wyoming will also explore the development of a programmatic NEPA analysis for other activities that the State of Wyoming considers de minimis in order to enable, as appropriate, field offices to use other tools, such as a determination of NEPA adequacy, to authorize projects.

- BLM Wyoming will develop guidance and clarification on the use of required design features (RDFs) when they are applied at the implementation level. RDFs are to be used as appropriate at the site-specific level and should not be assumed to apply to all projects.

1.5.3 Issues and Resource Topics not Carried Forward for Additional Analysis (Scoping Issues Outside the Scope and Scoping Issues Previously Analyzed)

Issues and Related Resource Topics Not Carried Forward for Additional Analysis

Commenters raised population-based management as an issue for consideration during scoping for this RMPA/EIS. This issue was not carried forward for detailed analysis because the BLM does not manage species populations, an authority that falls under the jurisdiction of the State of Wyoming's Game and Fish Department.

Because the issues listed below were analyzed in the 2015 Final EISs and no significant new information has emerged, they do not require additional analysis in this RMPA/EIS, and these types of impacts on these resources are described in the range of alternatives in the 2015 Final EISs. The impacts of implementing the alternative in this RMPA/EIS are within the range of alternatives previously analyzed.

- Restrictions on rights-of-way (ROWs) and infrastructure
- Wind energy development in PHMA
- ROW avoidance in PHMA and GHMA
- Retention of lands as identified as PHMA or GHMA in federal ownership
- Varying stipulations applied to oil, gas, and, geothermal development
- Effects of no surface occupancy (NSO) stipulations on Greater Sage-Grouse habitat on non-BLM land
- Mitigation for oil and gas development
- Prioritization of fluid mineral leases outside of PHMA and GHMA
- Numerical noise limitations within PHMA
- Contribution of disturbance caps toward Greater Sage-Grouse conservation objectives
- Vegetation treatments and wildfire response

Resource Topics Not Carried Forward for Additional Analysis

The resource topics below are dismissed from detailed analysis. While these resource topics may have impacts related to Greater Sage-Grouse conservation that were analyzed in the 2015 Final EISs, they are dismissed from detailed analysis because they have no potentially significant impacts from actions proposed in this RMPA/EIS:

- Air Quality
- Cultural resources
- Forestry
- Lands and realty
- Lands with wilderness characteristics
- Minerals and energy
- Paleontology
- Recreation resources
- Socioeconomics
- Soils
- Special designations and management areas
- Transportation and access management
- Visual resources
- Watershed and water quality
- Wild horses and burros
- Wildland fire and fuels
- Wildlife (other than Greater Sage-Grouse) and fisheries

1.6 RELATIONSHIP TO OTHER POLICIES, PLANS, AND PROGRAMS

The BLM amendments must be consistent with the following:

- Official approved or adopted resource-related plans
- The policies and programs other federal agencies, state and local governments, and Native American tribes

This is contingent on the guidance and plans also being consistent with the purposes, policies, and programs of federal laws and regulations applicable to public lands.

The BLM is aware that there are specific state laws and local plans relevant to aspects of public land management that are discrete from, and independent of, federal law; however, the BLM is bound by

federal law. As a consequence, there may be inconsistencies that cannot be reconciled. The BLM will consider, to the extent practicable, all state and local land use plans during this planning effort.

Specifically, the BLM considered the plans shown below.

1.6.1 State Plans

State plans considered during this planning effort are the following:

- The State of Wyoming's Greater Sage-Grouse Core Area Protection strategy
- Executive Order 2015-4
- Supplement to Greater Sage-Grouse Suitable Habitat Definitions
- Executive Order 2017-2
- Revised Greater Sage-Grouse Compensatory Mitigation Framework (the Core Area Strategy, Executive Order 2015-4)

1.6.2 Local Plans

Local land use plans considered during this planning effort include all local plans from all counties and conservation districts across Wyoming that may be affected by any decisions in this proposed amendment addressing alignment with state management plans.

The BLM considered how alignment with state management plans and conservation actions may affect local land use plans. The BLM considered all local plans from all counties and conservation districts across Wyoming that may be affected by proposed management actions.

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Chapter 2. Alternatives

2.1 Introduction

This chapter describes the alternatives evaluated as part of this RMPA/EIS. This RMPA/EIS analyzes in detail the No-Action Alternative and the Management Alignment Alternative. These were developed to meet the purpose and need presented in **Chapter 1**. In addition to the alternatives considered in detail, this chapter also describes an alternative considered but eliminated from detailed analysis.

Components of Alternatives

Goals are broad statements of desired outcomes and are not quantifiable or measurable. Objectives are specific measurable desired conditions or outcomes intended to meet goals. Goals and objectives can vary across alternatives, resulting in different allowable uses and management actions for some resources and resource uses.

Management actions and allowable uses are designed to achieve goals and objectives. Management actions are measures that guide day-to-day and future activities. Allowable uses delineate uses that are permitted, restricted, or prohibited, and may include stipulations or restrictions. Allowable uses also identify lands where specific uses are excluded to protect resource values, or where certain lands are open or closed in response to legislative, regulatory, or policy requirements. Implementation decisions are site-specific actions and are typically not addressed in RMPs.

Some portions of the Management Alignment Alternative are not applicable to all land use plans. For example, because the Lander RMP makes no reference to net conservation gain, changes to the amendments and revisions that do incorporate net conservation gain would not apply to the Lander RMP. Similarly, some actions that are applicable only in the amendments, and not to the revisions, are identified as such. The phrase "No Similar Action" means that the management alternative that is being described is not applicable to the plan referenced.

2.2 Alternatives Considered but Not Analyzed in Detail

2.2.1 Varying Constraints on Land Uses and Development Activities

During scoping, some commenters asked for increased or additional constraints on land uses and ground-disturbing activities to protect Greater Sage-Grouse habitat. These constraints are beyond those in the current management plan.[1] Other commenters, in contrast, asked the BLM to consider eliminating or reducing constraints on land uses, or incorporating other flexibilities into the BLM's implementation of RMPs, in addition to those issues that are already evaluated in the Management Alignment Alternative. The BLM considered every scoping comment and, where appropriate, incorporated these issues into the Management Alignment Alternative following coordination with the State. Because the purpose and need for the BLM's action, building off of the 2015 ROD/ARMPA, is to enhance cooperation with the states by seeking to better align the BLM's RMPs with individual state

[1]For example, this 2018 planning process, built upon the 2015 planning process, will continue to ensure that the BLM complies with its special status species policy, including the commitment to "implement measures to conserve [Special Status] species and their habitats… and promote their conservation and reduce the likelihood and need for such species to be listed pursuant to the ESA." (BLM Manual 6840, Special Status Species Management)

plans and/or conservation measures, the BLM gave great weight to the State's identification of issues that warrant consideration in this planning effort.

This planning process does not revisit every issue that the BLM evaluated in 2015. Instead, the BLM now addresses refinements to the 2015 ROD/ARMPA decisions, consistent with the BLM's purpose and need for action. Accordingly, this RMPA/EIS has as its foundation in the 2014 Lander Final EIS and Approved Plan and ROD; the 2015 Final EIS for the Buffalo and Bighorn Basin RMP revisions and Approved Plans and RODs; and the 2015 Final EIS and ROD/ARMPA for Greater Sage-Grouse; and incorporates those documents by reference—including the entire range of alternatives evaluated through those previous planning processes:

Final EIS for the Lander Field Office (2014); Final EIS for the Buffalo RMP Revision (Buffalo Field Office); and Final EIS for the Bighorn Basin RMP Revision (Cody and Worland Field Offices)

- Alternative A would have continued existing management practices (no action alternative).
- Alternative B would have emphasized conservation of natural and cultural resources while providing for compatible development and use.
- Alternative C emphasized resource development and use while protecting natural and cultural resources.
- Alternative D would have provided development opportunities while protecting sensitive resources (proposed RMP).
- Alternative E (Only in Bighorn Basin, Cody, Worland) would have provided conservation of natural and cultural resources and protection of Greater Sage-Grouse Key Habitat Areas through the designation of an ACEC.
- Alternative F (Only in Bighorn Basin, Cody, Worland) would have provided development opportunities and protects sensitive resources and protection of Greater Sage-Grouse Core Habitat Areas through the designation of an ACEC.

ARMPA

- Alternative A would have retained the current management goals, objectives and direction specified in the existing BLM RMPs.
- Alternative B was based on the conservation measures developed by the National Technical Team planning effort in IM 2012-044. As directed in the IM, the conservation measures developed by the National Technical Team must be considered and analyzed, as appropriate, through the land use planning process and NEPA by all BLM state and field offices that contain occupied Greater Sage-Grouse habitat. Most management actions included in Alternative B would be applied to PHMA.
- Alternative C was based on a citizen groups' recommended alternative. This alternative emphasizes improvement and protection of habitat for Greater Sage-Grouse and was applied to all occupied Greater Sage-Grouse habitat. Alternative C would limit commodity development in areas of occupied Greater Sage-Grouse habitat, and would close or designate portions of the planning area to some land uses.
- Alternative D, which was identified as the Preferred Alternative in the draft EIS, balanced opportunities to use and develop the planning area and ensures protection of GRSG habitat

based on scoping comments and input from cooperating agencies involved in the alternatives development process. Protective measures would be applied to Greater Sage-Grouse habitat.

- The Proposed LUPA incorporated guidance from specific State Conservation strategies, as well as additional management based on the National Technical Team recommendations. This alternative emphasized management of Greater Sage-Grouse seasonal habitats and maintaining habitat connectivity to support population objectives. For the Wyoming Proposed LUPA, this guidance was consistent with guidelines provided in the Governor's Sage-Grouse Implementation Team's Core Population Area strategy and the Governor's Executive Order (WY EO 2011-05).

The BLM considered the entire range of alternatives from the Lander Final EIS (2014) and the 2015 Final EISs to identify issues meriting reconsideration, given the BLM's goal of enhancing alignment with state plans. In this manner, the BLM will continue to appropriately manage Greater Sage-Grouse and its habitat through this planning effort in tandem with the 2015 ROD/ARMPA and the 2014 Approved Plan for Lander.

Further, additional constraints on land uses or development without a documented need would not meet the purpose of SO 3353. The BLM did not discover new information that would indicate the agency should increase the level of conservation, management, and protection to achieve its land use plan objective. As part of the consideration of whether to amend the 2015 Greater Sage-Grouse RMPs, the BLM requested the USGS to develop an annotated bibliography of Greater Sage-Grouse science published since January 2015 (Carter et al. 2018; see **Section 3.1**).

In addition, SO 3353 directs the BLM to promote habitat conservation, while contributing to economic growth and energy independence. As analyzed in the 2015 Final EIS (Alternative C), all of the previously analyzed alternatives, including one proposing constraints stricter than the current management plan, were predicted to result in a loss of development opportunities on public lands.

2.3 DESCRIPTION OF ALTERNATIVES

2.3.1 No-Action Alternative

Under the No-Action Alternative, the BLM would not amend the existing RMPs regarding Greater Sage-Grouse habitat management. Greater Sage-Grouse habitat would continue to be managed under current management direction. Goals and objectives for BLM-administered lands and federal mineral estate would not change. Allowable uses and restrictions pertaining to activities such as mineral leasing and development, recreation, lands and realty, and livestock grazing would also remain the same.

2.3.2 Management Alignment Alternative

This alternative, identified herein as the BLM's Preferred Alternative, was developed through coordination with the State to align with the State conservation plan and to support conservation outcomes for Greater Sage-Grouse.

The BLM continues to build upon the 2015 planning effort as envisioned in SO 3353 by collaborating with states and stakeholders to improve alignment between federal management plans and other plans and programs at the state level, while ensuring consistency with the BLM's multiple use mission. This enhanced cooperation between the BLM and the Governor of Wyoming's office would lead to improved management and coordination the range of Greater Sage-Grouse in Wyoming. At the request of the

State, the Management Alignment Alternative in this Draft RMPA/EIS proposes a change to compensatory mitigation by modifying the net conservation gain standard that the BLM incorporated into its plans in 2015. The DOI and the BLM have also modified their mitigation policies since the 2015 plans were finalized. The public did not have the opportunity to comment specifically on a net conservation gain approach to compensatory mitigation during the 2015 land use planning process. In addition, the DOI and the BLM are evaluating whether the implementation of a compensatory mitigation standard on public lands is appropriate and consistent with applicable legal authorities. We request public comment about how the BLM should consider and implement mitigation with respect to the Greater Sage-Grouse, including alternative approaches to requiring compensatory mitigation in BLM land use plans.

Key aspects of this alternative are the following:

- Ensure that the BLM has the flexibility to quickly update habitat management areas based on information consistent with the State of Wyoming's core areas
- Remove the sagebrush focal area designation
- Clarify the use of the habitat objectives tables
- Ensure that noise thresholds and monitoring outlined in EO 2015-4 are applicable only to leks inside priority habitat management area (PHMA)/core
- Define a process to review and reverse adaptive management actions once the identified causal factor is resolved
- Follow the State of Wyoming's Greater Sage-Grouse Compensatory Mitigation Framework

The Management Alignment Alternative does not propose to change any other decisions or objectives in the existing plans, other than those identified in **Table 2-1**. For example, the 2015 ROD/ARMPA Management Decision Special Status Species # 11 describes how the BLM would support other agencies in their efforts to minimize impacts from predators. This management decision is in the existing plans and is not proposed to change; therefore, all other existing management decisions that are not being proposed for change in this EIS/RMPA will remain the same, in full force and effect.

Consistent with the notice of cancellation, which canceled the BLM's application to withdraw SFA from locatable mineral entry (82 *Federal Register* 195, October 11, 2017, p. 47248), this alternative would remove the recommendation for withdrawal. The effects of such an action are included in **Chapter 4**.

2.4 COMPARISON OF ALTERNATIVES

Table 2-1
Alternatives Comparison

Topic	Management Decision Or Objective	No Action Alternative	Management Alignment Alternative
Modifying habitat boundaries			
Modifying habitat management area designations	No existing decision	No similar action	The BLM would update its Greater Sage-Grouse habitat management areas, including biologically significant units (BSUs), in conjunction with the State of Wyoming's core areas, upon issuance of any Wyoming Governor's Executive Order revising or amending the core area boundaries.
Sagebrush Focal Area Designations			
Sagebrush Focal Areas	ARMPA: MD SSS 14	**From the ARMPA:** Designate SFAs, as shown on Map 1-2 (1,915,990 acres). SFAs would be managed as PHMAs, with the following additional management: • Recommend for withdrawal from the General Mining Act of 1972, subject to valid existing rights, the lands shown in Map 2-3 (252,160 acres) Prioritized for vegetation management and conservation actions in these areas, including, but not limited to, land health assessments, wild horse and burro management actions, review of livestock grazing permits/leases, and habitat restoration (see specific management sections) **Buffalo RMP, Lander RMP, Cody RMP, and Worland RMP:** No similar action (no SFAs designated).	No similar action (no areas would be designated as SFA).
SFA Withdrawal	ARMPA: MD MR 12	**From the ARMPA:** MD MR 12—Within PHMAs, specific to management for Greater Sage-Grouse, all RMPs are amended as follows: 252,160 acres within SFAs would be recommended for withdrawal from the General Mining Act of 1872, subject to valid existing rights. A total of approximately 21,251,690 acres are open to locatable mineral location and entry (Map 2-3).	**Across all RMPs:** No similar action.

Table 2-1
Alternatives Comparison

Topic	Management Decision Or Objective	No Action Alternative	Management Alignment Alternative
		Buffalo RMP, Lander RMP, Cody RMP, and Worland RMP: No similar action (no SFAs and no recommended withdrawal).	
Habitat Objectives			
	ARMPA: Management Objective #6	**From the ARMPA:** Develop specific habitat objectives to protect, enhance, or restore Greater Sage-Grouse priority habitat, based on Ecological Site Descriptions (ESDs) and BLM land health evaluations (including within wetland and riparian areas) taking into account site history (historic treatments or habitat manipulations) that have changed the soil chemistry, possibly altering the ESD. If an effective grazing system that meets Greater Sage-Grouse habitat requirements is not already in place, analyze at least one alternative that conserves, restores, or enhances Greater Sage-Grouse habitat in the NEPA document prepared for grazing management (Doherty et al. 2011; Williams et al. 2011). **Buffalo, Cody, Worland, and Lander RMP:** No similar action.	**For the Plans covered under the ARMPA:** Develop specific habitat objectives to protect, enhance or restore Greater Sage-Grouse habitat based on Ecological Site Descriptions (ESDs) and BLM land health evaluations taking into account site history (historic treatments or habitat manipulations) that may have changed the soil chemistry, possibly altering the ESD. **Buffalo, Cody, Worland, and Lander RMPs:** No similar action.
Seasonal habitat objectives for Greater Sage-Grouse	No existing decision	**From the ARMPA, Buffalo, Cody, and Worland RMPs:** The habitat objectives for Greater Sage-Grouse (Table 2-2 [ARMPA], Table 2-6 [Buffao]), and Table 2-7 [Cody and Worland]) is a list of indicators, characteristics, and values that describe Greater Sage-Grouse seasonal habitat use areas. The BLM used indicator values derived from a synthesis of local and regional Greater Sage-Grouse habitat research and data to describe the typical vegetation communities that Greater Sage-Grouse select. While the habitat objectives are not attainable on every site or every acre within designated Greater Sage-Grouse habitat management areas, the values reflect a range of habitat conditions that generally lead to greater survival of	**For the ARMPA, Buffalo RMP, Worland RMP, and Cody RMP:** Include as preamble to the tables—The purpose of the habitat objectives tables is to identify vegetation attributes important to Greater Sage-Grouse site selection as described in the habitat assessment framework. Indicators should be measured during the appropriate season, within the seasonal habitat being assessed, and in the context of the ecological potential for the site. Collectively, the indicators for sagebrush (cover, height, and shape), perennial grass, and perennial forb (cover, height, and/or availability) represent the desired vegetation

Table 2-1
Alternatives Comparison

Topic	Management Decision Or Objective	No Action Alternative	Management Alignment Alternative
		individuals within a population. When permitting land use activities, BLM should consider the ecological site potential within designated habitat management areas to validate the habitat conditions achievable for a specific site. The seasonal habitat descriptions in habitat objectives tables (noted above) vary across the range of Greater Sage-Grouse, within a subregion, and between sites. They are not land health standards but are quantitative measures that inform the special status species habitat land health standard for Greater Sage-Grouse. These measurable values reflect ecological potential, and may be adjusted based on local factors influencing Greater Sage-Grouse habitat selection. Local data or recent science may indicate that Greater Sage-Grouse select for vegetation structure and composition in seasonal habitats not characterized by the values in the habitat objectives table. In these cases, it may be appropriate to adjust the values. Habitat objectives should be evaluated in the context of annual variability in ecological conditions and should not be used singly to determine habitat suitability for Greater Sage-Grouse. They may be used to demonstrate trends over time, during plan evaluations for effectiveness of Greater Sage-Grouse conservation, or when identifying limiting habitat characteristics for a given area. The indicators, characteristics, values and desired seasonal habitat conditions in the Greater Sage-Grouse Plan Habitat Objectives Table are meant to inform the wildlife habitat component of the land health standards evaluation process (LHS, 43 CFR 4180.2), but do not replace rangeland health assessments. Results from the LHS	components for the seasonal habitats. Indicators are not standards to be achieved but a metric used to evaluate habitat suitability within a home range. The habitat objectives tables outline range-wide attributes and values for each. Some of the science-based information used to determine the values in the Habitat Objectives tables was developed in disparate geographic regions and may not be based on local conditions. The BLM uses the best available information to ; specific values should be developed locally or at the project level. Data collected at each location (during the appropriate season) in Greater Sage-Grouse habitat is compared to each seasonal habitat indicator value in the tables. These indicator values would then be examined using a preponderance of evidence approach (BLM Technical Reference 1734-6) to determine seasonal habitat suitability within a home range and documented in a Greater Sage-Grouse habitat assessment. When completing site-scale assessments for Greater Sage-Grouse, it is not appropriate to use a single indicator to determine habitat suitability. Site-scale Greater Sage-Grouse habitat assessments inform the land health standard evaluation for the wildlife/special status species standard. Not all areas within a given habitat type would be capable of achieving the indicator values, due to inherent variation in vegetation communities and ecological site potential. Further, local data supported BLM-approved data collection protocols or most recent available science may indicate Greater Sage-Grouse select for vegetation structure and composition not characterized by values in

Table 2-1
Alternatives Comparison

Topic	Management Decision Or Objective	No Action Alternative	Management Alignment Alternative
		evaluation should be used to support BLM in land use authorization processes and during development of objectives for management actions such as vegetation treatments. BLM land use authorizations will contain terms and conditions regarding the actions needed to achieve or make progress toward achieving habitat objectives and land health standards. The habitat objectives tables are to be used: • To assess habitat suitability for Greater Sage-Grouse following the BLM policy on Greater Sage-Grouse habitat assessments • To evaluate land use plan effectiveness for Greater Sage-Grouse conservation, and • As a basis to develop measurable project objectives for actions in BLM-designated Greater Sage-Grouse habitat management areas when considered alongside land health standards, ecological potential and local information. **Lander RMP:** No similar action. **ARMPA, Buffalo, Cody, Worland RMPs:** As an indicator for perennial grass and forb height (includes residual grasses): Adequate nesting cover greater than or equal to 7 inches or as determined by ESD site potential and local variability. **Lander RMP:** No similar action.	the table. The values in the tables should be considered as initial references and do not preclude development of local desired conditions or utilizing other indicators/values, based on site selection preferences of the local population and ecological site capability of sagebrush communities. Adequate nesting cover is determined by ESD site potential or best available science in consideration of local variability. **Lander RMP:** No similar action.
Livestock Management			
Permit renewals	**ARMPA:** MD LG 4	**ARMPA:** Within PHMAs, all BLM use authorizations would contain terms and conditions regarding the actions needed to meet or progress toward meeting the habitat	**ARMPA, Buffalo RMP, Worland RMP, and Cody RMP:** Within PHMA, if monitoring data show the wildlife/special status species standard is neither being met

Table 2-1
Alternatives Comparison

Topic	Management Decision Or Objective	No Action Alternative	Management Alignment Alternative
	Buffalo: Page 25; Grazing-6017 **Cody:** Page 21; Record #6130 **Worland:** Page 21, Record #6202	objectives. If monitoring data show the habitat objectives have not been met nor progress being made towards meeting them, there would be an evaluation and a determination made as to the cause. If it is determined that the authorized use is a significant factor in failing to achieve the standards for healthy rangelands, the use would be adjusted by the response specified in the instrument that authorized the use. **Cody RMP, Worland RMP:** All BLM use authorizations would contain terms and conditions regarding the actions needed to meet or progress toward meeting the habitat objectives. If monitoring data show the habitat objectives have not been met nor progress being made towards meeting then, there would be an evaluation and a determination made as to the cause. If it is determined that the authorized use is a cause, the use would be adjusted by the response specified in the instrument that authorized the use. **ARMPA, Buffalo RMP, Cody RMP, Worland RMP:** The NEPA analysis for renewals and modifications of livestock grazing permits/leases that includes lands within SFAs and PHMAs would include specific management thresholds based on Greater Sage-Grouse habitat objectives (**Tables 2-2** and **2-3**) and Land Health Standards (43 CFR 4180.2), and one or more defined responses that would allow the Authorizing Officer to make adjustments to livestock grazing that have already been subjected to NEPA analysis. **Lander RMP:** No similar action.	or no progress is being made toward meeting that standard, there would be an evaluation and a determination made as to the cause. If it is determined that the current authorized livestock use is a significant causal factor in failing to achieve the wildlife/special status species standard, the BLM would address achievement or progress toward achieving the LHSs (43 CFR 4180.2) and, if needed, Greater Sage-Grouse habitat maintenance or improvement. If NEPA analysis is required for a specific implementation action, one alternative would include mechanisms to make adjustments to meet or make progress toward meeting the wildlife/special status species standard. The analysis should also identify the BLM-approved data collection methodologies used for monitoring conditions and determining when adjustments are necessary. If current grazing management meets LHSs and provides for Greater Sage-Grouse habitat, there is no need to analyze an alternative for Greater Sage-Grouse. Authorized uses in PHMA that incorporate habitat objectives for Greater Sage-Grouse must develop desired conditions based on Greater Sage-Grouse habitats present in the allotment and the ecological potential of sites which supports these habitats. Metrics used to monitor for objectives must be developed and inform the Wildlife/SSS portion of the Standards for Healthy Rangelands. Within PHMAs, seasonal habitat objectives for Greater Sage-Grouse apply only to those habitats delineated within an allotment during the specific season (e.g., breeding season objectives during breeding season). Data needed to inform the relationship between the authorized use and

Table 2-1
Alternatives Comparison

Topic	Management Decision Or Objective	No Action Alternative	Management Alignment Alternative
			habitat condition would come from sample locations that appropriately reflect the impact of the authorized use on habitat conditions. Data points should fall within Greater Sage-Grouse seasonal habitat areas and be collected on ecological sites that have the potential to produce Greater Sage-Grouse habitat. **Lander RMP:** No similar action.
Permit renewals	**ARMPA:** MD LG 5 **Cody:** Record #6126 **Worland:** Record #6198	**From the ARMPA:** BLM monitoring would be used to evaluate progress toward achieving land health standards within PHMAs and, where not achieved, to determine if existing grazing management practices or levels of grazing use on public lands are significant factors in failing to meet, maintain or make progress towards achieving the standards and conform with the guidelines, which through this process would identify appropriate actions to address non-achievement and non-conformance. Allotments within SFAs, followed by those within PHMAs, and focusing on those containing riparian areas, including wet meadows, would be prioritized for field checks to help ensure compliance with the terms and conditions of the grazing permits. Field checks include monitoring for actual use, utilization, and use supervision. The BLM would prioritize (1) the review of grazing permits/leases, in particular to determine if modification is necessary prior to renewal, and (2) the processing of grazing permits/leases in SFAs followed by PHMAs outside of the SFAs. In setting workload priorities, precedence would be given to existing permits/leases in these areas not meeting Land Health Standards, with focus on those containing riparian areas, including wet meadows. The BLM may use other criteria for prioritization to respond	**For the ARMPA:** The BLM monitoring would be used to evaluate progress toward achieving land health standards within PHMA and, where not achieved, to determine if existing grazing management practices or levels of grazing use on public lands are significant causal factors in failing to achieve, maintain, or make progress toward achieving the standards and conform with the guidelines, which through this process would identify appropriate actions to address non-achievement and non-conformance. The BLM would prioritize (1) the review of grazing permits/leases, in particular to determine if modification is necessary prior to renewal, and (2) the processing of grazing permits/leases in PHMA. In setting workload priorities, precedence would be given to existing permits/leases in these areas not meeting LHSs, with an emphasis on those containing riparian areas, including wet meadows. The BLM may use other criteria for prioritization to respond to urgent natural resource concerns (e.g., fire) and legal obligations. **Buffalo, Cody, Worland, Lander RMPs:** No similar action.

Table 2-1
Alternatives Comparison

Topic	Management Decision Or Objective	No Action Alternative	Management Alignment Alternative
		to urgent natural resource concerns (e.g., fire) and legal obligations. **Buffalo RMP**: No similar action. **Cody RMP, Worland RMP:** The BLM would prioritize (1) the review of grazing permits/leases, in particular to determine if modification is necessary prior to renewal, and (2) the processing of grazing permits/leases in PHMAs. In setting workload priorities, precedence would be given to existing permits/leases in areas not meeting Land Health Standards, with focus on allotments containing riparian areas or wet meadows. The BLM may use other criteria for prioritization to respond to urgent natural resource concerns (e.g., wildfire) and legal obligations. **Lander RMP:** No similar action.	
Range improvement projects	**ARMPA:** MD LG 8	**From the ARMPA:** In GHMAs and PHMAs, existing range improvements (e.g., fences, livestock/wildlife watering facilities) would continue to be evaluated and modified when necessary. The potential risk to Greater Sage-Grouse and its habitats from existing structural range improvements would be evaluated. The potential for modification of those structural range improvements identified as posing a risk would be addressed. Supplements and supplemental feeding would continue to be authorized where appropriate. **Buffalo RMP, Cody RMP, Worland RMP, Lander RMP:** No similar action.	**ARMPA:** In PHMA, existing range improvements (e.g., fences and livestock/wildlife watering facilities) would continue to be evaluated and modified when necessary. Supplements and supplemental feeding would continue to be authorized where appropriate. **Buffalo RMP, Cody RMP, Worland RMP, Lander RMP:** No similar action.
Riparian area management	**ARMPA:** MD LG 10	**From the ARMPA:** Grazing between riparian habitats and upland habitats would be balanced to promote the	**ARMPA:** In PHMA, for riparian and/or wet meadow communities utilized by Greater Sage-Grouse, livestock

Table 2-1
Alternatives Comparison

Topic	Management Decision Or Objective	No Action Alternative	Management Alignment Alternative
		production and availability of beneficial forbs to Greater Sage-Grouse for use during nesting and brood-rearing. Grazing in meadows, mesic habitats, and riparian pastures also would be balanced to promote the production and availability of beneficial grasses and forbs for use during late brood-rearing within PHMAs, while maintaining upland conditions and functions. **Buffalo RMP, Cody RMP, Worland RMP, Lander RMP:** No similar action.	grazing management would be balanced to promote the production and availability of beneficial grasses and forbs for use during late brood-rearing, while maintaining upland conditions and functions. **Buffalo RMP, Cody RMP, Worland RMP, Lander RMP:** No similar action.
Noise			
Noise requirements in PHMA (Please note: These are not stipulations attached to a lease but rather are measures that should be considered at the site-specific analysis level when appropriate).	**ARMPA:** MD SSS 12 **Buffalo:** Record # SS WL-4025 **Cody:** Record #4111 **Worland:** Record #4110 **Lander:** Record #4117	**ARMPA and Worland RMP:** New project noise levels, either individual or cumulative, should not exceed 10 dBA (as measured by L50) above baseline noise at the perimeter of the lek from 6:00 p.m. to 8:00 a.m. during the breeding season (March 1–May 15). Specific noise protocols for measurement and implementation would be developed as additional research and information emerges. **Lander RMP:** Limit noise sources to 10 decibels above ambient noise measured at the perimeter of occupied Greater Sage-Grouse leks from March 1 – May 15, unless scientific findings indicate a different noise level is appropriate. In addition, limit noise sources in other important Greater Sage-Grouse habitats if research and/or policy indicate the need. **Cody RMP:** New project noise levels, either individual or cumulative, should not exceed 10 dBA (as measured by L50) above baseline noise at the perimeter of the lek from 6:00 pm to 6:00 am during the breeding season (March 1 to May 15). Specific noise protocols for measurement and	**Within PHMA (Core) across all RMPs:** New project noise levels, either individual or cumulative, should not exceed 10 dB(A) (as measured by the L50) above baseline noise at the perimeter of a lek from 6:00 p.m. to 8:00 a.m. during the breeding season (March 1–May 15). Specific noise protocols for measurement and stipulations for implementation would be developed as additional research and information emerges.

Table 2-1
Alternatives Comparison

Topic	Management Decision Or Objective	No Action Alternative	Management Alignment Alternative
		implementation would be developed as additional research and information emerges. **From Buffalo RMP:** Inside Greater Sage-Grouse (priority habitat) core population areas and connectivity corridors…New project noise levels, either individual or cumulative, should not exceed 10 dBA (as measured by L50) above baseline noise at the perimeter of the lek from 6:00 pm to 8:00 am during the breeding season (March 1 – May 15). Specific noise protocols for measurement and implementation would be developed as additional research and information emerges.	
Modifying Adaptive Management Strategies			
Adaptive management triggers	**ARMPA:** MD SSS 13 **Buffalo:** Record #SS WL-4010 **Cody:** Record #4116 **Worland:** Record #4115	**Generally, across the ARMPA, Buffalo, Cody, and Worland RMPs:** The Greater Sage-Grouse adaptive management plan provides a means of addressing and responding to unintended negative impacts to Greater Sage-Grouse and its habitat would be addressed before consequences become severe or irreversible…With respect to Greater Sage-Grouse, all regulatory entities in Wyoming, including the BLM, use soft and hard triggers. **Lander RMP:** No similar action.	**Across the ARMPA, Buffalo, Cody, and Worland RMPs:** The Adaptive Management Working Group would define a process to review and reverse adaptive management actions once the identified causal factor is resolved (e.g., returning to previous management once objectives of interim management strategy have been met). **Lander RMP:** No similar action.
Modifying Compensatory Mitigation Strategies			
	ARMPA: MD SSS 4 **Buffalo RMP:** Page 339	**From the ARMPA, Buffalo RMP, Cody RMP, and Worland RMP:** In undertaking BLM management actions, and, consistent with valid existing rights and applicable law, in authorizing third-party actions that result in habitat loss and degradation in PHMAs, the BLM would require and ensure mitigation that provides a net conservation gain to the species including any accounting for any uncertainty	**Within PHMA across all RMPs:** Adopt the State of Wyoming's Greater Sage-Grouse Compensatory Mitigation Framework to the extent consistent with federal law, regulations, and policy. The BLM would follow the NEPA process in determining appropriate avoidance, minimization, and other mitigation measures in accordance with the CEQ mitigation

Table 2-1
Alternatives Comparison

Topic	Management Decision Or Objective	No Action Alternative	Management Alignment Alternative
		associated with the effectiveness of such mitigation. This would be achieved by avoiding, minimizing, and compensating for impacts by applying beneficial mitigation actions…The BLM would implement actions to achieve the goal of net conservation gain consistent with the Wyoming Strategy (EO 2015-4) that includes "compensatory mitigation as a strategy that should be used when avoidance and minimization are inadequate to protect Core Population Area Greater Sage-Grouse." **Lander RMP:** No similar action.	hierarchy as appropriate at the site-specific project level and would defer to the State of Wyoming regarding the applicability, and, if deemed applicable, the determination of compensatory mitigation. Remove the phrase "net conservation gain" from all management actions across all RMPs.
Recreation facilities and net conservation gain		**From the ARMPA, Buffalo RMP, Cody RMP, and Worland RMP:** Construction of recreation facilities within PHMAs must conform with the avoidance and minimization measures of this plan. If it is determined that these conservation measures are inadequate for the conservation of Greater Sage-Grouse, the BLM would require and ensure compensatory mitigation that provides a net conservation gain to the species. **Lander RMP:** No similar action.	**ARMPA, Buffalo RMP, Cody RMP, and Worland RMP**: Construction of recreation facilities within PHMAs would conform with the avoidance and minimization measures of this plan. If it is determined that these conservation measures are inadequate for the conservation of Greater Sage-Grouse, the BLM would defer to the State of Wyoming's Greater Sage-Grouse Compensatory mitigation framework for application of compensatory mitigation to the extent consistent with federal law, policy, and regulations. The BLM would follow the NEPA process in determining appropriate avoidance, minimization, and other mitigation measures as appropriate at the site-specific project level and would defer to the State of Wyoming regarding the applicability and, if deemed applicable, the determination of compensatory mitigation. **Lander RMP:** No similar action.
Fluid Mineral Leasing			
Prioritization of leasing	**ARMPA:** Management Objective 14	**From the ARMPA:** Priority would be given to leasing and development of fluid mineral resources, including geothermal, outside of PHMAs and GHMAs. When	**For the ARMPA:** To the extent consistent with federal regulation, law, and policy, priority would be given to leasing and development of fluid mineral resources, including

Table 2-1
Alternatives Comparison

Topic	Management Decision Or Objective	No Action Alternative	Management Alignment Alternative
		analyzing leasing and authorizing development of fluid mineral resources, including geothermal, in PHMAs and GHMAs, and subject to applicable stipulations for the conservation of Greater Sage-Grouse, priority would be given to development in non-habitat areas first and then in the least suitable habitat for Greater Sage-Grouse. The implementation of these priorities would be subject to valid existing rights and any applicable law or regulation, including, but not limited to, 30 USC 226(p) and 43 CFR 3162.3-1(h). Where a proposed fluid mineral development project on an existing lease could adversely affect Greater Sage-Grouse populations or habitat, the BLM would work with the lessees, operators, or other project proponents to avoid, reduce and mitigate adverse impacts to the extent compatible with lessees' rights to drill and produce fluid mineral resources. The BLM would work with the lessee, operator, or project proponent in developing an application for permit to drill (APD) for the lease to avoid and minimize impacts to Greater Sage-Grouse or its habitat and would ensure that the best information about the Greater Sage-Grouse and its habitat informs and helps to guide development of such federal leases. **Buffalo, Cody, Worland, Lander RMPs:** No similar action.	geothermal, outside of PHMA. Leasing is allowed in PHMA. When analyzing leasing and authorizing development of fluid mineral resources, including geothermal, in PHMA, and subject to applicable stipulations for the conservation of Greater Sage-Grouse, priority would be given to development in non-habitat areas first and then in the least suitable habitat for Greater Sage-Grouse. The implementation of these priorities would be subject to valid existing rights and any applicable law or regulation, including, but not limited to, 30 USC 226(p) and 43 CFR 3162.3-1(h). Where a proposed fluid mineral development project on an existing lease could adversely affect Greater Sage-Grouse populations or habitat, the BLM would work with the lessees, operators, or other project proponents to avoid, reduce and mitigate adverse impacts to the extent compatible with lessees' rights to drill and produce fluid mineral resources. To incentivize development to locate outside of PHMA, the BLM would work with the lessee, operator, or project proponent in developing an application for permit to drill (APD) for the lease to avoid and minimize impacts to Greater Sage-Grouse habitat and would ensure that the best information about the Greater Sage-Grouse habitat informs and helps to guide development of such federal leases. **Buffalo, Cody, Worland, Lander RMPs:** No similar action.

Notes:
MD: Management Decision
RMP: Resource Management Plan
ARMPA: Approved Resource Management Plan Amendment
LG: Livestock Grazing
SSS: Special Status Species

2.5 PREFERRED ALTERNATIVE

BLM regulations require the agency to identify a preferred alternative in the Draft RMPA/EIS (43 CFR 1610.4-7). The preferred alternative represents those goals, objectives, and actions determined to be most effective at resolving planning issues and balancing resource use at this stage of the process. While collaboration is critical in developing and evaluating alternatives, the final designation of a preferred alternative remains the responsibility of the lead agency, which is the BLM for this project. The BLM has identified the Management Alignment Alternative as the preferred alternative.

It is important to note that the identification of a preferred alternative does not constitute a final decision, and there is no requirement that the preferred alternative identified in this Draft RMPA/EIS be selected as the agency's decision in the ROD. Various parts of separate alternatives that are analyzed in this Draft RMPA/EIS can be "mixed and matched" to develop a proposed plan. With respect to compensatory mitigation in particular, at the request of the State, the Management Alignment Alternative in this Draft RMPA/EIS proposes a change to compensatory mitigation by modifying the net conservation gain standard that the BLM incorporated into its plans in 2015. The DOI and the BLM have also modified their mitigation policies since the 2015 plans were finalized. The public did not have the opportunity to comment specifically on a net conservation gain approach to compensatory mitigation during the 2015 land use planning process. In addition, the DOI and the BLM are evaluating whether the implementation of a compensatory mitigation standard on public lands is appropriate and consistent with applicable legal authorities. We request public comment about how the BLM should consider and implement mitigation with respect to the Greater Sage-Grouse, including alternative approaches to requiring compensatory mitigation in BLM land use plans.

2.6 MONITORING AND ADAPTIVE MANAGEMENT

Plan evaluation is the process by which the plan and monitoring data are reviewed to determine if management goals and objectives are being met and if management direction is sound. Land use plan evaluations determine if decisions are being implemented, if mitigation measures are satisfactory, if there are significant changes in the related plans of other entities, if there is new data of significance to the plan, and if decisions should be amended or revised.

Chapter 1, **Section 1.3**, Planning Area and Current Management, describes the decision area as those lands allocated as PHMA and GHMA and includes a definition of PHMA and GHMA. During plan evaluation, areas designated as PHMA and GHMA can be modified, based on an adaptive management process, including an evaluation of data by Wyoming Game and Fish Department (WGFD), in consultation with BLM management, as described in Appendix H (Guidelines for Implementation and Adaptive Management) of the 2015 ROD/ARMPA.

Monitoring data gathered over time are examined and used to draw conclusions on whether management actions are meeting stated objectives, and if not, why not. Conclusions are then used to make recommendations on whether to continue current management or to identify what changes need to be made in management practices to meet objectives. The BLM will use land use plan evaluations to determine if the decisions in the 2015 ROD/ARMPA, supported by the accompanying NEPA analysis, are still valid in light of new information and monitoring data. Evaluations would follow the protocols established by the BLM Land Use Planning Handbook (H-1601-1) or other appropriate guidance in effect at the time the evaluation is initiated.

The 2015 ROD/ARMPA also includes an adaptive management strategy with soft and hard triggers and responses. These triggers are not specific to any particular project but identify habitat and population factors. Soft triggers indicate that management changes may be needed at the implementation level to address habitat or population losses. If a soft trigger were tripped during the life of the plans, the BLM's response may be to apply more conservative or restrictive conservation measures or to identify habitat improvement projects to mitigate for the specific cause in the decline of populations or habitats, with consideration of local knowledge and conditions.

These adjustments would be made to preclude tripping a hard trigger, which signals more severe habitat loss or population declines. Hard triggers represent a threshold indicating that immediate action is necessary to stop a severe deviation from Greater Sage-Grouse conservation objectives set forth in the ARMPA. In the event that new scientific information becomes available demonstrating that the response to the hard trigger would be insufficient to stop a severe deviation from Greater Sage-Grouse conservation objectives set forth in the ARMPA, the BLM would implement interim management direction to ensure that conservation options are not foreclosed. The BLM would also undertake any appropriate plan amendments or revisions if necessary. More information regarding the ARMPA's adaptive management strategy can be found in Appendix H of the ARMPA.

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Chapter 3. Affected Environment

3.1 INTRODUCTION

The purpose of this chapter is to describe the existing biological, physical, and socioeconomic characteristics of the planning area, including human uses that could be affected by implementing the alternatives described in **Chapter 2**. The affected environment provides the context for assessing potential impacts described in **Chapter 4**. The resource topics included in this chapter reflect those that are identified in **Table 1-2** as corresponding to an issue carried forward for detailed analysis in this RMPA/EIS.

The geographic extent of this environmental analysis is the same as that in the 2015 Final EIS for Greater Sage-Grouse and the Lander RMP Revision, Buffalo RMPA Revision, and Bighorn (Cody and Worland Field Offices) RMP Revisions, combined; therefore, the analyses from those documents have been incorporated by reference in this document.

While the BLM acknowledges that there have been changes to the landscape since 2015, due to the scale of this analysis, covering approximately 17 million acres of BLM-administered lands and approximately 28 million acres of federal mineral estate, data collected consistently across the range indicate that the extent of these changes to the landscape are relatively minimal. For example, BLM monitoring data collected and analyzed annually at the biologically significant unit (BSU) scale, as outlined in the Greater Sage-Grouse Monitoring Framework (Appendix D of the 2015 ROD/ARMPA, BFO RMP Revision, and Bighorn RMP Revision; and Appendix N of the Lander RMP Revision) indicates that there has been a minimal overall increase in estimated disturbance (less than 1 percent range-wide from 2015 through 2017) within PHMA. Moreover, there has been an overall decrease in sagebrush availability (less than 1 percent range-wide from 2012 through 2015) in PHMA within BSUs. Based on available information, including the US Geological Survey (USGS) reports described below, the BLM has concluded that the existing condition is not substantially different from that which existed in 2015; therefore, the data and information presented in the 2014 and 2015 Final EISs are incorporated by reference into this RMPA/EIS. Where notable changes to the baseline condition have changed, a discussion is included.

Based on available information, including the USGS reports described below, the BLM has concluded that the existing condition is not substantially different from that of 2015; therefore, the data and information presented in the 2014 and 2015 Final EISs are incorporated into this RMPA/EIS. Actions that have been authorized since the 2015 plans are consistent with the 2015 Final ARMPA EIS and each of the Lander RMP Revision, Buffalo RMPA Revision, and Bighorn (Cody and Worland Field Offices) RMP Revisions.

Acreage figures and other numbers are approximated using geographic information systems (GIS) technology and do not reflect exact measurements or precise calculations.

USGS Reports

As part of the consideration of whether to amend some, all, or none of the 2015 Greater Sage-Grouse land use plans, the BLM requested the USGS to develop an annotated bibliography of Greater Sage-

Grouse science published since January 2015 (Carter et al. 2018) and a report that synthesizes and outlines the potential management implications of this new science (Hanser et al. 2018).

Following the 2015 plans, the scientific community has continued to improve the knowledge available to inform management actions and an overall understanding of Greater Sage-Grouse populations, habitat requirements, and their response to human activity.

The review discussed the science related to six major topics identified by the USGS and BLM, as follows:

- Multiscale habitat suitability and mapping tools
- Discrete human activities
- Diffuse activities
- Fire and invasive species
- Restoration effectiveness
- Population estimation and genetics

Multiscale Habitat Suitability and Mapping Tools

The science developed since 2015 corroborates previous knowledge about Greater Sage-Grouse habitat selection. Advances in modeling and mapping techniques at the landscape scale can help inform allocations and targeting of land management resources to benefit Greater Sage-Grouse conservation. Similar improvements at the site scale facilitate a better understanding of the importance of grass height to nest success, which indicates the potential need for a reevaluation of the existing habitat objectives. (Hanser et al. 2018, p. 2)

The BLM has completed a plan maintenance action, whereby the agency has clarified its ability to modify the habitat objective indicator values based upon local, site-specific information.

Discrete Human Activities

The science developed since 2015 corroborates prior knowledge about the impact of discrete human activities on Greater Sage-Grouse. New science suggests that strategies to limit surface disturbance may be successful at limiting range-wide population declines; however, it is not expected to reverse the declines, particularly in areas of active oil and gas operations (Hanser et al. 2018, p. 2). This information may have relevance when considering the impact of changes on management actions designed to limit discrete disturbances.

Diffuse Activities

The science developed since 2015 does not appreciably change prior knowledge about diffuse activities, such as livestock grazing, predation, hunting, wild horses and burros, fences, recreation, and noise; however, some study authors questioned current assumptions, provided refinements, or corroborated existing understanding.

Studies have shown that the impacts of livestock grazing vary with grazing intensity and season. Predation from ravens can limit Greater Sage-Grouse populations in areas with overabundant predator numbers or degraded habitats. Applying predator control has potential short-term benefits in small, declining populations; however, reducing human subsidies may be necessary to generate long-term

changes in raven numbers. This is because raven control has produced only short-term declines in local raven populations.

Refinements to the current hunting seasons used by State of Wyoming wildlife agencies may minimize potential impacts on Greater Sage-Grouse populations; however, none of the studies singled out current application of hunting seasons and timings as a plausible cause for Greater Sage-Grouse declines.

Finally, no new insights into the impacts of wild horses and burros, fence collision, recreation, or noise on Greater Sage-Grouse have been developed (Hanser et al. 2018, p. 2).

This information was considered when determining the scoping issues addressed in **Chapter 1**, **Section 1.5**.

Fire and Invasive Species

Science since 2015 indicates that wildfire will continue to threaten Greater Sage-Grouse through loss of available habitat, reductions in multiple vital rates, and declining population trends, especially in the western part of its range. The concepts of resilience after wildfire and resistance to invasion by nonnative annual grasses have been mapped across the sagebrush ecosystem. These concepts inform restoration and management strategies and help prioritize application of Greater Sage-Grouse management resources (Hanser et al. 2018, p. 2).

Restoration Effectiveness

Since 2015, tools have been developed to help managers strategically place and design restoration treatments where they will have the greatest benefit for Greater Sage-Grouse. Studies (Hanser et al. 2018, p. 3) indicate that Greater Sage-Grouse populations did not benefit from, or were negatively affected by, prescribed fire and mechanical sagebrush removal.

Restoration activities occur mainly at the implementation level, and the BLM maintains the flexibility to incorporate new tools in the agency's project planning for restoration actions.

Population Estimation and Genetics

The accuracy of estimating Greater Sage-Grouse populations has increased. This is because of improved sampling procedures used to complete count surveys at leks and the development of correction factors for potential bias in lek count data. In addition, techniques have improved to map Greater Sage-Grouse genetic structure at multiple spatial scales. These genetic data are used in statistical models to increase understanding of how landscape features and configuration affect gene flow. This understanding emphasizes the importance of maintaining connectivity between populations to ensure genetic diversity and distribution (Hanser et al. 2018, p. 3).

New information continues to reaffirm the BLM's understanding that Greater Sage-Grouse is a species that selects for large, intact landscapes and habitat patches.

3.2 RESOURCES AFFECTED

In accordance with **Chapter 1**, **Section 1.5**, the following resources may have potentially significant impacts based, on the actions considered in **Chapter 2**.

Table 3-1, below, provides the location of baseline information in the 2015 Final EIS, the Final EISs for Lander, Buffalo, and the Bighorn Basin (Cody and Worland Field Offices), as well as the 2016 draft EIS for Sagebrush Focal Area Withdrawal.

Table 3-1
Affected Environment Incorporated by Reference

Resource Topic		Location of Baseline Information
Greater Sage-Grouse	ARMPA	Chapter 3, Section 3.14.1 (Special Status Species), pages 3-238 to 3-243 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.4.9 (Special Status Species), pages 3-125 to 3-129 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.3 (Special Status Species), pages 507-512 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.3 (Special Status Species), page 416-418 (BLM 2014)
	Additional information regarding Greater Sage-Grouse is included in **Section 3.3** of this chapter.	
Air Quality	ARMPA	Chapter 3, Section 3.2, pages 3-1 to 3-18 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.1.1, page 3-4 to 3-28 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.1.1, pages 283-324 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.1.1, pages 269-288 (BLM 2014)
Soil Resources	ARMPA	Chapter 3, Section 3.12.1, pages 3-180 to 3-190 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.1.3, pages 3-32 to 3-35 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.1.3, pages 329-333 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.1.3, pages 292-297 (BLM 2014)
Water Resources	ARMPA	Chapter 3, Section 3.18.1, pages 3-419 to 3-436 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.1.4, pages 3-36 to 3-45 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.1.4, pages 333-378 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.1.4, pages 297-316 (BLM 2014)
Vegetation (including Noxious Weeds; Riparian and Wetlands)	ARMPA	Chapter 3, Section 3.16.1, pages 3-360 to 3-380 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.4.1, 3.4.2, 3.4.3, and 3.4.4, pages 3-85 to 3-102 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.4.1, 3.4.2, 3.4.3, and 3.4.4, pages 434-456 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.4.1, 3.4.2, 3.4.3, and 3.4.4, pages 374-392 (BLM 2014)
Other Special Status Species	ARMPA	Chapter 3, Section 3.14.1, pages 3-234 to 3-298 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.4.7, 3.4.8, and 3.4.9, pages 3-118 to 3-133 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.4.7, 3.4.8, and 3.4.9, pages 496-530 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.4.7, 3.4.8, and 3.4.9, pages 408-422 (BLM 2014)

Table 3-1
Affected Environment Incorporated by Reference

Resource Topic	Location of Baseline Information	
Fish and Wildlife	ARMPA	Chapter 3, Section 3.21.1, pages 3-466 to 3-507 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.4.5 and 3.4.6, pages 3-103 to 3-117 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.4.5 and 3.4.6, page 456-496 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.4.5 and 3.4.6, pages 392-408 (BLM 2014)
Wild Horse and Burros	ARMPA	Chapter 3, Section 3.19.1, pages 3-445 to 3-451 (BLM 2015a).
	Bighorn RMP Revision	Chapter 3, Section 3.4.10, pages 3-133 to 3-139 (BLM 2015b).
	Buffalo RMP Revision	No Wild Horses and Burros present in the Buffalo Field Office.
	Lander RMP Revision	Chapter 3, Section 3.4.10, pages 422-427 (BLM 2014).
Cultural Resources	ARMPA	Chapter 3, Section 3.3.1, pages 3-19 to 3-36 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.5.1, pages 3-140 to 3-150 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.5.1, pages 530-546 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.5.1, pages 427-447 (BLM 2014)
Paleontological Resources	ARMPA	Chapter 3, Section 3.9.1, pages 3-143 to 3-149 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.5.2, pages 3-150 to 3-154 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.5.2, pages 547-552 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.5.2, pages 447-451 (BLM 2014)
Visual Resources	ARMPA	Chapter 3, Section 3.17.1, pages 3-407 to 3-414 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.5.3, pages 3-155 to 3-160 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.5.3, pages 552-558 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.5.3, pages 451-457 (BLM 2014)
Fire and Fuels Management	ARMPA	Chapter 3, Section 3.20.1, pages 3-453 to 3-462 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.3 pages 3-75 to 3-81 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.3, pages 424-433 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.3, page 356-369 (BLM 2014)
Lands with Wilderness Characteristics	ARMPA	Chapter 3, Section 3.6.1, pages 3-71 to 3-73 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.6.6, pages 3-190 to 3-199 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.6.7, pages 585-588 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.1.6, pages 317-322 (BLM 2014)

Table 3-1
Affected Environment Incorporated by Reference

Resource Topic		Location of Baseline Information
Special Designations	ARMPA	Chapter 3, Section 3.13.1, pages 3-194 to 3-220 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.7, pages 3-205 to 3-231 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.7, pages 594-607 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.7, pages 496-527 (BLM 2014)
Livestock Grazing/Range Management	ARMPA	Chapter 3, Section 3.7.1, pages 3-74 to 3-83 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.6.7, pages 3-199 to 3-204 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.6.8, pages 588-594 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.6.5, pages 479-487 (BLM 2014)
Recreation	ARMPA	Chapter 3, Section 3.10.1, pages 3-153 to 3-159 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.6.5, pages 3-184 to 3-190 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.6.6, pages 576-585 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.6.6, pages 487-496 (BLM 2014)
Comprehensive Travel and Transportation Management	ARMPA	Chapter 3, Section 3.15.1, pages 3-340 to 3-351 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.6.4, pages 3-176 to 3-184 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.6.5, pages 571-575 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.6.4, pages 473-479 (BLM 2014)
Lands and Realty	ARMPA	Chapter 3, Section 3.5.1, pages 3-50 to 3-63 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.6.1, pages 3-161 to 3-169 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.6.2, pages 561-567 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.6.1, pages 457-465 (BLM 2014)
Renewable Energy	ARMPA	Chapter 3, Section 3.5.1, pages 3-50 to 3-63 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.6.2, pages 3-170 to 3-174 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.6.3, pages 568-569 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.6.2, pages 465-469 (BLM 2014)

Table 3-1
Affected Environment Incorporated by Reference

Resource Topic		Location of Baseline Information
Leasable Minerals (Oil and Gas, Nonenergy Leasable Minerals, and Coal)	ARMPA	Chapter 3, Section 3.8.1, pages 3-97 to 3-133 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.2.2 (coal), pages 3-50 (BLM 2015b) Chapter 3, Section 3.2.5 (oil and gas), pages 3-53 to 3-69 (BLM 2015b) Chapter 3, Section 3.2.6 (Other Leasable Solid Minerals), pages 3-69 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.2.2 (coal), pages 398-410 (BLM 2015c) Chapter 3, Section 3.2.3 (fluids), pages 410-415 (BLM 2015c) Chapter 3, Section 3.2.4 (Other Leasable Solid Minerals), page 416 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.2.2 (coal), pages 332 (BLM 2014) Chapter 3, Section 3.2.4 (oil and gas), pages 334-350 (BLM 2014) Chapter 3, Section 3.2.6 (Other Leasable Solid Minerals), pages 350-352 (BLM 2014)
Locatable Minerals	ARMPA	Chapter 3, Section 3.8.1, pages 3-97 to 3-133 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.2.1, pages 3-47 to 3-49 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.2.1, pages 383-398 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.2.1, pages 322-332 (BLM 2014)
	Sagebrush Focal Area Withdrawal EIS	Chapter 3, Section 3.4 (Geology and Mineral Resources), page 3-7; and Chapter 2, Section 2.3.1 (No Action Alternative), page 2-4 (BLM 2016)
Salable Minerals	ARMPA	Chapter 3, Section 3.8.1, pages 3-97 to 3-133 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.2.7, pages 3-70 to 3-74 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.2.5, pages 417-423 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.2.7, pages 352-356 (BLM 2014)
Social and Economic Conditions	ARMPA	Chapter 3, Section 3.11 (Social and Economic Conditions (Including Environmental Justice)), pages 3-170 to 3-179 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.8 (Social and Economic Conditions (Including Environmental Justice)), pages 3-232 to 3-289 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.8 (Social and Economic Conditions (Including Environmental Justice)), pages 607-638 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.8 (Social and Economic Conditions (Including Environmental Justice)), pages 527-584 (BLM 2014)
Tribal Interests	ARMPA	Chapter 3, Section 3.3.1, pages 3-19 to 3-36 (BLM 2015a)
	Bighorn RMP Revision	Chapter 3, Section 3.8.5, page 3-291 (BLM 2015b)
	Buffalo RMP Revision	Chapter 3, Section 3.8.5, page 639 (BLM 2015c)
	Lander RMP Revision	Chapter 3, Section 3.8.5, page 584-585 (BLM 2014)

3.3 GREATER SAGE-GROUSE

The existing condition of Greater Sage-Grouse in the planning area is described in the 2015 ARMPA Final EIS in Section 3.14.1 and in the Buffalo, Bighorn and Lander RMP Revisions in Section 3.4.9. Since 2015, the State of Wyoming issued Governor's Executive Orders (EOs) 2015-4 and 2017-2, replacing the previous EO 2011-5 and EO 2013-3. Most notable in these EO changes is an adjustment of core area boundaries.

Additionally, the following changes were made within EO 2015-4:

- The Sage-Grouse Implementation Team (SGIT) was designated to serve as the oversight team in implementing the EO and is composed of representatives from the BLM and the State of Wyoming. The Wyoming Legislature established the SGIT as a statutory body (W. S. § 9-19-101) to provide recommendations regarding regulatory actions necessary to maintain and enhance Greater Sage-Grouse populations and habitats in Wyoming.
- The State of Wyoming Greater Sage-Grouse Compensatory Mitigation Framework was added as Appendix H to this EO.

The following provisions in EO 2017-2 were carried forward from prior EOs:

- All State agencies shall strive to maintain consistency by following the procedures outlined in the Executive Order, while recognizing that adjustments to the stipulations may be necessary based upon local conditions, opportunities, and limitations. The goal is to minimize future disturbance by co-locating proposed disturbances within areas that are already disturbed or naturally unsuitable.
- Consider incentivizing and prioritizing projects outside of core areas and streamlining permitting processes.
- Direction for the State of Wyoming to work with federal, state, county, private, and nongovernmental organization partners to collect data to determine the condition of each core population area in relationship to the goals of the Wyoming Greater Sage-Grouse core area protection strategy.
- The State of Wyoming commits to continue to monitor and document Greater Sage-Grouse populations and development activities to ensure that permitted activities under this authority do not result in negative impacts on Greater Sage-Grouse outside cyclical trends.

The BLM incorporated all of the above changes in EO 2015-4, with the exception of the revised core area boundaries.

EO 2017-2 supplemented EO 2015-2, Attachment F:

- Definition of suitable habitat for "riparian, wet meadow (native or introduced) or areas of alfalfa or other suitable forbs (brood rearing habitat) within 275 meters of sagebrush habitat with 5% or greater sagebrush canopy cover (for roosting/loafing)" to include areas of these habitats farther than 275 meters from sagebrush, where it has been proven through pellet counts, documented sightings, or other defensible proof that Greater Sage-Grouse use the area.
- Include the following definition for wetlands and irrigated riparian meadows: Wetlands and irrigated riparian meadows are natural and man-made wetlands and historically (pre-August 1,

2008) irrigated areas in stream and river valleys. Wetlands and irrigated riparian meadows are considered suitable habitat for the density/disturbance calculation tool purposes. Wetlands and irrigated riparian meadows may be considered suitable habitat for conservation credit purposes if they meet the definition of suitable habitat in Attachment F of EO 2015-4, as supplemented above.

3.3.1 Changes Based on Threats

Wildland Fire

The wildland fire threat was discussed in the 2015 ARMPA Final EIS (Section 3.20.1) and in the Buffalo, Bighorn Basin (Cody and Worland Field Offices), and Lander RMP Final EISs (Section 3.3.1). From 2015 to 2017 there have been 422 wildfires that were 10 acres or greater within the analysis area. These wildfires burned approximately 137,085 acres of Greater Sage-Grouse habitat management areas (approximately 51,577 acres in PHMA and approximately 85,508 in GHMA, as calculated by the BLM's fire and vegetation mapping databases in 2018). Since that time, approximately 96,309 acres of Greater Sage-Grouse habitat management areas (about 38,709 acres in PHMA and about 57,600 acres of GHMA) have been treated to improve habitat for the species. Since the 2015 ARMPA Final EIS and Buffalo, Bighorn, and Lander RMP Revisions, more habitat has been lost to wildfire than has been gained through treatment.

Loss and Fragmentation of Sagebrush Habitats

The habitat loss and fragmentation threat was discussed in the 2015 ARMPA Final EIS (Section 3.14.1) and in the Buffalo, Bighorn, and Lander RMP Revisions (Section 3.4.9). From 2015 to 2017, 20,865 acres of Greater Sage-Grouse habitat has been lost or disturbed by fire, renewable and non-renewable energy developments, conversion for agriculture, urban developments, and vegetation treatments. Due to the State of Wyoming redefining suitable habitat as outlined in EO 2017-2 (see above), approximately 85,000 acres of previously designated unsuitable habitat is now considered suitable for the State of Wyoming's density and disturbance calculation tool.

Adaptive Management Triggers

Due to a large wildfire in the summer of 2017, the Buffalo Connectivity Area experienced habitat loss outside the normal trends in a given year. This fire bisected the connectivity area. It is unknown at this time if this fire will strain the genetic connectivity between the Buffalo Core Population of Greater Sage-Grouse and the populations in southern Montana. The BLM, in coordination with the Adaptive Management Working Group, would implement an appropriate response strategy to address the causal factor, as directed by the adaptive management frameworks in the respective RMPs.

Priority Habitat Management Area Adjustment

Wyoming's Core Area boundaries were reevaluated by the State of Wyoming in late 2015, and they now differ from the habitat management areas analyzed in the 2015 Final EIS for the RMPA and the Final EISs for the Lander, Buffalo, and Bighorn Basin areas.

Wyoming's 2011 core population areas were analyzed in the 2015 Final ARMPA EIS and the Lander RMP, Buffalo RMPA Revision, and Bighorn (Cody and Worland Field Offices) RMP Revisions. These amendments and revisions, except Lander, incorporated these 2011 core population areas as PHMA; the Lander RMP revision incorporated them as core areas.

In early 2015, the State of Wyoming used a similar process as when the core population areas were initially designated to update the core population area boundaries (SGEO 2015-4, Attachment A). The 2015 effort centered around making modifications to reassess areas that may not support habitats essential for Greater Sage-Grouse, areas that were considered disturbed but may be transitional or non-habitat, and areas that have experienced a decline in human activity and are being reoccupied by Greater Sage-Grouse. The SGIT then used these data, along with public input, to delineate the current core population areas.

The resulting net changes were adopted by the Wyoming Governor in EO 2015-4. BLM Wyoming incorporated these changes into the 2015 Final ARMPA EIS and the Lander RMP Revision, Buffalo RMPA Revision, and Bighorn (Cody and Worland Field Offices) RMP Revisions with Maintenance Action DOI-BLM-WY-0000-2018-0001-CX. The changes resulted in a net addition of 143,892 acres of PHMA.

State of Wyoming Greater Sage-Grouse Compensatory Mitigation Framework

The State of Wyoming added a Greater Sage-Grouse compensatory mitigation framework (framework) as an attachment to EO 2015-4. In this framework, the State recognized compensatory mitigation as a strategy that should be used when avoidance and minimization are inadequate to protect core population area Greater Sage-Grouse and/or occupied non-core area leks.

The primary emphasis of the Wyoming Greater Sage-Grouse core area population strategy is to avoid and minimize impacts on the species first. Since the inception of Wyoming's strategy, those efforts have been employed across the state and have been effective in avoiding and reducing impacts on and threats to the species; however, there are cases when avoidance and minimization still do not meet the EO 2015-4 thresholds, primarily due to preexisting disturbance. In those cases, where projects cannot be denied due to valid rights and where avoidance and minimization does not adequately address impacts on Greater Sage-Grouse, compensatory mitigation may be an appropriate method to ensure maintenance and enhancement of the species and its required habitats. The Wyoming Greater Sage-Grouse Compensatory Mitigation framework is based upon biological, legal, and policy requirements for mitigation, including the debit and/or credit principles of replacement, landscape support and vulnerability, durability of mitigation measures, indirect effects from activities, additionality, and timeliness.

Chapter 4. Environmental Consequences

4.1 Introduction

This chapter presents the anticipated direct, indirect, and cumulative impacts on the human and natural environment from implementing the alternatives in **Chapter 2**. The purpose of this chapter is to describe to the decision-maker and the public how the environment could change if either of the alternatives were implemented. It is meant to aid in the decision of which LUPA, if any, to adopt.

This chapter is organized by topic, based on the affected resources identified in **Chapters 1** and **3**. Only those issues listed in **Table 1-2** were carried forward for analysis.

Impact analysis is a cause-and-effect process. The detailed impact analyses and conclusions are based on the following:

- The BLM planning team's knowledge of resources and the project area
- Literature reviews
- Information provided by experts in the BLM, other agencies, cooperating agencies, interest groups, and concerned citizens

The baseline used for the impact analysis is the current condition or situation, as described in **Chapter 3**. Impacts on resources and resource uses are analyzed and discussed in detail, commensurate with resource issues and concerns identified through the process. At times, impacts are described in qualitative terms or using ranges of potential impacts.

4.2 Analytical Assumptions

Several overarching assumptions have been made in order to facilitate the analysis of the project impacts. These assumptions set guidelines and provide reasonably foreseeable projected levels of development that would occur in the planning area during the planning period. These assumptions should not be interpreted as constraining or redefining the management objectives and actions proposed for each alternative, as described in **Chapter 2**.

The following general assumptions apply to all resource categories; any specific resource assumptions are provided in the methods of analysis section for that resource:

- Sufficient funding and personnel would be available for implementing the final decision.
- Implementation-level actions necessary to execute the LUP-level decisions in this RMPA/EIS would be subject to further environmental review, including that under NEPA.
- Direct and indirect impacts of implementing the RMPA/EIS would primarily occur on public lands administered by the BLM in the planning area.
- The BLM would carry out appropriate maintenance for the functional capability of all developments.

- The discussion of impacts is based on best available data. Knowledge of the planning area and decision area and professional judgment, based on observation and analysis of conditions and responses in similar areas, are used for environmental impacts where data are limited.
- Restrictions (such as siting, design, and mitigation measures) would apply, where appropriate, to surface-disturbing activities associated with land use authorizations and permits issued on BLM-administered lands and federal mineral estate.

4.3 GENERAL METHOD FOR ANALYZING IMPACTS

Potential impacts are described in terms of type, context, duration, and intensity, which are generally defined below.

Type of impact—Impacts are characterized using the indicators described at the beginning of each resource impact section. The presentation of impacts for key planning issues is intended to provide the BLM decision-maker and reader with an understanding of the multiple use trade-offs associated with each alternative.

Context—This describes the area or site-specific, local, planning area-wide, or regional location where the impact would occur. Site-specific impacts would occur at the location of the action; local impacts would occur in the general vicinity of the action area; planning area-wide impacts would affect a greater portion of decision area lands in Wyoming; and regional impacts would extend beyond the planning area boundaries.

Duration—This describes the duration of an impact, either short term or long term. Unless otherwise noted, short-term is defined as anticipated to begin and end within the first 5 years after the action is implemented; long-term is defined as lasting beyond 5 years to the end of or beyond the life of this RMPA/EIS.

Intensity—Rather than categorize impacts by intensity (e.g., major, moderate, or minor), this analysis discusses impacts using quantitative data wherever possible.

Direct and indirect impacts—Direct impacts are caused by an action or implementation of an alternative and occur at the same time and place; indirect impacts result from implementing an action or alternative but usually occur later in time or are removed in distance and are reasonably certain to occur.

For ease of reading, the impacts of the management actions for a particular alternative on a specific resource are generally compared with the status quo or baseline for that resource; however, in order to properly and meaningfully evaluate the impacts under each alternative, its expected impacts should be measured against those projected to occur under the No-Action Alternative. This alternative is the baseline for comparing the alternatives with one another. This is because it represents what is anticipated to occur should the RMPA/EIS not take place.

Irreversible and irretrievable commitment of resources are discussed in **Section 4.6**. Irreversible commitments of resources result from actions in which resources are considered permanently changed; irretrievable commitments of resources result from actions in which resources are considered permanently lost.

Impacts from No-Action

The impacts of the No-Action Alternative, or current management, of this RMPA were analyzed as Alternative E in the 2015 Final EIS and Alternative D in each of the Final EISs for the Lander, Buffalo, and Bighorn Basin (Cody and Worland Field Offices). The BLM has reviewed new information to verify that the analysis in the 2015 Final EIS remains sound; therefore, impacts from implementing the No-Action Alternative are substantially the same as those analyzed the 2015 Final EIS and each of the Lander RMP Revision, Buffalo RMPA Revision, and Bighorn (Cody and Worland Field Offices) RMP Revisions.

Table 4-1 below shows where analysis of impacts of the No-Action Alternative can be found.

Table 4-1
Environmental Consequences for the No-Action Alternative Incorporated by Reference

Decision Topic	Related Resource Topic	Location in 2015 Final EIS
Modifying habitat boundaries	Greater Sage-Grouse	ARMPA: Chapter 4, Special Status Species Section 4.14.7 (Greater Sage-Grouse Proposed Land Use Plan Amendments), pages 4-340 to 4-346
		Bighorn: Chapter 4, Special Status Species – Wildlife Section 4.4.9.3 (Detailed Analysis of Alternatives), page 4-292
		Buffalo: Chapter 4, Special Status Species – Wildlife (including Greater Sage-grouse) Section 4.4.9.6 (Alternative D), pages 1271-1283
		Lander: Chapter 4, Special Status Species – Wildlife Section 4.4.9.6 (Detailed Analysis of Alternatives), pages 924-971
	Air Quality	ARMPA: Chapter 4, Air Quality Section 4.2 pages 4-7 to 4-57
		Bighorn: Chapter 4, Air Quality Section 4.1.1.3 (Detailed Analysis of Alternatives for Criteria Pollutants), pages 4-21 and 4-27
		Buffalo: Chapter 4, Air Quality Section 4.1.1.6 (Alternative D), pages 675-680 and 692-695
		Lander: Chapter 4, Air Quality Section 4.1.1.3.6 (Alternative D), pages 623-629 and Climate Change Section 4.9.3.5.2 (Alternative D, Resources) page 1275
	Soil	ARMPA: Chapter 4, Soil Section 4.12.7 (Proposed Land Use Plan Amendments), pages 4-236 to 4-240
		Bighorn: Chapter 4, Soil Section 4.1.3.3 (Detailed Analysis of Alternatives), page 4-42
		Buffalo: Chapter 4, Soil Section 4.1.3.6 (Alternative D), page 730
		Lander: Chapter 4, Soil Section 4.1.3.3.5.2 (Alternative D, Resources), pages 623-629
	Water	ARMPA: Chapter 4, Watershed and Water Quality Section 4.18.7 (Proposed Land Use Plan Amendments), pages 4-391 to 4-395
		Bighorn: Chapter 4, Water Section 4.1.4.3 (Detailed Analysis of Alternatives), page 4-59 to 4-60
		Buffalo: Chapter 4, Water Section 4.1.4.6 (Alternative D), page 767
		Lander: Chapter 4, Water Section 4.1.4.3.5.2 (Alternative D, Resources), page 665
	Vegetation	ARMPA: Chapter 4, Vegetation Section 4.4.7 (Forestry), page 4-70 and Section 4.16.7 (Vegetation), pages 4-362 to 4-364
		Bighorn: Chapter 4, Biological Resources Section 4.4, pages 4-159, 4-175 to 4-176, 4-191 and 4-208
		Buffalo: Chapter 4, Vegetation Section 4.4. (Alternative D) pages 1006, 1045, and 1081
		Lander: Chapter 4, Vegetation Section 4.4, pages 779-780, 797-798, 816-817, and 834

Table 4-1
Environmental Consequences for the No-Action Alternative Incorporated by Reference

Decision Topic	Related Resource Topic	Location in 2015 Final EIS
	Other Special Status Species	ARMPA: Chapter 4, Special Status Species Section 4.14 pages 4-334 to 4-346
		Bighorn: Chapter 4, Special Status Species Section 4.4 pages 4-280, 4-290, 4-296 to 4-305 and 4-334
		Buffalo: Chapter 4, Special Status Species 4.4 pages 1119, 1126-1127, and 1171-1172
		Lander: Chapter 4, Special Status Species Section 4.4 pages 915, 922, and 965
	Fish and Wildlife	ARMPA: Chapter 4, Wildlife and Fisheries Section 4.21, pages 4-433 to 4-435 and 4-457 to 4-463
		Bighorn: Chapter 4, Fish and Wildlife Resources Section 4.4 pages 4-223 and 4-256 to 4-257
		Buffalo: Chapter 4, Fish and Wildlife Resources Section 4.4 page 1115 and 1163
		Lander: Chapter 4, Fish and Wildlife Resources Section 4.4 pages 847-848 and 896
	Wild Horses	ARMPA: Chapter 4, Wild Horses Section 4.19.7 (Proposed Land Use Plan Amendments), pages 4-405 to 4-407
		Bighorn: Chapter 4, Wild Horses Section 4.4.10.3 (Detailed Analysis of Alternatives), page 4-355
		Lander: Chapter 4, Wild Horses Section 4.4.10.3.5.2 (Alternative D, Resources), pages 990
	Cultural Resources	ARMPA: Chapter 4, Cultural Resources Section 4.3.7 (Proposed Land Use Plan Amendments), pages 4-65 to 4-66
		Bighorn: Chapter 4, Cultural Resources Section 4.5.1.3 (Detailed Analysis of Alternatives), page 4-377
		Buffalo: Chapter 4, Cultural Resources Section 4.5.1.6 (Alternative D), page 1361
		Lander: Chapter 4, Cultural Resources Section 4.5.1.3.5.2 (Alternative D, Resources), page 1004
	Paleontological Resources	ARMPA: Chapter 4, Paleontological Resources Section 4.9.7 (Proposed Land Use Plan Amendments), pages 4-125 to 4-126
		Bighorn: Chapter 4, Paleontological Resources Section 4.5.2.3 (Detailed Analysis of Alternatives), page 4-389
		Buffalo: Chapter 4, Paleontological Resources Section 4.5.2.6 (Alternative D), page 1375
		Lander: Chapter 4, Paleontological Resources Section 4.5.2.3.5.2 (Alternative D, Resources), pages 1013
	Visual Resources	ARMPA: Chapter 4, Visual Resources Section 4.1.7.7 (Proposed Land Use Plan Amendments), pages 4-372 to 4-373
		Bighorn: Chapter 4, Visual Resources Section 4.5.3.3 (Detailed Analysis of Alternatives), pages 4-403 to 4-404
		Buffalo: Chapter 4, Visual Resources Section 4.5.3.6 (Alternative D), page 1396
		Lander: Chapter 4, Visual Resources Section 4.5.3.3.5.2 (Alternative D, Resources), page 1022
	Fire and Fuels Management	ARMPA: Chapter 4, Wildland Fire and Fuels Section 4.20.7, pages 4-415 to 4-417
		Bighorn: Chapter 4, Fire and Fuels Management Section 4.3 pages 4-130, 4-139 to 4-140 and 4-145
		Buffalo: Chapter 4, Fire and Fuels Management Section 4.3 pages 923, 942, and 949
		Lander: Chapter 4, Fire and Fuels Management Section pages 753 and 764

Table 4-1
Environmental Consequences for the No-Action Alternative Incorporated by Reference

Decision Topic	Related Resource Topic	Location in 2015 Final EIS
	Lands with Wilderness Characteristics	ARMPA: Chapter 4, Lands with Wilderness Characteristics Section 4.6.7 (Proposed Land Use Plan Amendments), pages 4-87 to 4-88
		Bighorn: Chapter 4, Lands with Wilderness Characteristics Section 4.6.6.3 (Detailed Analysis of Alternatives), page 4-488
		Buffalo: Chapter 4, Lands with Wilderness Characteristics Section 4.6.7.6 (Alternative D), pages 1544-1545
		Lander: Chapter 4, Lands with Wilderness Characteristics Section 4.1.6.3.5.2 (Alternative D, Resources), page 673
	Special Designations	ARMPA: Chapter 4, Special Designations and Management Areas Section 4.13.7 pages 4-248 to 4-249
		Bighorn: Chapter 4, Special Designations Section 4.7 pages 4-517, 4-519, 4-521 to 4-523, 4-526, 4-530, 4-533, 4-536, 4-539 to 4-540, 4-543, 4-546, 4-549, 4-552, 4-554 to 4-556, 4-561, 4-564, 4-566 to 4-567, 4-569 to 4-570, 4-572 to 4-573, 4-589, and 4-604
		Buffalo: Chapter 4, Special Designations Section 4.7 (Alternative D), pages 1602 and 1628
		Lander: Chapter 4, Special Designations Section 4.7 pages 1113, 1122, 1126, 1149-1150, 1158, 1163, 1170, 1177, 1185, 1195, 1203, 1209, 1215, 1222, 1230, and 1238-1239
	Recreation	ARMPA: Chapter 4, Recreation Section 4.10.7 (Proposed Land Use Plan Amendments), pages 4-132 to 4-133
		Bighorn: Chapter 4, Recreation Section 4.6.5.3 (Detailed Analysis of Alternatives), page 4-472 to 4-473
		Buffalo: Chapter 4, Recreation Section 4.6.6.6 (Alternative D), page 1530
		Lander: Chapter 4, Recreation Section 4.6.6.3.5.2 (Alternative D, Resources), pages 1102-1103
	Comprehensive Trails and Travel Management	ARMPA: Chapter 4, Transportation and Access Section 4.15.7 (Proposed Land Use Plan Amendments), page 4-351
		Bighorn: Chapter 4, Comprehensive Trails and Travel Management Section 4.6.4.3 (Detailed Analysis of Alternatives), pages 4-447 to 4-448
		Buffalo: Chapter 4, Travel and Transportation Section 4.6.5.6 (Alternative D), page 1505
		Lander: Chapter 4, Comprehensive Trails and Travel Management Section 4.6.4.3.5.2 (Alternative D, Resources), page 1060
	Lands and Realty	ARMPA: Chapter 4, Lands and Realty Section 4.5.7 (Proposed Land Use Plan Amendments), pages 4-78 to 4-80
		Bighorn: Chapter 4, Lands and Realty Section 4.6.1.3 (Detailed Analysis of Alternatives), pages 4-417 to 4-418
		Buffalo: Chapter 4, Lands and Realty Resources Section 4.6.2.6 (Alternative D), page 1428
		Lander: Chapter 4, Lands and Realty Section 4.6.1.3. (Detailed Analysis of Alternatives), page 1026
	Renewable Energy	ARMPA: Chapter 4, Minerals and Energy Section 4.7.6 (Proposed Land Use Plan Amendments), page 4-116
		Bighorn: Chapter 4, Renewable Energy Section 4.6.2.3 (Detailed Analysis of Alternatives), page 4-424
		Buffalo: Chapter 4, Renewable Resources Section 4.6.3.6 (Alternative D), page 1447

Table 4-1
Environmental Consequences for the No-Action Alternative Incorporated by Reference

Decision Topic	Related Resource Topic	Location in 2015 Final EIS
		Lander: Chapter 4, Renewable Energy Section 4.6.2.3.5.2 (Alternative D, Resources), page 1036
	Leasable Minerals	ARMPA: Chapter 4, Minerals and Energy Section 4.8.7 pages 4-115 to 4-116
		Bighorn: Chapter 4, Leasable Minerals Section 4.2 pages 4-78 to 4-79, 4-103 to 4-104 and 4-110
		Buffalo: Chapter 4, Leasable Minerals Section 4.2 pages 841 and 867-869
		Lander: Chapter 4, Leasable Minerals Section 4.2. pages 711-715 and 727
	Locatable Minerals	ARMPA: Chapter 4, Minerals and Energy Section 4.8.7 (Proposed Land Use Plan Amendments), page 4-116
		Bighorn: Chapter 4, Locatable Minerals Section 4.2.1.3 (Detailed Analysis of Alternatives), pages 4-75 to 4-76
		Buffalo: Chapter 4, Locatable Minerals Section 4.2.1.6 (Alternative D), pages 814-815
		Lander: Chapter 4, Locatable Minerals Section 4.2.1.3.5.2 (Alternative D, Resources), pages 687-688
	Salable Minerals	ARMPA: Chapter 4, Minerals and Energy Section 4.8.7 (Proposed Land Use Plan Amendments), page 4-117
		Bighorn: Chapter 4, Salable Minerals Section 4.2.7.3 (Detailed Analysis of Alternatives), page 4-118
		Buffalo: Chapter 4, Salable Minerals Section 4.2.5.6 (Alternative D), pages 900-901
		Lander: Chapter 4, Salable Minerals Section 4.2.7.3.5.2 (Alternative D, Resources), page 740
	Socioeconomics	ARMPA: Chapter 4, Socioeconomics Section 4.11, pages 4-207 to 4-211 and 4-217 to 4-218
		Bighorn: Chapter 4, Socioeconomic Impacts Section 4.8 4-618 to 4-632, and 4-638 to 4-640
		Buffalo: Chapter 4, Socioeconomic Impacts Section 4.8 pages 1636-1637, 1649-1657 and 1659.
		Lander: Chapter 4, Socioeconomics Section 4.8 pages 1250-1251, 1262-1265, and 1267
	Tribal Treaty Rights	Bighorn: Chapter 4, Tribal Treaty Rights Section 4.8.5.3 (Detailed Analysis of Alternatives), page 4-641
		Buffalo: Chapter 4, Tribal Treaty Rights Section 4.8.5 (Alternative D), page 1660
		Lander: Chapter 4, Tribal Treaty Rights Section 4.8.5, page 1267
Sagebrush Focal Areas	Greater Sage-Grouse	ARMPA: Chapter 4, Special Status Species Section 4.14.7 (Greater Sage-Grouse Proposed Land Use Plan Amendments), page 4-343
		Sagebrush Focal Area Withdrawal EIS: Chapter 4, Section 4.5, (Wildlife, Including Special Status Species and Greater Sage-Grouse), page 4-82
	Air Quality	ARMPA: Chapter 4, Air Quality Section 4.2.4 (Air Quality Impacts associated with Oil and Gas Development), pages 4-56 to 4-57
	Soil	ARMPA: Chapter 4, Soil Section 4.12.7 (Proposed Land Use Plan Amendments), page 4-238
	Water	ARMPA: Chapter 4, Watershed and Water Quality Section 4.18.7 (Proposed Land Use Plan Amendments), page 4-393
	Vegetation	ARMPA: Chapter 4, Vegetation Sections 4.16.7 page 4-363 and Section 4.18.7 page 4-393

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Environmental Consequences for the No-Action Alternative Incorporated by Reference

Decision Topic	Related Resource Topic	Location in 2015 Final EIS
		Sagebrush Focal Area Withdrawal EIS: Chapter 4, Section 4.4 (Vegetation, Including Special Status Plants), page 4-68
	Other Special Status Species	ARMPA: Chapter 4, Special Status Species Section 4.14.7 (Proposed Land Use Plan Amendments), page 4-337
		Sagebrush Focal Area Withdrawal EIS: Chapter 4, Section 4.5, (Wildlife, Including Special Status Species and Greater Sage-Grouse), page 4-82
	Fish and Wildlife	ARMPA: Chapter 4, Wildlife and Fisheries Section 4.21.7 (Proposed Land Use Plan Amendment), page 4-458
		Sagebrush Focal Area Withdrawal EIS: Chapter 4, Section 4.5 (Wildlife, Including Special Status Species and Greater Sage-Grouse), page 4-8
	Wild Horses	ARMPA: Chapter 4, Wild Horses Section 4.19.7 (Proposed Land Use Plan Amendments), page 4-406
	Cultural Resources	ARMPA: Chapter 4, Cultural Resources Section 4.3.7 (Proposed Land Use Plan Amendments), page 4-65
	Paleontological Resources	ARMPA: Chapter 4, Paleontological Resources Section 4.9.7 (Proposed Land Use Plan Amendments), page 4-125
	Visual Resources	ARMPA: Chapter 4, Visual Resources Section 4.17.7 (Proposed Land Use Plan Amendments), page 4-372
	Fire and Fuels Management	ARMPA: Chapter 4, Wildland Fire and Fuels Management Section 4.20.7 (Proposed Land Use Plan Amendments), page 4-416
	Lands with Wilderness Characteristics	ARMPA: Chapter 4, Lands with Wilderness Characteristics Section 4.6.7 (Proposed Land Use Plan Amendments), page 4-88
	Special Designations	ARMPA: Chapter 4, Special Designations and Management Areas Section 4.13.7 (Proposed Land Use Plan Amendments), page 4-249
	Recreation	ARMPA: Chapter 4, Recreation Section 4.10.7 (Proposed Land Use Plan Amendments), page 4-132
	Comprehensive Trails and Travel Management	ARMPA: Chapter 4, Transportation and Access Management Section 4.15.7 (Proposed Land Use Plan Amendments), page 4-351
	Lands and Realty	ARMPA: Chapter 4, Lands and Realty Section 4.5.7 (Proposed Land Use Plan Amendments), page 4-78
	Renewable Energy	ARMPA: Chapter 4, Lands and Realty Section 4.5.7 (Proposed Land Use Plan Amendments), page 4-78
	Leasable Minerals	ARMPA: Chapter 4, Minerals and Energy Section 4.8.7 (Proposed Land Use Plan Amendments), page 4-116
	Locatable Minerals	ARMPA: Chapter 4, Minerals and Energy, Section 4.8.7 (Proposed Land Use Plan Amendments), page 4-116
		Sagebrush Focal Area Withdrawal EIS: Chapter 4, Section 4.2 (Geology and Mineral Resources), page 4-7
	Salable Minerals	ARMPA: Chapter 4, Minerals and Energy Section 4.8.7 (Proposed Land Use Plan Amendments), page 4-116
	Socioeconomics	ARMPA: Chapter 4, Socioeconomics Section 4.11 pages 4-209 and 4-217 to 4-218
		Sagebrush Focal Area Withdrawal EIS: Chapter 4, Section 4.3 (Social and Economic), page 4-20

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Environmental Consequences for the No-Action Alternative Incorporated by Reference

Decision Topic	Related Resource Topic	Location in 2015 Final EIS
Noise standards outside PHMA	Greater Sage-Grouse	ARMPA: Chapter 4, Special Status Species Section 4.14.7 (Greater Sage-Grouse Proposed Land Use Plan Amendments), page 4-346
		Bighorn: Chapter 4, Special Status Species – Wildlife Section 4.4.9.3 (Detailed Analysis of Alternatives), page 4-338
		Buffalo: Chapter 4, Special Status Species – Wildlife (including Greater Sage-grouse) Section 4.4.9.6 (Alternative D), pages 1271-1283
		Lander: Chapter 4, Special Status Species – Wildlife Section 4.4.9.6 (Detailed Analysis of Alternatives), pages 924-971
	Air Quality	ARMPA: Chapter 4, Air Quality Section 4.2.5 (Air Quality Impacts associated with Non-Oil and Gas Development Activities), page 4-57
		Bighorn: Chapter 4, Air Quality Section 4.1.1.3 (Detailed Analysis of Alternatives for Criteria Pollutants), page 4-21
		Buffalo: Chapter 4, Air Quality Section 4.1.1.6 (Alternative D), pages 675-680 and 692-695
		Lander: Chapter 4, Air Quality Section 4.1.1.3.6 (Alternative D), pages 623-629 and Climate Change Section 4.9.3.5.2 (Alternative D, Resources) page 1275
	Soil	ARMPA: Chapter 4, Soil Section 4.12.7 (Proposed Land Use Plan Amendments), page 4-237
		Bighorn: Bighorn: Chapter 4, Soil Section, 4.1.3.3 (Detailed Analysis of Alternatives), pages 4-41 to 4-42
		Buffalo: Chapter 4, Soil Section 4.1.3.6 (Alternative D), page 730
		Lander: Chapter 4, Soil Section 4.1.3.3.5.2 (Alternative D, Resources), pages 623-629
	Water	ARMPA: Chapter 4, Watershed and Water Quality Section 4.18.7 (Proposed Land Use Plan Amendments), page 4-392
		Bighorn: Bighorn: Chapter 4, Water Section, 4.1.4.3 (Detailed Analysis of Alternatives), pages 4-50 to 4-62
		Buffalo: Chapter 4, Water Section 4.1.4.6 (Alternative D), page 767
		Lander: Chapter 4, Water Section 4.1.4.3.5.2 (Alternative D, Resources), page 665
	Vegetation	ARMPA: Chapter 4, Vegetation Section 4.4.7 (Proposed Land Use Plan Amendments), page 4-70, Section 4.16.7 (Proposed Land Use Plan Amendments), pages 4-362 to 4-363 and Section 4.18.7 (Proposed Land Use Plan Amendments), page 4-392
		Bighorn: Chapter 4, Biological Resources Section, 4.4, pages 4-152 to 4-160, 4-165 to 4-176, 4-182 to 4-191, and 4-196 to 4-208
		Buffalo: Chapter 4, Vegetation Section 4.4. (Alternative D) pages 1006, 1045, and 1081
		Lander: Chapter 4, Vegetation Section 4.4, pages 779-780, 797-798, 816-817, and 834
	Other Special Status Species	ARMPA: Chapter 4, Special Status Species Section 4.14.7 (Proposed Land Use Plan Amendments), page 4-340
		Bighorn: Chapter 4, Biological Resources Section, 4.4, pages 4-271 to 4-281, 4-285 to 4-299, and 4-306 to 4-340
		Buffalo: Chapter 4, Special Status Species 4.4 pages 1119, 1126-1127, and 1171-1172
		Lander: Chapter 4, Special Status Species Section 4.4 pages 915, 922, and 965
	Fish and Wildlife	ARMPA: Chapter 4, Wildlife and Fisheries Section 4.21, page 4-435 and 4-462 to 4-463

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Environmental Consequences for the No-Action Alternative Incorporated by Reference

Decision Topic	Related Resource Topic	Location in 2015 Final EIS
		Bighorn: Chapter 4, Biological Resources Section, 4.4, pages 4-216 to 4-223 and 4-229 to 4-261
		Buffalo: Chapter 4, Fish and Wildlife Resources Section 4.4 page 1115 and 1163
		Lander: Chapter 4, Fish and Wildlife Resources Section 4.4 pages 847-848 and 896
	Wild Horses	ARMPA: Chapter 4, Wild Horses Section 4.19.7 (Proposed Land Use Plan Amendments), page 4-405 to 4-407
		Bighorn: Chapter 4, Wild Horses Section 4.4.10.3 (Detailed Analysis of Alternatives), pages 4-349 to 4-361
		Lander: Chapter 4, Wild Horses Section 4.4.10.3.5.2 (Alternative D, Resources), pages 990
	Cultural Resources	ARMPA: Chapter 4, Cultural Resources Section 4.3.7 (Proposed Land Use Plan Amendments), page 4-65
		Bighorn: Chapter 4, Cultural Resources Section 4.5.1.3 (Detailed Analysis of Alternatives), pages 4-368 to 4-378
		Buffalo: Chapter 4, Cultural Resources Section 4.5.1.6 (Alternative D), page 1361
		Lander: Chapter 4, Cultural Resources Section 4.5.1.3.5.2 (Alternative D, Resources), page 1004
	Paleontological Resources	ARMPA: Chapter 4, Paleontological Resources Section 4.9.7 (Proposed Land Use Plan Amendments), page 4-125
		Bighorn: Chapter 4, Paleontological Resources Section 4.5.2.3 (Detailed Analysis of Alternatives), pages 4-382 to 4-389
		Buffalo: Chapter 4, Paleontological Resources Section 4.5.2.6 (Alternative D), page 1375
		Lander: Chapter 4, Paleontological Resources Section 4.5.2.3.5.2 (Alternative D, Resources), pages 1013
	Visual Resources	ARMPA: Chapter 4, Visual Resources Section 4.17.7 (Proposed Land Use Plan Amendments), page 4-372
		Bighorn: Chapter 4, Visual Resources Section 4.5.3.3 (Detailed Analysis of Alternatives), pages 4-395 to 4-405
		Buffalo: Chapter 4, Visual Resources Section 4.5.3.6 (Alternative D), page 1396
		Lander: Chapter 4, Visual Resources Section 4.5.3.3.5.2 (Alternative D, Resources), page 1022
	Fire and Fuels Management	ARMPA: Chapter 4, Wildland Fire and Fuels Section 4.20.7 (Proposed Land Use Plan Amendments), page 4-415 to 4-417
		Bighorn: Chapter 4, Fire and Fuels Management Section 4.3, pages 4-122 to 4-131, 4-135 o 4-140 and 4-144 to 4-145.
		Buffalo: Chapter 4, Fire and Fuels Management Section 4.3 pages 923, 942, and 949
		Lander: Chapter 4, Fire and Fuels Management Section pages 753 and 764
	Lands with Wilderness Characteristics	ARMPA: Chapter 4, Lands with Wilderness Characteristics Section 4.6.7 (Proposed Land Use Plan Amendments), page 4-87 to 4-88
		Bighorn: Chapter 4, Lands with Wilderness Characteristics Section 4.6.6.3, pages 4-481 to 4-489
		Buffalo: Chapter 4, Lands with Wilderness Characteristics Section 4.6.7.6 (Alternative D), pages 1544-1545
		Lander: Chapter 4, Lands with Wilderness Characteristics Section 4.1.6.3.5.2 (Alternative D, Resources), page 673

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Environmental Consequences for the No-Action Alternative Incorporated by Reference

Decision Topic	Related Resource Topic	Location in 2015 Final EIS
	Special Designations	ARMPA: Chapter 4, Special Designations and Management Areas Section 4.13.7 (Proposed Land Use Plan Amendments), page 4-248 to 4-249
		Bighorn: Chapter 4, Special Designations and Other Management Areas Section 4.7, pages 4-515 to 4-573
		Buffalo: Chapter 4, Special Designations Section 4.7 (Alternative D), pages 1602 and 1628
		Lander: Chapter 4, Special Designations Section 4.7 pages 1113, 1122, 1126, 1149-1150, 1158, 1163, 1170, 1177, 1185, 1195, 1203, 1209, 1215, 1222, 1230, and 1238-1239
	Recreation	ARMPA: Chapter 4, Recreation Section 4.10.7 (Proposed Land Use Plan Amendments), page 4-132
		Bighorn: Chapter 4, Recreation Section 4.6.5.3 (Detailed Analysis of Alternatives), pages 4-452 to 4-479
		Buffalo: Chapter 4, Recreation Section 4.6.6.6 (Alternative D), page 1530
		Lander: Chapter 4, Recreation Section 4.6.6.3.5.2 (Alternative D, Resources), pages 1102-1103
	Comprehensive Trails and Travel Management	ARMPA: Chapter 4, Transportation and Access Management Section 4.15.7 (Proposed Land Use Plan Amendments), page 4-351
		Bighorn: Chapter 4, Comprehensive Trails and Travel Management Section 4.6.4.3 (Detailed Analysis of Alternatives), pages 4-439 to 4-450
		Buffalo: Chapter 4, Travel and Transportation Section 4.6.5.6 (Alternative D), page 1505
		Lander: Chapter 4, Comprehensive Trails and Travel Management Section 4.6.4.3.5.2 (Alternative D, Resources), page 1060
	Leasable Minerals	ARMPA: Chapter 4, Minerals and Energy Section 4.8.7 (Proposed Land Use Plan Amendments), page 4-116
		Bighorn: Chapter 4, Mineral Resources Section 4.2, pages 4-78 to 4-110
		Buffalo: Chapter 4, Leasable Minerals Section 4.2 pages 841 and 867-869
		Lander: Chapter 4, Leasable Minerals Section 4.2. pages 711-715 and 727
	Locatable Minerals	ARMPA: Chapter 4, Minerals and Energy Section 4.8.7 (Proposed Land Use Plan Amendments), page 4-116
		Bighorn: Chapter 4, Locatable Minerals Section 4.2.1.3 (Detailed Analysis of Alternatives), pages 4-71 to 4-78
		Buffalo: Chapter 4, Locatable Minerals Section 4.2.1.6 (Alternative D), pages 814-815
		Lander: Chapter 4, Locatable Minerals Section 4.2.1.3.5.2 (Alternative D, Resources), pages 687-688
	Salable Minerals	ARMPA: Chapter 4, Minerals and Energy Section 4.8.7 (Proposed Land Use Plan Amendments), page 4-116
		Bighorn: Chapter 4, Salable Minerals Section 4.2.7.3 (Detailed Analysis of Alternatives), pages 4-113 to 4-120
		Buffalo: Chapter 4, Salable Minerals Section 4.2.5.6 (Alternative D), pages 900-901
		Lander: Chapter 4, Salable Minerals Section 4.2.7.3.5.2 (Alternative D, Resources), page 740
	Socioeconomics	ARMPA: Chapter 4, Socioeconomics Section 4.11 pages 4-207 to 4-211 and 4-217 to 4-219
		Bighorn: Chapter 4, Socioeconomic Resources Section 4.8, pages 4-609 to 4-610, 4-625 to 4-634, 4-636 to 4-638, and 4-639 to 4-640

Table 4-1
Environmental Consequences for the No-Action Alternative Incorporated by Reference

Decision Topic	Related Resource Topic	Location in 2015 Final EIS
		Buffalo: Chapter 4, Socioeconomic Impacts Section 4.8 pages 1636-1637, 1649-1657 and 1659.
		Lander: Chapter 4, Socioeconomics Section 4.8 pages 1250-1251, 1262-1265, and 1267
	Tribal Treaty Rights	Bighorn: Chapter 4, Tribal Treaty Rights Section 4.8.5.3 (Detailed Analysis of Alternatives), page 4-641
		Buffalo: Chapter 4, Tribal Treaty Rights Section 4.8.5, page 1660
		Lander: Chapter 4, Tribal Treaty Rights Section 4.8.5, page 1267
Habitat Objectives	Greater Sage-Grouse	ARMPA: Chapter 4, Special Status Species Section 4.14.7 (Greater Sage-Grouse Proposed Land Use Plan Amendments), page 4-341
		Bighorn: Chapter 4, Special Status Species – Wildlife Section 4.4.9.3 (Detailed Analysis of Alternatives), page 4-334
		Buffalo: Chapter 4, Special Status Species – Wildlife (including Greater Sage-grouse) Section 4.4.9.6 (Alternative D), pages 1271-1283
	Vegetation	ARMPA: Chapter 4, Vegetation Section 4.16. page 4-362
		Bighorn: Chapter 4, Biological Resources Section, 4.4, pages 4-152 to 4-160, 4-165 to 4-176, 4-182 to 4-191, and 4-196 to 4-208
		Buffalo: Chapter 4, Vegetation Section 4.4. (Alternative D) pages 1006, 1045, and 1081
	Fish and Wildlife	ARMPA: Chapter 4, Wildlife and Fisheries Section 4.21.7 (Proposed Land Use Plan Amendments), page 4-458
		Bighorn: Chapter 4, Biological Resources Section, 4.4, pages 4-216 to 4-223 and 4-229 to 4-261
		Buffalo: Chapter 4, Fish and Wildlife Resources Section 4.4 page 1115 and 1163
	Other Special Status Species	ARMPA: Chapter 4, Special Status Species Section 4.14.7 (Proposed Land Use Plan Amendments), page 4-336
		Bighorn: Chapter 4, Biological Resources Section, 4.4, pages 4-271 to 4-281, 4-285 to 4-299, and 4-306 to 4-340
		Buffalo: Chapter 4, Special Status Species 4.4 pages 1119, 1126-1127, and 1171-1172
	Livestock Grazing	ARMPA: Chapter 4, Livestock Grazing Section 4.7.7 (Proposed Land Use Plan Amendments), page 4-101
		Bighorn: Chapter 4 Livestock Grazing Section 4.6.7.3 (Detailed Analysis of Alternatives), page 4-493 to 4-512
		Buffalo: Chapter 4, Livestock Grazing Management Section 4.4. (Alternative D) pages 1570-1576
Adaptive Management	Greater Sage-Grouse	ARMPA: Chapter 4, Special Status Species Section 4.14.7 (Greater Sage-Grouse Proposed Land Use Plan Amendments), pages 4-346
		Bighorn: Chapter 4, Special Status Species – Wildlife Section 4.4.9.3 (Detailed Analysis of Alternatives), page 4-337 to 4-338
		Buffalo: Chapter 4, Special Status Species – Wildlife (including Greater Sage-grouse) Section 4.4.9.6 (Alternative D), pages 1271-1283
Mitigation Standards	Greater Sage-Grouse	ARMPA: Chapter 4, Special Status Species Section 4.14.7 (Greater Sage-Grouse Proposed Land Use Plan Amendments), page 4-345
		Bighorn: Chapter 4, Special Status Species – Wildlife Section 4.4.9.3 (Detailed Analysis of Alternatives), pages 4-335 to 4-338
		Buffalo: Chapter 4, Special Status Species – Wildlife (including Greater Sage-grouse) Section 4.4.9.6 (Alternative D), pages 1271-1283

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Environmental Consequences for the No-Action Alternative Incorporated by Reference

Decision Topic	Related Resource Topic	Location in 2015 Final EIS
	Air Quality	ARMPA: Chapter 4, Air Quality Section 4.2 (Air Quality Impacts), pages 4-7 to 4-57
		Bighorn: Chapter 4, Air Quality Section 4.1.1.3 (Detailed Analysis of Alternatives for Criteria Pollutants), page 4-21
		Buffalo: Chapter 4, Air Quality Section 4.1.1.6 (Alternative D), pages 675-680 and 692-695
	Soil	ARMPA: Chapter 4, Soil Section 4.12.7 (Proposed Land Use Plan Amendments), pages 4-236 to 4-240
		Bighorn: Bighorn: Chapter 4, Soil Section, 4.1.3.3 (Detailed Analysis of Alternatives), pages 4-41 to 4-42
	Water	ARMPA: Chapter 4, Watershed and Water Quality Section 4.18.7 (Proposed Land Use Plan Amendments), pages 4-391 to 4-395
		Bighorn: Bighorn: Chapter 4, Water Section, 4.1.4.3 (Detailed Analysis of Alternatives), pages 4-50 to 4-62
	Vegetation	ARMPA: Chapter 4, Vegetation Sections 4.4.7, page 4-70 Section 4.16.7, page 4-362 and Section 4.18.7, pages 4-391 to 4-395
		Bighorn: Chapter 4, Biological Resources Section, 4.4, pages 4-152 to 4-160, 4-165 to 4-176, 4-182 to 4-191, and 4-196 to 4-208
		Buffalo: Chapter 4, Vegetation Section 4.4. (Alternative D) pages 1006, 1045, and 1081
	Other Special Status Species	ARMPA: Chapter 4, Special Status Species Section 4.14 pages 4-334 to 4-340 and 4-345
		Bighorn: Chapter 4, Biological Resources Section, 4.4, pages 4-271 to 4-281, 4-285 to 4-299, and 4-306 to 4-340
		Buffalo: Chapter 4, Special Status Species 4.4 pages 1119, 1126-1127, and 1171-1172
	Fish and Wildlife	ARMPA: Chapter 4, Wildlife and Fisheries Section 4.21 pages 4-433 to 4-434 and 4-459
		Bighorn: Chapter 4, Biological Resources Section, 4.4, pages 4-216 to 4-223 and 4-229 to 4-261
		Buffalo: Chapter 4, Fish and Wildlife Resources Section 4.4 page 1115 and 1163
	Cultural Resources	ARMPA: Chapter 4, Cultural Resources Section 4.3.7 (Proposed Land Use Plan Amendments), pages 4-65 to 4-66
		Bighorn: Chapter 4, Cultural Resources Section 4.5.1.3 (Detailed Analysis of Alternatives), pages 4-368 to 4-378
		Buffalo: Chapter 4, Cultural Resources Section 4.5.1.6 (Alternative D), page 1361
	Paleontological Resources	ARMPA: Chapter 4, Paleontological Resources Section 4.9.7 (Proposed Land Use Plan Amendments), pages 4-125 to 4-126
		Bighorn: Chapter 4, Paleontological Resources Section 4.5.2.3 (Detailed Analysis of Alternatives), pages 4-382 to 4-389
		Buffalo: Chapter 4, Paleontological Resources Section 4.5.2.6 (Alternative D), page 1375
	Visual Resources	ARMPA: Chapter 4, Visual Resources Section 4.17.7 (Proposed Land Use Plan Amendments), pages 4-372 to 4-373
		Bighorn: Chapter 4, Visual Resources Section 4.5.3.3 (Detailed Analysis of Alternatives), pages 4-395 to 4-405
		Buffalo: Chapter 4, Visual Resources Section 4.5.3.6 (Alternative D), page 1396

Table 4-1
Environmental Consequences for the No-Action Alternative Incorporated by Reference

Decision Topic	Related Resource Topic	Location in 2015 Final EIS
	Fire and Fuels Management	ARMPA: Chapter 4, Wildland Fire and Fuels Section 4.20.7 (Proposed Land Use Plan Amendments), pages 4-415 to 4-417
		Bighorn: Chapter 4, Fire and Fuels Management Section 4.3, pages 4-122 to 4-131, 4-135 o 4-140 and 4-144 to 4-145.
		Buffalo: Chapter 4, Fire and Fuels Management Section 4.3 pages 923, 942, and 949
	Lands with Wilderness Characteristics	ARMPA: Chapter 4, Lands with Wilderness Characteristics Section 4.6.7 (Proposed Land Use Plan Amendments), pages 4-87 to 4-88
		Bighorn: Chapter 4, Lands with Wilderness Characteristics Section 4.6.6.3, pages 4-481 to 4-489
		Buffalo: Chapter 4, Lands with Wilderness Characteristics Section 4.6.7.6 (Alternative D), pages 1544-1545
	Special Designations	ARMPA: Chapter 4, Special Designations and Management Areas Section 4.13.7 (Proposed Land Use Plan Amendments), pages 4-248 to 4-249
		Bighorn: Chapter 4, Special Designations and Other Management Areas Section 4.7, pages 4-515 to 4-573
		Buffalo: Chapter 4, Special Designations Section 4.7 (Alternative D), pages 1602 and 1628
	Recreation	ARMPA: Chapter 4, Recreation Section 4.10.7 (Proposed Land Use Plan Amendments), pages 4-132 to 4-133
		Bighorn: Chapter 4, Recreation Section 4.6.5.3 (Detailed Analysis of Alternatives), pages 4-452 to 4-479
		Buffalo: Chapter 4, Recreation Section 4.6.6.6 (Alternative D), page 1530
	Comprehensive Trails and Travel Management	ARMPA: Chapter 4, Transportation and Access Management Section 4.15.7 (Proposed Land Use Plan Amendments), page 4-351
		Bighorn: Chapter 4, Comprehensive Trails and Travel Management Section 4.6.4.3 (Detailed Analysis of Alternatives), pages 4-439 to 4-450
		Buffalo: Chapter 4, Travel and Transportation Section 4.6.5.6 (Alternative D), page 1505
	Lands and Realty	ARMPA: Chapter 4, Lands and Realty Section 4.5.7 (Proposed Land Use Plan Amendments), pages 4-78 to 4-80
		Bighorn: Chapter 4, Lands and Realty Section 4.6.1.3 (Detailed Analysis of Alternatives), pages 4-409 to 4-419
		Buffalo: Chapter 4, Lands and Realty Resources Section 4.6.2.6 (Alternative D), page 1428
	Renewable Energy	ARMPA: Chapter 4, Lands and Realty Section 4.5.7 (Proposed Land Use Plan Amendments), pages 4-78 to 4-80
		Bighorn: Chapter 4, Renewable Energy Section 4.6.2.3 (Detailed Analysis of Alternatives), pages 4-421 to 4-425
		Buffalo: Chapter 4, Renewable Resources Section 4.6.3.6 (Alternative D), page 1447
	Leasable Minerals	ARMPA: Chapter 4, Minerals and Energy Section 4.8.7 (Proposed Land Use Plan Amendments), pages 4-115 to 4-116
		Bighorn: Chapter 4, Mineral Resources Section 4.2, pages 4-78 to 4-110
		Buffalo: Chapter 4, Leasable Minerals Section 4.2 pages 841 and 867-869
	Locatable Minerals	ARMPA: Chapter 4, Minerals and Energy Section 4.8.7 (Proposed Land Use Plan Amendments), page 4-116
		Bighorn: Chapter 4, Locatable Minerals Section 4.2.1.3 (Detailed Analysis of Alternatives), pages 4-71 to 4-78

Table 4-1
Environmental Consequences for the No-Action Alternative Incorporated by Reference

Decision Topic	Related Resource Topic	Location in 2015 Final EIS
		Buffalo: Chapter 4, Locatable Minerals Section 4.2.1.6 (Alternative D), pages 814-815
	Salable Minerals	ARMPA: Chapter 4, Minerals and Energy Section 4.8.7 (Proposed Land Use Plan Amendments), page 4-117
		Bighorn: Chapter 4, Salable Minerals Section 4.2.7.3 (Detailed Analysis of Alternatives), pages 4-113 to 4-120
		Buffalo: Chapter 4, Salable Minerals Section 4.2.5.6 (Alternative D), pages 900-901
	Socioeconomics	ARMPA: Chapter 4, Socioeconomics Section 4.11, pages 4-207 to 4-210 and 4-217 to 4-219
		Bighorn: Chapter 4, Socioeconomic Resources Section 4.8, pages 4-609 to 4-610, 4-625 to 4-634, 4-636 to 4-638, and 4-639 to 4-640
		Buffalo: Chapter 4, Socioeconomic Impacts Section 4.8 pages 1636-1637, 1649-1657 and 1659.
	Tribal Treaty Rights	Bighorn: Chapter 4, Tribal Treaty Rights Section 4.8.5.3 (Detailed Analysis of Alternatives), page 4-641
		Buffalo: Chapter 4, Tribal Treaty Rights Section 4.8.5, page 1660
Recreational facilities in PHMA	Greater Sage-Grouse	ARMPA: Chapter 4, Special Status Species Section 4.21.7 (Greater Sage-Grouse Proposed Land Use Plan Amendments), page 4-345
		Bighorn: Chapter 4, Special Status Species – Wildlife Section 4.4.9.3 (Detailed Analysis of Alternatives), pages 4-335 to 4-338
		Buffalo: Chapter 4, Special Status Species – Wildlife (including Greater Sage-grouse) Section 4.4.9.6 (Alternative D), pages 1271-1283
	Recreation	ARMPA: Chapter 4, Recreation Section 4.10.7 (Proposed Land Use Plan Amendments), pages 4-132 to 4-133
		Bighorn: Chapter 4, Recreation Section 4.6.5.3 (Detailed Analysis of Alternatives), pages 4-452 to 4-479
		Buffalo: Chapter 4, Recreation Section 4.6.6.6 (Alternative D), page 1530

Environmental Impacts of the Management Alignment Alternative

The section below identifies potential impacts identified with the implementation of the Management Alignment Alternative. Please refer to **Table 2-1** for detailed information regarding the proposed management actions, as well as the identification of which RMPs would be affected by the proposed alternative. Some components of the alternatives do not apply to all RMPs, as identified in **Table 2-1** and explained in **Section 2-1**.

Modifying Habitat Management Area Designations

The existing ARMPA and revisions identified that as new occupied Greater Sage-Grouse habitat is found or occurs either through additional inventories or expansion into previously unoccupied habitat, the BLM will incorporate, through appropriate processes and analyses, these areas into the GHMA category and manage them as such, until the earliest review occurs by the SGIT. At that time, they will be considered for PHMA status or continue to be managed as GHMA and will be added to the statewide map. The BLM would continue to work with the State of Wyoming in the identification of new core and connectivity areas (PHMA) or the removal of areas from core and connectivity (PHMA) habitat. The BLM would update its Greater Sage-Grouse management areas in conjunction with the State of

Wyoming's core areas, upon issuance of any Wyoming Governor's executive order revising or amending the core area boundaries.

Updating the BLM's PHMA to match the State of Wyoming's core area boundaries has the potential to affect Greater Sage-Grouse and other resources through additional or fewer restrictions imposed on development and other types of land use activities.

There would likely be beneficial impacts on Greater Sage-Grouse conservation where additional PHMA is added and the potential for local adverse effects in areas where PHMA is reduced, depending on the value and quantity of the respective habitats being added or removed. The State of Wyoming established the core area boundaries based on Greater Sage-Grouse lek location and attendance data, as identified through modeling of bird populations and habitat, overlaid with areas of valid existing rights.

A series of reviews conducted by the Local Working Groups (LWGs) and others with thorough understanding of local Greater Sage-Grouse use occurred in order to ensure that areas included as core habitat were a true representation of actual conditions on the ground. Similar processes will continue to be used to refine the core population area mapping, which resulted in the core area boundaries identified in the Governor's Executive Order 2015-4.

Consistent application of management actions across the state's core areas and the BLM's PHMA would result in beneficial impacts on the species in Wyoming, but it may result in locally adverse impacts on areas previously located in core areas but then removed to non-core.; however, this is not anticipated to affect Greater Sage-Grouse conservation in Wyoming. It is likely to improve consistent management of the habitat across the state, thus benefiting Greater Sage-Grouse conservation in Wyoming.

The BLM has existing plan maintenance authority to correct minor errors in administrative boundaries or updating habitat information, such as aligning crucial winter range habitats to those delineated by the State or incorporating a new lek and providing appropriate lease stipulations to those areas. If major changes to the core area boundaries are proposed, the BLM would be required to consider the changes under its requirements of NEPA. Impacts would be further assessed at the time a change to the habitat management areas is proposed; however, the BLM anticipates that any impact resulting from a change in core area boundaries, and therefore PHMA, would be similar to those described in the 2015 Final EISs.

Sagebrush Focal Areas

Under the Management Alignment Alternative, there would be no designation of SFAs. The environmental impacts of not designating SFAs were analyzed in the ARMPA under Alternative A (Chapter 4, page 4-108). No other RMPs in Wyoming considered designating SFAs. Because management of Greater Sage-Grouse in SFAs was identified as the same as management of Greater Sage-Grouse in Wyoming PHMA, there are no additional impacts associated with not identifying Wyoming SFAs in the Management Alignment Alternative.

Sagebrush Focal Area Mineral Withdrawal

Under the Management Alignment Alternative, the BLM would continue to not pursue mineral withdrawal of 252,160 acres of SFA from location and entry under the General Mining Act of 1872. The impacts associated with not pursuing withdrawal were discussed in the 2015 Final EIS for the ARMPA, under Alternative A, beginning on page 4-108. In addition, impacts associated with not pursuing

withdrawal are also discussed under the No-Action Alternative in Chapter 4 of the Draft EIS for Sagebrush Focal Area Withdrawal (BLM 2016).

Although the BLM did identify in the 2015 Final EIS/Proposed RMPA that the designation of SFAs and the recommend withdrawal would result in increased conservation benefits for Greater Sage-Grouse, the BLM later determined that those conservation benefits would likely be limited. This conclusion was based on information presented in the Draft EIS for Sagebrush Focal Area Withdrawal (BLM 2016).

Habitat Objectives

Proposed changes to Management Objective #6 from the ARMPA would have minimal impacts on Greater Sage-Grouse habitat and would be similar to those identified in the No-Action Alternative of the ARMPA's FEIS.

The Management Alignment Alternative proposes to include clarifying language for the intent of the habitat objectives tables. It also would modify the value of a greater than or equal to 7 inches for perennial grass and forb height indicator to reflect ESD site potential or best available science in consideration of local variability. Impacts associated with this alternative would be similar to those identified in the No-Action Alternative in the ARMPA's Final EIS. This would not affect Greater Sage-Grouse conservation in Wyoming.

It is likely that the impacts of clarifying language for the intent of the habitat objectives tables and modifying the 7-inch indicator for perennial grass and forb height would be minimal. There are existing mechanisms throughout the ARMPA and other RMPs that allow for adjustments, if necessary. Because the Management Alignment Alternative continues to stress the important of providing nesting cover, local impacts on Greater Sage-Grouse would also be minor.

Livestock Management—Permit Renewals

The Management Alignment Alternative does not include a requirement for incorporation of terms and conditions for achieving the habitat objectives; rather, it requires achievement of Land Health Standard #4 (Wildlife/special status species). Standard #4 achievement would still be required to rely on meeting habitat objectives identified in either the Land Health Standards (Habitat Assessment Framework [HAF]); therefore, the impacts of this action would be similar to the No-Action alternative as analyzed in the RMPA's No-Action Alternative (Alternative A), beginning on page 4-90 of the 2015 Final EIS for the RMPAs.

The Management Alignment Alternative does not have an explicit requirement for analysis of a threshold to trigger the response; however, it says the analysis, if done, should also identify the location, timing, frequency, and methods used for monitoring conditions and determining when adjustments are necessary. The impacts of changing when and how analysis should be conducted would be similar to those described for Alternative A in the 2015 Final EIS for the RMPA No-Action Alternative.

Under the Management Alignment Alternative, permit renewals in PHMA where the wildlife/special status species standard is not being met would include actions necessary to achieve or make progress toward achieving the standard in accordance with 43 CFR 4180. If needed, it may include actions to maintain or improve Greater Sage-Grouse habitat, resulting in no impact or beneficial effects.

Strict requirements to analyze thresholds and responses for Greater Sage-Grouse habitat based on the habitat objectives table would be removed. Under the Management Alignment Alternative, if NEPA analysis is required, one alternative would include mechanisms to make adjustments to meet or make progress toward meeting the wildlife/special status species standard. This management change is commensurate with the threat grazing poses to Greater Sage-Grouse and relies on BLM's existing grazing regulations. The impacts would be similar to No-Action.

The Management Alignment Alternative also identifies how and when the BLM would consider Greater Sage-Grouse habitat maintenance or improvement if the current authorized use is identified as a significant factor that contributes to failing to achieve the standard in accordance with 43 CFR 4180.2. This regulation requires the BLM to formulate, propose, and analyze appropriate action to address the failure to meet the standards or conform to the guidelines when the BLM Authorized Officer determines that existing grazing management or level of use are significant factors in failure. Similar to the No-Action Alternative, the Management Alignment Alternative would emphasize balanced grazing between riparian areas/wet meadows and uplands to promote beneficial grass and forb abundance during brood-rearing season for Greater Sage-Grouse in PHMA.

The impacts of implementing the Management Alignment Alternative for livestock grazing/permit renewals would be similar to those for the No-Action Alternative for the 2015 Final EIS for the 2015 RMPs.

Livestock Management—Existing Range Improvement Structures

The impacts associated with the proposed change to MD LG 8 from the ARMPA would be minimal. The only changes between the existing management decision and the Management Alignment Alternative is to remove the requirement for the BLM to assess the potential risk to Greater Sage-Grouse and its habitats from existing structural range improvements. The potential for modification of those improvements identified as posing a risk would be evaluated and the requirement in GHMA would be removed.

The BLM would be required to analyze the impact of modifying range improvements, regardless of habitat type, and the risk to Greater Sage-Grouse and other resources would need to be evaluated in any case. Because of this, there would be minimal differences between the impacts of these alternatives; however, there is the potential for increased risk of exposure to West Nile virus or other risks to Greater Sage-Grouse if structural range improvements go unevaluated for long periods; therefore, there is the potential for a local adverse impact on Greater Sage-Grouse if existing range improvements are not periodically evaluated for risks to Greater Sage-Grouse.

Livestock Management—Riparian Area Management

The impacts associated with the Management Alignment Alternative for riparian area management would be similar to those identified in the No-Action Alternative. There would be the potential for some disruption and impacts to occur on nesting and early brood-rearing habitat for Greater Sage-Grouse as a result of the Management Alignment Alternative both in PHMA and GHMA.

Livestock grazing management would be adjusted if needed to promote the production and availability of beneficial grasses and forbs for use during late brood-rearing, as opposed to also including nesting and early brood-rearing habitat (as identified in the No-Action Alternative). Because of this, there may be

impacts on the nesting and early brood-rearing habitat in riparian areas. This would likely result in local adverse impacts on Greater Sage-Grouse. This would be the case in areas where livestock grazing is not balanced to promote beneficial forbs and grasses in nesting and early brood-rearing habitat, especially in GHMA; however, it would not be likely to affect the conservation of Greater Sage-Grouse in Wyoming.

Noise

The impacts associated with clarifying that the noise measurement and monitoring condition of approval (COA) would apply only to leks within Greater Sage-Grouse PHMA would have similar impacts as those described under the No-Action Alternative for the RMPAs and for the RMP revisions.

Impacts of noise on Greater Sage-Grouse are discussed in the following locations:

- FEIS for the RMPAs—Chapter 4, page 4-249
- FEIS for the Bighorn Basin RMP—Chapter 4, Section 4.4.9.3, Page 4-338
- FEIS for the Buffalo RMP—Chapter 4, Section 4.4.9.4, page 1252
- FEIS for the Lander RMP—Chapter 4, page 963

The need for the application of a noise measurement and monitoring COA to a project would be identified at the time of site-specific environmental review. It would likely impact only the proposed land use, such as fluid mineral development, and Greater Sage-Grouse. Impacts on resource uses associated with the application of a noise COA would be reviewed in the site-specific environmental assessment.

Adaptive Management

Impacts associated with identifying that management of Greater Sage-Grouse would return to previous management actions once adaptive management action objectives in the interim response strategy have been met would be similar to those identified in Alternative E of the 2015 Final EIS for the RMPA and Revisions. There would be no change as to the identification of triggers, nor to the application of adaptive management. The only change for adaptive management would be at the implementation level, when the Adaptive Management Working Group identifies a process for returning to previous management. The impacts associated with returning to previous management would be the same as those identified in Alternative E for the 2015 Final EIS of the RMPA, and Alternative D in each of the Lander, Buffalo, and Bighorn Basin (Cody and Worland) FEISs.

Compensatory Mitigation and Net Conservation Gain

Impacts on Greater Sage-Grouse from following the BLM's NEPA process in determining avoidance, minimization, rectification, and reducing over time at the site-specific project level would be similar to those identified in the No-Action Alternative for the RMPAs and the RMP Revisions. The BLM would defer to the State of Wyoming's Greater Sage-Grouse Compensatory Mitigation Framework if the need for compensatory mitigation is identified by the State of Wyoming through the Executive Order review process and appropriate coordination.

Determination of the applicability of the framework and amount of compensatory mitigation would be made by the State of Wyoming. Any impacts associated with the need for compensatory mitigation, or the applicability of compensatory mitigation, would be identified at the site-specific project level.

The impacts associated with the removal of the compensatory mitigation standard of "net conservation gain" would have minimal impacts across the range of Greater Sage-Grouse in Wyoming. This is because the State of Wyoming's compensatory mitigation framework provides a replacement of habitat, including indirect effects, with assurances and durability over the life of the impact; however, there is the potential for local adverse impacts on Greater Sage-Grouse as a result of modifying the decisions associated with compensatory mitigation and net conservation gain. Site-specific impacts would be identified at the time of site-specific environmental review.

Recreation Facilities

Impacts associated with not requiring a net conservation gain for recreation facilities are similar to those described in the Management Alignment Alternative for compensatory mitigation, above. Impacts for constructing recreation facilities in PHMA are described in the following locations:

- FEIS for the RMPAs—Chapter 4, Section 4.14.3, page 4-272
- FEIS for the Bighorn Basin RMP—Chapter 4, Section 4.4.6.3, page 4-311
- FEIS for the Buffalo RMP—Chapter 4, page 1240

Prioritization of Fluid Mineral Leasing

This action identifies that the BLM would prioritize leasing outside PHMA, as a method of incentivizing development in GHMA and other non-habitat areas. Impacts associated with prioritizing leasing outside PHMA would be beneficial to Greater Sage-Grouse conservation in Wyoming, with the potential for locally adverse impacts on habitat in GHMA. This would be a result of potentially concentrating development in the GHMA or non-core areas; however, locally adverse impacts would not be likely to affect the conservation of Greater Sage-Grouse in Wyoming.

4.4 INCOMPLETE OR UNAVAILABLE INFORMATION

The CEQ established implementing regulations for NEPA, requiring that a federal agency identify relevant information that may be incomplete or unavailable for evaluating reasonably foreseeable significant adverse impacts in an EIS (40 CFR, 1502.22). If the information is essential to a reasoned choice among alternatives, it must be included or addressed in an EIS, unless the cost of obtaining such information is exorbitant. Knowledge and information is, and would always be, incomplete, particularly with infinitely complex ecosystems considered at various scales.

The best available information pertinent to the decisions to be made was used in developing the LUPA. The BLM and Forest Service have made a considerable effort to acquire and convert resource data into digital format for use in the LUPA, both their own and from outside sources.

Under the FLPMA, the inventory of public land resources is ongoing and continuously updated; however, certain information was unavailable for use in developing the LUPA. This was because inventories either had not been conducted or were not complete.

Some of the major types of data that are incomplete or unavailable are the following:

- Comprehensive planning area-wide inventory of wildlife and special status species occurrence and condition
- GIS data used for disturbance calculations on private lands

- Site-specific surveys of cultural and paleontological resources

For these resources, estimates were made concerning their number, type, and significance, based on previous surveys and existing knowledge.

In addition, some impacts could not be quantified, given the proposed management actions. Where there was this gap, impacts were projected in qualitative terms or, in some instances, were described as unknown. Subsequent site-specific project-level analyses would provide the opportunity to collect and examine site-specific inventory data to determine appropriate application of LUP-level guidance. In addition, the BLM and other agencies in the planning area continue to update and refine information used to implement this plan.

4.5 IMPACTS ON GREATER SAGE-GROUSE

The Management Alignment Alternative may result in local adverse impacts on Greater Sage-Grouse but would not affect the overall goal of Greater Sage-Grouse conservation across Wyoming. For example, localized impacts on Greater Sage-Grouse may occur through the updating of core area boundaries (if, for example, previously identified PHMA is then changed to GHMA or if new PHMA is identified). In addition, localized impacts on Greater Sage-Grouse may occur as a result of the removal of the net conservation gain standard; however, the alignment with the State of Wyoming's Greater Sage-Grouse Compensatory Mitigation Framework would result in more consistent application of compensatory mitigation and would likely result in improved conservation of Greater Sage-Grouse in Wyoming.

In general, management of Greater Sage-Grouse habitat would be improved through better coordination and alignment with the State of Wyoming's Greater Sage-Grouse Core Area Strategy. Please see **Table 2-2** for a summary of the comparison of impacts across alternatives.

4.6 CUMULATIVE EFFECTS ANALYSIS

This section presents the anticipated cumulative impacts on the environment that could occur from implementing the alternatives presented in **Chapter 2**. A cumulative impact is the impact on the environment that results from the incremental impact of the action, when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such actions. Actions may occur inside or outside habitat management areas (HMAs).

Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time. The cumulative impacts resulting from the implementation of the alternatives in this RMPA/EIS may be influenced by other actions, as well as activities and conditions on other public and private lands, including those beyond the planning area boundary. These include the concurrent Forest Service planning effort to amend land management plans for National Forests in Idaho, Montana, Nevada, Utah, Colorado, and Wyoming. These were previously amended in September 2015 to incorporate conservation measures to support the continued existence of the Greater Sage-Grouse. As a result, the sum of the effects of these incremental impacts involves determinations that often are complex, limited by the availability of information, and, to some degree, subjective.

This RMPA/EIS incorporates by reference the analysis in the 2014 and 2015 Final EISs and the 2016 Draft Sagebrush Focal Area Withdrawal EIS. The preparers of these documents comprehensively analyzed the cumulative impacts associated with the planning decisions under consideration in those

processes, including the impacts associated with what became the Selected Alternative in the 2014 and 2015 RODs.

The 2014 and 2015 Final EISs evaluated the cumulative impacts associated with the No-Action Alternative in this EIS, as well as the cumulative impacts associated with this RMPA/EIS's Management Alignment Alternative, which comprises planning decisions evaluated by the 2015 Final EIS. This includes the six state-wide BLM RMPA/EISs occurring in the Greater Sage-Grouse range and similar plan amendment efforts being undertaken by the Forest Service; therefore, the Management Alignment Alternative's effects, including its cumulative effects, are entirely within the range of effects analyzed by the 2014 and 2015 Final EISs.

While the analysis for the 2015 Final EIS is quite recent, the BLM has reviewed conditions in Wyoming to verify that they have not changed significantly. The BLM's assessment that conditions have not changed significantly is based, in part, on the USGS science review (see **Chapter 3**), as well the BLM's review of additional past, present, and reasonably foreseeable actions in 2018. Since the nature and context of the cumulative effects scenario has not appreciably changed since 2015, and the 2014 and 2015 analyses covered the entire range of the Greater Sage-Grouse, the cumulative effects analysis in the 2014 and 2015 Final EISs applies to this planning effort and provides a foundation for the BLM to identify any additional cumulative impacts.

Table 4-2, below, identifies the resource and location of applicable cumulative effects analysis from the 2014 and 2015 Final EISs. Unless otherwise addressed in this chapter, the cumulative effects of the alternatives analyzed in this RMPA/EIS are covered by the 2014 and 2015 Final EISs. This includes the incremental impacts across the range of BLM and Forest Service lands being amended in concurrent plan amendment efforts.

Table 4-2
Cumulative Effects Analysis Incorporated by Reference

Resource Topic	Location of Cumulative Effects Analysis	Additional Cumulative Impacts not Analyzed in 2014 and 2015
Greater Sage-Grouse	ARMPA: Section 4.23.6 and 4.23.7 page 4-499 Buffalo: Section 4.4.9.7, page 1271 Bighorn: Section 7.1.6, page 7-13 Lander: Section 4.10.1, page 1282	None
Solid Minerals	ARMPA: Section 4.22.3, page 4-493 Buffalo: Section 4.2.1.7, page 818 Bighorn: Section 7.1.6.1, page 7-22 Lander: Section 4.10, page 1276	None
Fluid Minerals	ARMPA: Section 4.22.3, page 4-493 Buffalo: Section 4.2.3.7, page 871 Bighorn: Section 7.1.6.1, page 7-14 Lander: Section 4.10, page 1276	None
Livestock Grazing	ARMPA: Section 4.22.3, page 4-492 Buffalo: Section 4.6.8.7, page 1576 Bighorn: Section 7.1.6.3, page 7-32 Lander: Section 4.10, page 1276	None

Cumulative impact analyses from the 2014 and 2015 Final EISs are hereby incorporated by reference into this RMPA/EIS. The location of the applicable cumulative impact on those resources identified to have potential direct or indirect effects are shown in **Table 4-2**, above.

Table 4-3 represents the past, present, and reasonably foreseeable actions across the entire range for Greater Sage-Grouse, which are separated by state. When assessing the cumulative impact of the RMPA/EIS on Greater Sage-Grouse and its habitat, there are multiple geographic scales that the BLM has considered, including the appropriate WAFWA management zone. WAFWA Management Zones have biological significance to Greater Sage-Grouse. Established and delineated in 2004 in the *Conservation Assessment of Greater Sage-Grouse and Sagebrush Habitats* (Connelly et al. 2004), the WAFWA management zones are based on floristic provinces that reflect ecological and biological issues and similarities, not political boundaries.

At the regional scale, WAFWA Greater Sage-Grouse management zones and responsible BLM offices include I (Great Plains: BLM Montana and Wyoming), II (Wyoming Basins: BLM Wyoming, Colorado, and Utah), III (Southern Great Basin: BLM Nevada, Northeastern California, and Utah), IV (Snake River Plain: BLM Idaho, Oregon, Nevada, Colorado, Utah, and Montana), V (Northern Great Basin: BLM Oregon, Northeastern California, and Nevada), VI (Columbia Basin: BLM Oregon), and VII (Colorado Plateau: BLM Northwest Colorado and Utah). These zones are an important resource for Greater Sage-Grouse management; and at a regional scale, the following projects are past, present, and reasonably foreseeable that cumulatively effect one or more of the WAWFA management zones. For Nevada and northeastern California, those actions in WAFWA Zones III, IV, and V, which overlap Utah, Idaho, Oregon, and Colorado, would have the greatest potential to contribute to cumulative effects. Note that not all of the projects listed for Utah, Idaho, Oregon, and Colorado are in WAFWA Zones III, IV, and V, and so may not contribute to cumulative effects.

Further, the entire sum of past, present, and reasonably foreseeable actions listed below represent cumulative effects across the range of Greater Sage-Grouse habitat and management areas. These effects are important to consider for future management of the species as a whole and are not solely being analyzed at the local or state level. That is why all ongoing BLM RMPAs/EISs refer to every past, present, and reasonably foreseeable action across all states undergoing a plan amendment.

Wildland fire and invasive species remain the greatest threat to Greater Sage-Grouse in the Great Basin. Between 2008 and 2017, wildfires burned an average of 900,000 acres per year in Greater Sage-Grouse habitat management areas range-wide[1]; this is within the range of projected wildland fire analyzed in the 2015 Final EIS. The BLM has committed resources to habitat restoration and has treated 1.4 million acres of Greater Sage-Grouse habitat range-wide over the past 5 years.

The increased flexibility in these amendments is not expected to result in a large increase in development proposals on public land. Similarly, the increased protections from the 2014 and 2015 Final EISs have not resulted in a large decrease in ROW applications or an increase in rejected applications; therefore, the changes proposed under the Management Alignment Alternative are not expected to result in large changes to the rate of development in Wyoming or in its economy.

[1] Removing 2012 and 2017, which were above-average wildland fire years, the 8-year average is approximately 500,000 acres burned per year.

Table 4-3
Range-Wide Impacts from Past, Present, and Reasonably Foreseeable Future Actions

Action	Type	Effects
Great Basin		
Habitat Restoration Programmatic EIS	Great Basin-wide programmatic habitat restoration project	Programmatic document effects will be realized when the field implements projects. This action will provide opportunities to improve and enhance habitat through vegetation treatments.
Fuel Breaks Programmatic EIS	Great Basin-wide programmatic habitat fuel break project	Programmatic document effects will be realized when the field implements projects. This action will help to reduce the loss of habitat due to catastrophic fires.
Northwest Colorado		
Integrated program of work	Habitat restoration and improvement projects	Potential localized, short-term, adverse impacts on Greater Sage-Grouse habitat, with beneficial long-term impacts. Actions are consistent with those foreseen in the 2015 Final EIS and are therefore within the range of cumulative effects analyzed in the 2015 Final EIS.
Travel management	White River Field Office: Area-wide travel designations being considered through an ongoing plan amendment Little Snake Field Office: Travel Management plan, identifying route designations consistent with criteria in the 2015 LUPA	These actions represent implementation of objectives from 2015 ARMPA to prioritize travel management in Greater Sage-Grouse habitat. Impacts are covered in the cumulative impacts of the 2015 Final EIS as reasonably foreseeable.
Continued oil and gas development	Disturbance and fragmentation	Development is consistent with the reasonably foreseeable development scenarios analyzed as part of the 2015 Final EIS and the associated field office RMPs. Additional impacts are expected to be within the range analyzed in 2015 Final EIS cumulative impacts analysis.
Plans		
Northwest Colorado Programmatic Vegetation Treatment Environmental Assessment (DOI-BLM-CO-N000-2017-0001-EA) decision	Programmatic NEPA document for streamlining habitat treatments in sagebrush	
Idaho		
Wildland fires 2015–2017	BLM: Past acres burned on BLM-administered land	534,744 acres of HMA burned since the ROD was signed in 2015. Post-fire rehabilitation was implemented. Too soon to determine the effectiveness of rehabilitation.

Table 4-3
Range-Wide Impacts from Past, Present, and Reasonably Foreseeable Future Actions

Action	Type	Effects
Habitat treatments 2015–2017	BLM: Past habitat improvement projects	431,295 acres treated to restore or improve potential Greater Sage-Grouse habitat. Too soon to determine the effectiveness of treatment.
ROWs issued 2015–2017	BLM: Past ROWs issued on BLM-administered land	97 ROWs were issued in the planning area but fewer than 10 were in Greater Sage-Grouse habitat and resulted in new habitat loss. The effects were mitigated, using the mitigation hierarchy.
Soda Fire restoration	BLM: Present habitat restoration and fuel break construction	Restoration of previously burned Greater Sage-Grouse habitat. Results in a net benefit to Greater Sage-Grouse habitat.
Twin Falls Vegetation Project	BLM: Present habitat treatment project that improves Greater Sage-Grouse habitat district-wide	Restoration of Greater Sage-Grouse habitat and improved rangeland conditions. Results in a net benefit to Greater Sage-Grouse habitat.
Idaho Falls Vegetation Project	BLM: Present habitat treatment project that improves Greater Sage-Grouse habitat district-wide	Restoration of Greater Sage-Grouse habitat and improved rangeland conditions. Results in a net benefit to Greater Sage-Grouse habitat.
Natural gas-producing well near Weiser, Idaho	Private: Present active gas well on private land	Well is not in Greater Sage-Grouse habitat.
Conifer removal	NRCS: Present (2018) 1,862 acres of conifer removal on private land to improve Greater Sage-Grouse habitat	Conifer removal would improve Greater Sage-Grouse habitat and open areas to Greater Sage-Grouse that were previously unavailable because of juniper encroachment.
Weed treatments	NRCS: Present (2018) 95 acres of weed treatments on private land to reduce noxious weeds in Greater Sage-Grouse habitat	Weed treatments allow the native vegetation to outcompete weeds on treated acres.
Water development	NRCS: Present (2018) 21,308 feet of pipeline and 40 watering tanks installed on private land	Water development to move livestock out of natural springs and wet meadows.
Pending ROWs 2015–2017	BLM: Future ROW under analysis on BLM-administered land	123 ROW applications have been submitted and are pending review and analysis.
Boise District Vegetation Project	BLM: Future habitat treatment project that improves Greater Sage-Grouse habitat district-wide	Restoration of Greater Sage-Grouse habitat and improved rangeland conditions result in a net benefit to Greater Sage-Grouse habitat.
Tristate Fuel Breaks Project	BLM: Future Greater Sage-Grouse habitat protection	Fuel breaks would protect habitat from wildfires. Some sagebrush may be lost during fuel break construction. Results in a net benefit to Greater Sage-Grouse habitat.

Table 4-3
Range-Wide Impacts from Past, Present, and Reasonably Foreseeable Future Actions

Action	Type	Effects
Bruneau-Owyhee Sage-Grouse Habitat Project (BOSH)	BLM: Future removal of juniper encroaching into Greater Sage-Grouse habitat	BOSH would remove encroaching juniper from Greater Sage-Grouse habitat and render the habitat usable for Greater Sage-Grouse. Results in a net benefit to Greater Sage-Grouse habitat.
Conifer removal	NRCS: Future (2019–2023) 5,541 acres of conifer removal on private land to improve Greater Sage-Grouse habitat	Conifer removal would improve Greater Sage-Grouse habitat and open areas to Greater Sage-Grouse that were previously unavailable because of juniper encroachment.
Weed treatments	NRCS: Future (2019–2023) 357 acres of weed treatments on private land to reduce noxious weeds in Greater Sage-Grouse habitat	Weed treatments allow the native vegetation to outcompete weeds on treated acres.
Water development	NRCS: Present (2019–2023) 82,502 feet of pipeline and 46 watering tanks installed on private land	Water development to move livestock out of natural springs and wet meadows
Nevada and Northeast California		
Wildland Fires 2015-2017	BLM: Past – Acres burned on BLM administered land	Approximately 1.3 million acres of HMA burned between 2015-2017. Post fire restoration is being implemented as described below.
Fire Restoration (Emergency Stabilization and Rehabilitation)	BLM: Past and Present – Habitat restoration following wildland fires	1.8 million acres of habitat are either currently being treated or scheduled to be treated according to specific prescriptions outlined in Emergency Stabilization and Burned Area Rehabilitation plans following wildfire.
Habitat Treatments	BLM: Past – Habitat improvement projects	Over 176,000 acres of Greater Sage-Grouse habitat was treated between 2015 and 2017 to maintain or improve conditions for Greater Sage-Grouse. Treatments included conifer removal, fuel breaks, invasive species removal and habitat protection/restoration.
Land Use and Realty (issued and pending) 2015-2018	BLM: Past ROWs issued on BLM land	227 ROWs were issued in the planning area between 2015 and 2017. This includes amendments and reauthorizations, which may not have resulted in new disturbance. For ROWs occurring in Greater Sage-Grouse habitat, effects were offset using the mitigation hierarchy.
	BLM: Future pending	85 ROW applications are pending review and analysis. New ROWs would be held to the same mitigation standard under the management alignment alternative as described in the 2015 EIS, so no additional cumulative impacts beyond those described in 2015 are anticipated.

Table 4-3
Range-Wide Impacts from Past, Present, and Reasonably Foreseeable Future Actions

Action	Type	Effects
		In addition, BLM Nevada is also currently evaluating a proposed withdrawal for expansion of the Fallon Naval Air Station, Fallon Range Training Complex for defense purposes.
Oil and Gas	BLM: Past	BLM has offered for lease 425,711 acres in HMAs; 407,478 of that total was leased. Lease stipulations apply as described in the leases according to HMA category.
	BLM: Future pending	BLM has a scheduled lease sale in June 2018 that will offer 110,556 acres in HMAs. Lease stipulations would still be as described in 2015 until a decision is made on this draft.
Geothermal	BLM: Past and Present	Between 2015 and 2017, the BLM has offered for lease 24,468 acres within HMAs. Lease stipulations apply as described in the leases as analyzed in the 2015 Final EIS. 6 geothermal development permits have been approved and drilled on existing pads on existing leases. McGinness Hills Phase 3 EA authorized up to 42 acres of disturbance on existing leases, which will be offset according to the mitigation hierarchy.
Geothermal	Forest Service: Future Pending	6,901 acres of HMA pending forest service concurrence to lease, no pending geothermal development permits. If in HMAs, stipulations would be as described in 2015.
Locatable Mineral Projects	BLM: Past and Present	Between 2015 and 2017, the BLM has approved 18 new mines and/or expansions in the planning area, which is within the reasonably foreseeable development scenario outlined in the 2015 Final EIS (Section 5.1.16).
	BLM: Future Pending	The BLM is currently reviewing 20 plans of development for new mines or expansions, which is within the reasonably foreseeable development scenario outlined in the 2015 Final EIS (Section 5.1.16).
Fuel Breaks PEIS	BLM: Future – Great Basin-wide programmatic habitat fuel break project	Programmatic document effects will be realized when the field implements projects.
Sage-Grouse Conservation	Forest Service- Future	Forest Service has indicated they will also be amending their land use plans. Specific details of their proposed changes are not

Table 4-3
Range-Wide Impacts from Past, Present, and Reasonably Foreseeable Future Actions

Action	Type	Effects
		yet known, but it is anticipated they propose alignment with state management plans and strategies.
Oregon		
Emergency Stabilization and Rehabilitation in South Bull Ridge RNA	Aerial herbicide application	Preliminary results indicate success in treating annual grasses (2017).
Emergency Stabilization and Rehabilitation in South Ridge Bully Creek RNA	Aerial herbicide application	Preliminary results indicate success in treating annual grasses (2015).
Emergency Stabilization and Rehabilitation in North Ridge Bully Creek RNA	Aerial herbicide application	Preliminary results indicate success in treating annual grasses (2015).
Trout Creek Mountain	Grazing permit renewal	Grazing permit renewal allotment includes the East Fork Trout Creek RNA (2016).
Utah		
Fire and Fuels		
Wildland Fires 2015-2017	Acres burned on BLM administered land	Approximately 61,262 acres of PHMA/GHMA burned between 2015 and 2017. Post fire restoration is being implemented across all population areas that are affected. Effects: Potential loss of habitat value due to the removal of vegetation by fire.
Fire Restoration (Emergency Stabilization and Rehabilitation)	Acres of habitat restoration following wildland fires	Approximately 173,100 acres of HMA were treated/restored between 2015 and 2017. All of these acres are being restored in according to specific prescriptions outlined in Emergency Stabilization and Burned Area Rehabilitation plans following wildfire across all population areas that are affected. Effect: Potentially improve or increase habitat due to vegetative restoration activities.
Vegetation		
Habitat Treatments	Acres of habitat improvement projects	Past: Over 219,000 acres of Greater Sage-Grouse habitat was treated between 2015 and 2017 to maintain or improve conditions for Greater Sage-Grouse across all populations. Treatments included conifer removal, fuel breaks, invasive species removal and habitat protection/restoration. Effect: Potentially improve or increase habitat due to vegetative restoration activities.

Table 4-3
Range-Wide Impacts from Past, Present, and Reasonably Foreseeable Future Actions

Action	Type	Effects
		Future: Over 524,702 acres of Greater Sage-Grouse habitat is being proposed for treatment over the next 5 years. Treatments will include conifer removal, fuel breaks, invasive species removal and habitat protection/restoration across all populations. Effect: Potentially improve or increase habitat due to vegetative restoration activities.
Lands and Realty		
Land Use and Realty (issued and pending) 2015-2018	ROWs issued or pending on BLM land	Past: Issued 841 ROWs were issued in the planning area between 2015 and 2017. Effect: This includes amendments and reauthorizations, which may not have resulted in new disturbance. For ROWs occurring in Greater Sage-Grouse habitat, effects were offset using the mitigation hierarchy. Future: 380 ROW applications are pending review and analysis. Effect: New ROWs would be held to the same mitigation standard under the management alignment alternative as described in the 2015 EIS, so no additional cumulative impacts beyond those described in 2015 are anticipated.
Zephyr Transmission Line	500 kV transmission line	Application received – could impact the Bald Hills, Uintah, Carbon, Strawberry, Emery, and Sheeprocks populations. Effects: May remove vegetation due to construction activities. Towers may provide perching opportunities for avian predators. However, most of these impacts should be removed by management standards identified in the selected alternative.
Parker Knoll Pump Storage Hydroelectric Federal Energy Regulatory Commission Project	Create electricity using a two-reservoir, gravity-fed system; approximately 200 acres of Greater Sage-Grouse habitat would be lost; mitigation involves Greater Sage-Grouse habitat-improvement work in areas adjacent to the lost habitat.	Still in planning and NEPA stages – could impact the Parker Mountain population. Effects: May remove vegetation due to construction activities. Increased maintenance activities could lead to an increase in collision mortalities. Any associated tall structures may provide

Table 4-3
Range-Wide Impacts from Past, Present, and Reasonably Foreseeable Future Actions

Action	Type	Effects
		perching opportunities for avian predators. However, most of these impacts should be removed by management standards identified in the selected alternative.
Enefit Utility Project	Five rights-of-way across public lands for infrastructure (a road, 3 pipelines, and 2 powerlines) to support development of a mine on private lands. Estimated 1,037 acres of disturbance for the rights-of-way (7,000-9,000 acre mine and 320-acre processing plant).	Still in planning and NEPA stages – could impact the Uintah population. Effects: May remove vegetation due to construction activities. Increased maintenance activities could lead to an increase in collision mortalities. Any associated tall structures may provide perching opportunities for avian predators. However, most of these impacts should be removed by management standards identified in the selected alternative.
Leasable Minerals (Oil and Gas, Non-energy Leasable Minerals, Coal, and Oil Shale and Tar Sands)		
Oil and Gas Leases	Acres of BLM land leased for Oil and Gas development	Past: From 2105-2017 the BLM has leased approximately 25,000 acres in HMAs, of which approximately 25 of those acres were located in PHMA. Lease stipulations apply as described in the leases according to HMA category. Effects: The act of leasing would have no direct effect. Future: BLM has a scheduled lease sale in June 2018 that will offer 646 acres in HMAs. Additionally, the BLM is required to conduct quarterly lease sales which could include parcels in HMA. Lease stipulations would still be as described in 2015 until a decision is made on this RMPA/EIS. Effect: The act of leasing would have no direct effect, as no specific disturbance is taken as a result of purchasing a lease. Leasing could occur in any of the populations, but would be most likely to impact the Uintah, Carbon, Emery, and Rich populations due to mineral potential.
Oil and Gas Wells	Oil and Gas exploration and development	Based upon the reasonable and foreseeable development assumptions in Chapter 4, it is anticipated that 2,968 oil and gas wells will be drilled within

Table 4-3
Range-Wide Impacts from Past, Present, and Reasonably Foreseeable Future Actions

Action	Type	Effects
		occupied Greater Sage-Grouse habitat within the population areas of which 2,289 wells are anticipated to be producing wells. Exploration wells expected in all populations. Development wells anticipated in Uintah, Carbon, Emery, and Rich populations. Effect: The development of wells within these areas could lead to fragmentation and loss of habitat due to construction activities. Increased noise levels associated with traffic and compressors may impact lek attendance. Increased traffic associated with day to day operations may also increase the potential for collision mortality. However, most of these impacts should be removed by management standards identified in the selected alternative.
Asphalt Ridge Tar Sands Development	Lease approximately 6,000 acres of Tar Sands Lands described in the Asphalt Ridge Tract, which is directly adjacent to existing approximately 16,000 acres of State leases	Still in planning and NEPA stages – could impact the Uintah population. Effect: As a largely underground operation on BLM-administered lands, this would disturb a small amount of land associated with ancillary features. On the portions of the mine that would be mined through surface means, habitat would be lost and noise, dust and light would affect adjacent areas.
Flat Canyon Coal Lease by application	The Flat Canyon Coal Lease Tract is approximately 2, 692 acres of federal coal reserves	Forest Service completed the consent to BLM. Approximately 23 acres out of the 2,692 acres are within the Emery Population Area. Effect: The act of leasing would have no direct effect. However, the activities associated with development of the lease could result in loss of habitat and vehicle mortality due to increased traffic. Most of these impacts should be removed by management standards identified in the selected alternative.
Alton Coal Tract Lease-by-Application	Add 3,576 acres of federal surface or mineral estate to existing 300-acre mine on private land.	Still in planning and NEPA stages – could impact the Panguitch population. Effect: Activities associated with development of the lease could result in loss of habitat and vehicle mortality due to increased traffic. Most of these

Table 4-3
Range-Wide Impacts from Past, Present, and Reasonably Foreseeable Future Actions

Action	Type	Effects
		impacts should be removed by management standards identified in the selected alternative.
Williams Draw Coal Lease by Application	The proposed action includes 4,200 acres of federal surface and mineral estate; the proposal may have several vents, drilling exploration holes on the surface and underground, and load-out facilities	Still in planning and NEPA stages; could impact the Carbon population. Effect: The act of leasing would have no direct effect. However, the activities associated with development of the lease could result in loss of habitat and vehicle mortality due to increased traffic. Most of these impacts should be removed by management standards identified in the selected alternative.
Greens Hollow Coal Lease by Application	Proposal includes 6,700 acres; a vent is proposed off site; minimal surface disturbances with the exception for exploration drilling	The area has been leased, but development is on hold due to litigation. Would affect the Emery population. Effect: Activities associated with development of the lease could result in loss of habitat and vehicle mortality due to increased traffic. Most of these impacts should be removed by management standards identified in the selected alternative.
Flat Canyon Coal Lease by Application	Lease by Application 3,792 acres; and Exploration License, 595 acres	Leased and under production in the Carbon population. Effect: The act of leasing would have no direct effect. However, the activities associated with development of the lease could result in loss of habitat and vehicle mortality due to increased traffic. Most of these impacts should be removed by management standards identified in the selected alternative.
Gilsonite Leasing	16,810 acres that are currently under prospecting permit application; the permits would either be issued or a Known Gilsonite Leasing Area would be established, thus allowing competitive leasing	The prospecting permit applications have been in place since the late 1980s; Known Gilsonite Leasing Area report ongoing, after which NEPA will begin to address backlogs for these areas in the Uintah population. Effect: Activities associated with development or prospecting of the permit / lease could result in loss of habitat and vehicle mortality due to increased traffic. Most of these impacts should be removed by management standards identified in the selected alternative.

Table 4-3
Range-Wide Impacts from Past, Present, and Reasonably Foreseeable Future Actions

Action	Type	Effects
Phosphate Fringe Acreage Lease	1,627 acres of fringe acreage lease on BLM-administered lands	NEPA has started and awaiting a Development Scenario to complete the NEPA for this area in the Uintah population. Effect: The act of leasing would have no direct effect. However, the activities associated with development of the lease could result in loss of habitat and vehicle mortality due to increased traffic. Most of these impacts should be removed by management standards identified in the selected alternative.
Phosphate Competitive Lease Application	1,186 acres on National Forest System lands	NEPA has started and awaiting a Development Scenario to complete the NEPA for this area in the Uintah population. Effect: Activities associated with development of the lease could result in loss of habitat and vehicle mortality due to increased traffic. Most of these impacts should be removed by management standards identified in the selected alternative.
Other Items		
Hard Rock Prospecting Permits being considered on Bankhead Jones	Hard rock exploration permits	Pending Consideration for this area in the Sheeprocks population. Effect: Activities associated with development of the lease could result in loss of habitat, vehicle mortality due to increased traffic and disruption of seasonal use areas. Most of these impacts should be removed by management standards identified in the selected alternative.
Gooseberry Narrows Reservoir	Bureau of Reclamation project on Forest Service and private land; project is approximately 1,200 acres	EIS is complete, pending EPA review and approval for this portion of the Carbon population. Effect: Activities associated with construction and operation of the reservoir would result in loss of habitat within the project area and a potential increase for vehicle mortality due to increased traffic. However, the habitat lost within the project area may be supplemented by improving the quality and seasonal functionality of the adjacent habitat. Most of the impacts should be

Table 4-3
Range-Wide Impacts from Past, Present, and Reasonably Foreseeable Future Actions

Action	Type	Effects
		removed by management standards identified in the selected alternative.
Motorized Travel Plan Implementation	Implementation of motorized route designation plans across the planning region	Implementation actions underway statewide, with travel planning reasonably foreseeable in the Sheeprocks, Uintah, Carbon and Panguitch populations. Effect: The development of a motorized travel plan would potential help to reduce fragmentation of habitat and centralizing disturbance into areas of lesser importance.
Grand Staircase-Escalante National Monument Management Plan	Development of a resource management plan	Still in early planning stages for this area that overlaps the Panguitch population. Effect: This action would provide a framework to manage both the remaining monument areas and the areas no longer within the monument boundaries. It is too early in the process to determine a cumulative effect since the proposed plan is unknown.
Forest Service Sage-Grouse Planning	Forest Service and Utah Division of Wildlife Resources	Forest Service has indicated they will also be amending their land use plans. Specific details of their proposed changes are not yet known, but it is anticipated they propose alignment with state management plans and strategies. Applicable to all Greater Sage-Grouse populations with National Forest System Lands. Effect: This effort will help to align the Forest Service's plan to be more consistent with the State of Utah's plan and provide the adequate management actions necessary to protect and conserve the Greater Sage-Grouse.
State of Utah Greater Sage-Grouse Management	Update of the State's Conservation Plan for Greater Sage-Grouse in Utah, as well as implementation of the State's compensatory mitigation rule	Past: The Conservation Plan for Greater Sage-grouse in Utah was finalized in 2013; it was designed to be updated every 5 years. While it requires a 4:1 mitigation ratio in the State's Sage-Grouse Management Areas (SGMA), there was no established approach to implement that mitigation standard to the State's 11 SGMAs. Effect: The plan establishes the management actions necessary for the State of Utah to continue to enhance and

Table 4-3
Range-Wide Impacts from Past, Present, and Reasonably Foreseeable Future Actions

Action	Type	Effects
		conserve the Greater Sage-Grouse while still allowing for economic opportunities. Future: The State is updating their Greater Sage-Grouse plan and incorporating the compensatory mitigation rule that provides a process to develop a banking system to apply the state's 4:1 mitigation ratio that is designed to improve habitat for Greater Sage-Grouse. Effect: This effort will help to refine and identify areas to improve management actions and allow for the incorporation of new and local science to better balance Greater Sage-Grouse management across the state. It will also provide an opportunity for economic development to occur while offsetting the impacts to habitat quality.
Wyoming		
Wildland Fires 2015-2017	BLM: Past – Acres burned on BLM administered land	Approximately 137,000 acres of HMA burned between 2015 and 2017. Post fire restoration and habitat treatments are being implemented, as described below, to diminish impacts of habitat lost to wildland fire.
Fire Restoration (Emergency Stabilization and Rehabilitation)	BLM: Past and Present – Habitat restoration following wildland fires	Approximately 4,030 acres of BLM-administered habitat are either currently being treated or scheduled to be treated according to specific prescriptions outlined in Emergency Stabilization and Burned Area Rehabilitation plans following wildfire.
Habitat Treatments	BLM: Past – Habitat improvement projects	More than 96,000 acres of Greater Sage-Grouse habitat were treated between 2015 and 2017 to maintain or improve conditions for Greater Sage-Grouse. Treatments included conifer removal, fuel breaks, invasive species removal and habitat protection/ restoration.
Land Use and Realty (issued and pending) 2015-2018	BLM: Past ROWs issued on BLM land	BLM Wyoming issued approximately 3,000 ROWs in the planning area between 2015 and 2017. This includes amendments and reauthorizations, which may not have resulted in new disturbance. For ROWs occurring in sage grouse habitat, effects were offset by the management prescriptions in the RMPs and ARMPA.

Table 4-3
Range-Wide Impacts from Past, Present, and Reasonably Foreseeable Future Actions

Action	Type	Effects
	BLM: Future pending	There are approximately 590 ROW applications pending review and analysis. New ROWs under the Management Alignment Alternative would align with the management prescriptions of the Core Area Strategy and State of Wyoming Mitigation Framework. No additional cumulative impacts are anticipated, beyond those described.
Oil and Gas	BLM: Past	BLM Wyoming has offered for lease 861,634 acres; 812,123 acres of that total was leased. Leases followed management prescriptions in the RMPs and ARMPA and stipulations apply as described in the leases according to HMA category.
	BLM: Future pending	BLM Wyoming has a scheduled lease sale in June 2018 that will offer 198,588 acres for lease. The actions proposed in the Management Alignment Alternative to not propose to change stipulations analyzed in the 2014 and 2015 plans.
Locatable Mineral Projects	BLM: Past and Present	Between 2015-2017, the BLM has approved 17 new mines and/or expansions within the planning area (including non-habitat). The Management Alignment Alternative does not propose changes to any decisions associated with locatable minerals, which were sufficiently analyzed on the existing plans.
	BLM: Future pending	The BLM is currently reviewing 26 plans of operation for new mines, mine expansions and notice-level activities. This number also includes 10 pending mine patents, which are in the process of being patented into private ownership. The Management Alignment Alternative does not propose changes to any decisions associated with locatable minerals, and future impacts would be analyzed in future EISs, adhering to existing requirements of the RMPs and ARMPA.
Leasable Mineral Projects (Coal)	BLM: Past and Present	Two coal lease modifications were issued in 2018, totaling 1,306.61 acres. For lease modifications occurring in sage grouse habitat, effects were offset by the management prescriptions in the RMPs and ARMPA.
	BLM: Future pending	BLM Wyoming is currently reviewing 4 coal lease applications/modifications totaling 10,148.56 acres. No management

Table 4-3
Range-Wide Impacts from Past, Present, and Reasonably Foreseeable Future Actions

Action	Type	Effects
		decisions for leasable minerals are proposed for change under the Management Alignment Alternative.
Sage-Grouse Conservation	Forest Service- Future	Forest Service has indicated they will also be amending their land use plans. Specific details of their proposed changes are not yet known, but it is anticipated they will propose alignment with state management plans and strategies.

Some 350 species of plants and wildlife rely on sagebrush steppe ecosystems, coexist with Greater Sage-Grouse, and may be similarly affected by development or disturbance; however, nothing in the considered alternatives would lessen the BLM's authority or responsibility to provide for the needs of special status species, as described in BLM land use plans, policies, and laws, including Manual 6840, the Endangered Species Act, and FLPMA.

Increased flexibility for other uses within Greater Sage-Grouse habitat do not necessarily increase potential impacts on other wildlife or plant species. Site-specific NEPA analyses, including an evaluation of impacts on special status species, is required for on-the-ground projects within the planning area.

In addition to the analysis in the 2014 and 2015 Final EISs in **Table 4-2**, other anticipated incremental impacts are discussed below in association with planning issues being analyzed in this RMPA/EIS.

Under the Management Alignment Alternative, the BLM would update its Greater Sage-Grouse habitat management areas, including biologically significant units (BSUs), in conjunction with the State of Wyoming's core areas, upon issuance of any Wyoming Governor's executive order revising or amending the core area boundaries. The underlying HMA allocations developed to conserve Greater Sage-Grouse would not change, and these updates reflect the most recent knowledge concerning Greater Sage-Grouse habitat use and distribution. Because of this there would be no appreciable additive impact from the implementation of this aspect on Greater Sage-Grouse or the resources/uses analyzed herein.

Similarly, no appreciable additive impacts are anticipated for the removal of SFAs or the recommendation to withdraw SFAs from location and entry under the Mining Law of 1872 under the Management Alignment Alternative. The EIS process considering the withdrawal was cancelled on October 11, 2017, and the cumulative effects of implementing the Management Alignment Alternative are as described in the 2016 SFA Withdrawal DEIS, under Alternative A, in which SFAs are not carried forward.

While the Management Alignment Alternative removes the Greater Sage-Grouse specific language, it emphasizes wildlife/special status species standards that would include Greater Sage-Grouse, as long as they retain sensitive species status. As Greater Sage-Grouse will continue to be considered at the implementation level with site-specific analysis, following management prescriptions analyzed in the 2014 and 2015 Final EISs, no additive impact of this change is anticipated.

The Management Alignment Alternative proposes to modify livestock grazing actions for riparian area management and range improvement projects. Analysis indicates that there is a potential for localized adverse impacts on Greater Sage-Grouse; however, the BLM would be required to analyze the impact of modifying range improvements and riparian management, regardless of habitat type, under management prescriptions analyzed in the 2014 and 2015 Final EISs; therefore, the additive impact of this change at a population level would be minimal.

Under the Management Alignment Alternative, language would be modified in the habitat objectives table. The proposed preamble language is intended to clarify the use of the tables and does not alter management actions associated with the tables. The modified language for perennial grass height expresses reliance on best available science to define appropriate perennial grass height. This is also included in the No-Action Alternative and does not preclude the use of the science supporting the objective defined by the No-Action Alternative. Because the Management Alignment Alternative either does not alter management actions or is included in the No-Action Alternative, there is no additive impact of this change.

There is no anticipated additive impact from updating the adaptive management process as described in the Management Alignment Alternative. The updated language does not alter the adaptive management actions described and analyzed in the No-Action Alternative; instead, it aims to codify the intent and ability to return to previous management actions once an identified threat has been alleviated.

Under the Management Alignment Alternative, the recommendation to withdraw SFAs from location and entry under the Mining Law of 1872 would be removed, as the EIS process considering the withdrawal was cancelled on October 11, 2017. In its 2016 SFA Withdrawal EIS, the BLM quantified the possible adverse effects from locatable mineral exploration and mining on the approximately 10 million acres of SFAs proposed for withdrawal, finding that they would be limited to approximately 9,000 acres of surface disturbance over 20 years, with approximately 0.58 percent of Greater Sage-Grouse male birds affected per year. The other action alternatives evaluated in the 2016 SFA Withdrawal EIS similarly demonstrated minimal benefit of the proposed withdrawal to Greater Sage-Grouse and its habitat.[2] The cumulative effects of implementing the Management Alignment Alternative are as described in the 2016 SFA Withdrawal EIS, under the No-Action Alternative, in which SFAs are not carried forward.

Under the Management Alignment Alternative, language would be added to clarify how implementation level decisions would be guided regarding compensatory mitigation for a broad set of actions, including aligning the compensatory mitigation process for the construction of recreation facilities in PHMA. The modifications proposed to the compensatory mitigation framework and net conservation gain in the Management Alignment Alternative are in line with the Wyoming core area strategy, which has been supported by the USFWS as "adequate protection for Greater Sage-Grouse and their habitat" (Decision; 75 FR 13910). Additionally, the State of Wyoming Compensatory Mitigation Framework addresses the issues of durability, effectiveness, timeliness, commensurability, and additionality, in-kind

[2]Importantly, mining operations that do occur are subject to regulation under the BLM's surface management regulations at 43 CFR Part 3809. These regulations ensure that operators comply with environmental standards in conducting exploration, mining, and reclamation. For example, the BLM must approve a plan of operations for locatable mining operations on public lands, which includes compliance with the National Environmental Policy Act, National Historic Preservation Act, and Endangered Species Act. Plans of operation must also include those measures to meet specific performance standards and to prevent unnecessary or undue degradation of the lands (43 CFR 3809.411).

to the compensatory mitigation analysis completed in the 2014 and 2015 plans. As these updates did not result in any new identifiable direct or indirect impacts, there would be no appreciable additive impact on Greater Sage-Grouse from the implementation of this language or the resources/uses analyzed herein, as compared to the No-Action Alternative.

Under the Management Alignment Alternative, language would be added to clarify how implementation level decisions would be guided in regard to appropriate noise standards around leks in PHMA. Impacts on resource uses associated with the application of a noise COA would be reviewed in a site-specific NEPA analysis (i.e., environmental assessment) and there is no additive, population-scale impact anticipated from this action.

No additive impact is anticipated by the change proposed to fluid mineral leasing prioritization under the Management Alignment Alternative. A fluid mineral lease does not authorize surface-disturbing activities; therefore, impacts related to changes in the prioritization of leasing outside of PHMA would be likely to beneficially affect Greater Sage-Grouse conservation in Wyoming. Site-specific impacts would be identified at the time a project-level application is received, and additional additive impacts would be analyzed at that time.

4.7 Irreversible and Irretrievable Commitment of Resources

Section 102(2)(C) of NEPA requires a discussion of any irreversible or irretrievable commitments of resources from an alternative, should it be implemented. An irreversible commitment of a resource is one that cannot be reversed, such as the extinction of a species or loss of a cultural resource site without proper documentation; an irretrievable commitment of a resource is one in which the resource or its use is lost for a period of time, such as extraction of oil and gas.

Implementation of the Management Alignment Alternative would still allow for surface-disturbing activities, including mineral and energy development and infrastructure development that would result in irreversible or irretrievable commitments of resources. These surface-disturbing activities would result in long-term or permanent alternations to soil, removal of vegetation cover, fragmentation of wildlife habitat, and damage to cultural and paleontological resources. Wildlife dependent on affected habitats may be displaced and populations may be reduced as the carrying capacity of the range is reduced.

Increases in sediment, salinity, and nonpoint source pollution that result from these activities could result in degradation of water quality and an irretrievable loss of water utility, aquatic habitats, and aquatic-dependent species. Impacts on these resources are detailed in the 2014 and 2015 amendments and revisions and are not repeated in this RMPA/EIS; however, management prescriptions and mitigation prescribed under the existing RMP decisions that are designed to protect Greater Sage-Grouse habitat would reduce the magnitude of these impacts by limiting surface disturbance and disruptive activities.

Because none of the proposed changes identified in this RMPA/EIS identify additional irreversible or irretrievable commitments of resources, there is no expectation that impacts additional to or different from those identified in the 2014 and 2015 Final EISs would occur.

4.8 Unavoidable Adverse Impacts

Section 102(C) of NEPA requires disclosure of any adverse environmental impacts that could not be avoided should the proposal be implemented. Unavoidable adverse impacts are those that remain

following the implementation of mitigation measures or impacts for which there are no mitigation measures. Some unavoidable adverse impacts happen from implementing the RMPA; others are a result of public use of BLM-administered lands in the planning area.

There are no unavoidable adverse impacts identified that would be additional to or different from those identified in the 2014 and 2015 Final EISs. It is likely that local adverse effects may occur as a result of the implementation of the Management Alignment Alternative; however, they would be similar to those local adverse effects identified in the 2015 and 2015 Final EISs and would not affect Greater Sage-Grouse conservation in Wyoming.

4.9 Relationship Between Local Short-Term Uses and Long-Term Productivity

Section 102(C) of NEPA requires a discussion of the relationship between local, short-term uses of human environment and the maintenance and enhancement of long-term productivity of resources. As described in the introduction to this chapter, short-term is defined as anticipated to occur within the first 5 years of implementation of the activity; long-term is defined as following the first 5 years of implementation but within the life of the RMPA.

Any use of natural resources within the planning area is likely to adversely impact long-term productivity of these natural resources. The short-term uses that would result in the greatest impact on long-term productivity include mineral and energy development, dispersed recreation, livestock grazing, and infrastructure development. These uses result in surface-disturbing and disruptive activities that remove vegetation, increase soil erosion and compaction, create visual intrusions and landscape alterations, increase noise, impair water quality, and degrade and fragment wildlife habitat.

Although management actions, BMPs, surface use restrictions, and lease stipulations are intended to minimize the effect of short-term uses, some impact on long-term productivity of resources would occur, regardless of management approach; however, because allocations are not being affected and impacts as a result of the Management Alignment Alternative would be minimal, no additional or different impacts on short-term uses and long-term productivity than those that were identified in the 2014 and 2015 Final EISs would occur.

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Chapter 5. Consultation and Coordination

The BLM decision-making process is conducted in accordance with the requirements of NEPA, Council on Environmental Quality (CEQ) regulations implementing NEPA, and the DOI and BLM policies and procedures implementing NEPA. The NEPA and associated regulatory and policy framework require that all federal agencies involve the interested public and potentially affected parties in their decision-making and prepare environmental documents that disclose the potential impacts of proposed actions and alternatives.

A Notice of Intent (NOI) was published in the *Federal Register* on October 11, 2017, which initiated a 45-day public scoping period for the potential amendment to BLM land use plans (LUPs) that were revised or amended in 2014 and 2015 regarding Greater Sage-Grouse conservation. The BLM Wyoming State Office solicited additional public involvement at multiple meetings, including public scoping meetings and two cooperating agency workshops, to help identify issues to be addressed in the planning process. **Table 5-1** lists the public involvement, coordination, and consultation events that occurred in Wyoming.

Table 5-1
Public Involvement, Coordination, and Consultation Events

Date	Location	Type
November 6, 2017	Cheyenne, Wyoming	Public Scoping Meeting
November 8, 2017	Pinedale, Wyoming	Public Scoping Meeting
March 27–28, 2018	Rock Springs, Wyoming	Cooperators Meeting
April 3–4, 2018	Casper, Wyoming	Cooperators Meeting

5.1 PUBLIC INVOLVEMENT

In accordance with CEQ scoping guidance, the BLM provided a public scoping period to identify potential issues and concerns associated with potentially amending LUPs regarding Greater Sage-Grouse conservation. The intent of the scoping process is to provide an opportunity for the public, interest groups, tribes, and other governmental agencies to learn about the project and provide input on planning issues, impacts, and potential alternatives that will be addressed in the RMPA/EIS. Generally, public involvement during scoping assists the agency through the following: broadening the information base for decision-making, informing the public about the planning and NEPA process, and ensuring that public needs and viewpoints are understood by the agencies. Information about scoping meetings, comments received, comment analysis, and issue development can be found in the scoping report available online here: https://goo.gl/7wdKmM.

5.1.1 Public Scoping

The scoping period began with the publication of the NOI in the *Federal Register* on October 11, 2017. The NOI was titled Notice of Intent to Amend Land Use Plans Regarding Greater Sage-Grouse Conservation and Prepare Associated Environmental Impact Statements or Environmental Assessments. During the scoping period, the BLM sought public comments on whether all, some, or none of the 2015 Greater Sage-Grouse plans should be amended, what issues should be considered, and whether the BLM

should pursue a state-by-state amendment process or structure its planning effort differently, for example by completing a national programmatic process. Representatives of the BLM engaged with the Western Governors' Association Sage Grouse Task Force in October of 2017 and January of 2018 to discuss the progress of scoping efforts. In addition, the DOI Deputy Secretary has emphasized that input from state governors would weigh heavily when considering what changes should be made and ensuring consistency with the BLM's multiple use mission.

The BLM held two public scoping meetings on November 6 and 8, 2017, respectively, in Cheyenne and Pinedale, Wyoming. **Table 5-1**, Public Involvement, Coordination, and Consultation Events, lists the scoping meeting locations and dates. The scoping meetings provided the public with an opportunity to learn and ask questions about the project and the planning process, and to submit their issues and concerns to the BLM. The BLM provided an open house format to encourage participation and dialogue, and to enable attendees to ask questions of BLM representatives in an informal one-on-one setting. The BLM also provided handouts, presented displays, and delivered a presentation at each meeting. The BLM encouraged attendees to comment by providing written or electronic submissions. Comment forms were available to attendees at each meeting.

5.1.2 Website

The national webpage for the NOI to amend the Greater Sage-Grouse RMP revisions and amendments is located at https://goo.gl/7wdKmM and includes scoping and other information relevant to all state-specific planning efforts in accordance with the NOI. The project website for the Wyoming Greater Sage-Grouse RMPA/EIS can be found at https://goo.gl/FoqAn9. The site serves as a repository for documents related to the development of the RMPA/EIS, including draft and final NEPA documents and other pertinent information. The website also provides the opportunity for the public to submit comments for consideration as part of the RMPA/EIS comment period.

5.1.3 Future Public Involvement

Public participation efforts will be ongoing throughout the remainder of the RMPA/EIS process. One substantial part of this effort is the opportunity for members of the public to comment on the Draft RMPA/EIS during the comment period. This Proposed RMPA/Final EIS will respond to all substantive comments that the BLM receives during the 90-day comment period. An NOA will be published in the *Federal Register* to notify the public of the availability of the Proposed RMPA and Final EIS. The NOA will also outline protest procedures during the 30-day period. A Governor's Consistency Review will occur concurrent with this protest period. Such protests will be addressed in the RODs, and necessary adjustments may be made to the RMPA/EIS. A ROD will then be issued by the BLM after the release of the Proposed RMPA/Final EIS, the Governor's Consistency Review, and any resolution of protests received on the Proposed RMPA/Final EIS.

5.2 Cooperating Agencies

Federal regulation directs the BLM to invite eligible federal agencies, state and local governments, and federally recognized Indian tribes to participate as cooperating agencies when amending RMPs Notice of Intent to Amend Land Use Plans Regarding Greater Sage-Grouse Conservation and Prepare Associated Environmental Impact Statements or Environmental Assessments (43 CFR 1610.3-1(b)). A cooperating agency is any such agency or tribe that enters into a formal agreement with the lead federal agency to help develop an environmental analysis. More specifically, cooperating agencies "work with the BLM, sharing knowledge and resources, to achieve desired outcomes for public lands and communities within

statutory and regulatory frameworks" (BLM Land Use Planning Handbook H-1601-1). These agencies are invited to participate because they have jurisdiction by law or can offer special expertise. Cooperating agency status provides a formal framework for these government units to engage in active collaboration with a lead federal agency in the planning process.

The BLM Wyoming State Office extended cooperating agency status to government entities and agencies throughout the state. The following is a list of the government entities that have formally agreed to participate as cooperating agencies in the development of the RMPA/EIS (**Table 5-2**).

Table 5-2
Cooperating Agencies

- Bighorn County
- Campbell County
- Campbell County Conservation District
- Clear Creek Conservation District
- Converse County
- Fremont County
- Hot Springs County
- Hot Springs Conservation District
- Johnson County
- Lincoln County
- Lincoln County Conservation District
- Lower Wind River Conservation District
- Medicine Bow Conservation District
- Meeteetse Conservation District
- Natrona County Conservation District
- Park County
- Popo Agie Conservation District
- Saratoga-Encampment-Rawlins Conservation District
- Sheridan County
- Sublette County
- Sublette County Conservation District
- Sweetwater County
- Sweetwater County Conservation District
- Teton County
- Uinta County
- Uinta County Conservation District
- US Fish and Wildlife Service
- US Office of Surface Mining and Reclamation Enforcement
- Washakie County
- Washakie County Conservation District
- Weston County
- Wyoming Department of Agriculture
- Wyoming Department of Environmental Quality – Industrial Siting Division
- Wyoming Game and Fish Department
- Wyoming Office of the Governor
- Wyoming Office of State Lands and Investments
- Wyoming Oil and Gas Conservation Commission

The cooperating agencies were invited to participate in the development of alternatives and to provide data and other information relative to their disciplines. The BLM held meetings with the cooperating agencies on March 27 and 28, 2018, and April 3 and 4, 2018, regarding the planning process and development of alternatives. Cooperating agencies have also provided comments on the Draft RMPA/EIS. **Table 5-1** lists the cooperating agency meeting locations and dates.

5.3 AMERICAN INDIAN TRIBAL CONSULTATION

Consultation with Native American tribes is a requirement of FLPMA and BLM guidance. In December 2017, the BLM Wyoming sent letters to tribal governments providing notification of the RMPA/EIS and inviting the tribes to participate as cooperating agencies in the planning process. Letters were sent to the following six tribes located in Wyoming and Nebraska:

- Eastern Shoshone
- Northern Arapaho
- Omaha Tribe of Nebraska
- Ponca Tribe of Nebraska
- Santee Sioux Nation of Nebraska
- Winnebago Tribe of Nebraska

The Draft RMPA/EIS was provided to the tribes concurrently with its release to the public. Government-to-government consultation will continue throughout the planning process to ensure that tribal groups' concerns are considered during development of the Proposed RMPA/Final EIS. This portion of the Final EIS will be updated to reflect continuing consultation efforts with American Indian tribes.

5.4 LIST OF PREPARERS

This RMPA/EIS was prepared and reviewed by an interdisciplinary team of staff from the BLM, in collaboration with Environmental Management and Planning Solutions, Inc.

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Glossary

Adaptive management. A type of natural resource management in which decisions are made as part of an ongoing science-based process. Adaptive management involves testing, monitoring, and evaluating applied strategies, and incorporating new knowledge into management approaches that are based on scientific findings and the needs of society. Results are used to modify management policy, strategies, and practices.

Amendment. The process for considering or making changes in the terms, conditions, and decisions of approved Resource Management Plans or management framework plans. Usually only one or two issues are considered that involve only a portion of the planning area.

Avoidance/avoidance area. These terms usually address mitigation of some activity (i.e., resource use). Paraphrasing the CEQ Regulations (40 CFR 1508.20), avoidance means to circumvent, or bypass, an impact altogether by not taking a certain action, or parts of an action. Therefore, the term "avoidance" does not necessarily prohibit a proposed activity, but it may require the relocation of an action, or the total redesign of an action to eliminate any potential impacts resulting from it. Also see *"right-of-way avoidance area"* definition.

Best Management Practices (BMPs). A suite of techniques that guide or may be applied to management actions to aide in achieving desired outcomes. BMPs are often developed in conjunction with land use plans, but they are not considered a planning decision unless the plans specify that they are mandatory.

Biologically Significant Unit (BSU). A geographical/spatial area within Greater Sage-Grouse habitat that contains relevant and important habitats that is used as the basis for comparative calculations to support evaluation of changes to habitat.

Compensatory mitigation. Compensating for the residual impact by replacing or providing substitute resources or environments (40 CFR 1508.20).

Controlled Surface Used (CSU). CSU areas are open to fluid mineral leasing, but the stipulation allows the BLM to require special operational constraints, or the activity can be shifted more than 200 meters (656 feet) to protect the specified resource or value.

Connectivity Habitat. Connectivity habitats (as defined in Wyoming Executive Order 2011-5) are state-designated areas identified as the as the most important for Greater Sage-Grouse and include known migration or connectivity corridors. It does not include breeding, late brood-rearing, or winter concentration areas. Along with core habitat, connectivity habitat is one of two components of priority habitat management areas (PHMA).

Cooperating agency. Assists the lead federal agency in developing an environmental assessment or environmental impact statement. These can be any agency with jurisdiction by law or special expertise for proposals covered by NEPA (40 CFR 1501.6). Any tribe or Federal, State, or local government

jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency.

Core Habitat. Core habitats (as defined in Wyoming Executive Order 2011-5) are state-designated areas identified as the most important for Greater Sage-Grouse and include breeding, late brood-rearing, and winter concentration areas. It does not include known migration or connectivity corridors. Along with connectivity habitat, core habitat is one of two components of priority habitat management areas (PHMA).

Council on Environmental Quality (CEQ). An advisory council to the President of the US established by the National Environmental Policy Act of 1969. It reviews federal programs to analyze and interpret environmental trends and information.

Cumulative effects. The direct and indirect effects of a proposed project alternative's incremental impacts when they are added to other past, present, and reasonably foreseeable actions, regardless of who carries out the action.

Decision area. Public lands and mineral estate managed by the US Department of Interior, Bureau of Land Management that are within the planning area and are encompassed by all designated habitat.

Direct impacts. Direct impacts are caused by an action or implementation of an alternative and occur at the same time and place.

Environmental impact statement (EIS). A detailed statement prepared by the responsible official in which a major federal action that significantly affects the quality of the human environment is described, alternatives to the proposed action are provided, and effects are analyzed.

Fluid minerals. Oil, gas, coal bed natural gas, and geothermal resources.

General Habitat Management Area (GHMA). Areas of seasonal or year-round Greater Sage-Grouse habitat outside of priority habitat.

Geographic Information System (GIS). A system of computer hardware, software, data, people, and applications that capture, store, edit, analyze, and display a potentially wide array of geospatial information.

Habitat. An environment that meets a specific set of physical, biological, temporal, or spatial characteristics that satisfy the requirements of a plant or animal species or group of species for part or all of their life cycle.

Impact. The effect, influence, alteration, or imprint caused by an action.

Indirect impacts. Indirect impacts result from implementing an action or alternative but usually occur later in time or are removed in distance and are reasonably certain to occur.

Leasable minerals. Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920. These include energy-related mineral resources such as oil, natural gas, coal and geothermal,

and some non-energy minerals, such as phosphate, sodium, potassium, and sulfur. Geothermal resources are also leasable under the Geothermal Steam Act of 1970.

Lease stipulation. A modification of the terms and conditions on a standard lease form at the time of the lease sale.

Lek. An arena where male sage-grouse display for the purpose of gaining breeding territories and attracting females. These arenas are usually open areas with short vegetation within sagebrush habitats, usually on broad ridges, benches, or valley floors where visibility and hearing acuity are excellent.

Long-term effect. The effect could occur for an extended period after implementation of the alternative. The effect could last several years or more.

Management decision. A decision made by the BLM to manage public lands. Management decisions include both land use plan decisions and implementation decisions.

Minimization mitigation. Minimizing impacts by limiting the degree or magnitude of the action and its implementation (40 CFR 1508.20 (b)).

Mitigation. Includes specific means, measures or practices that could reduce, avoid, or eliminate adverse impacts. Mitigation can include avoiding the impact altogether by not taking a certain action or parts of an action, minimizing the impact by limiting the degree of magnitude of the action and its implementation, rectifying the impact by repairing, rehabilitation, or restoring the affected environment, reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, and compensating for the impact by replacing or providing substitute resources or environments.

Modification. A change to the provisions of a lease stipulation, either temporarily or for the term of the lease. Depending on the specific modification, the stipulation may or may not apply to all sites within the leasehold to which the restrictive criteria are applied.

No surface occupancy (NSO). A major constraint where use or occupancy of the land surface for fluid mineral exploration or development and all activities associated with fluid mineral leasing (e.g., truck-mounted drilling and geophysical exploration equipment off designated routes, construction of wells and/or pads) are prohibited to protect identified resource values. Areas identified as NSO are open to fluid mineral leasing, but surface occupancy or surface-disturbing activities associated with fluid mineral leasing cannot be conducted on the surface of the land. Access to fluid mineral deposits would require horizontal drilling from outside the boundaries of the NSO area.

Planning area. The geographical area for which resource management plans are developed and maintained regardless of jurisdiction.

Planning criteria. The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decision making, analysis, and data collection during planning. Planning criteria streamlines and simplifies the resource management planning actions.

Planning issues. Concerns, conflicts, and problems with the existing management of public lands. Frequently, issues are based on how land uses affect resources. Some issues are concerned with how land uses can affect other land uses, or how the protection of resources affects land uses.

Policy. This is a statement of guiding principles, or procedures, designed and intended to influence planning decisions, operating actions, or other affairs of the BLM. Policies are established interpretations of legislation, executive orders, regulations, or other presidential, secretarial, or management directives.

Priority Habitat Management Areas (PHMA). Areas that have been identified as having the highest conservation value to maintaining sustainable Greater Sage-Grouse populations; they include breeding, late brood-rearing, and winter concentration areas.

Required Design Features (RDFs). Means, measures, or practices intended to reduce or avoid adverse environmental impacts. A suite of features that would establish the minimum specifications for certain activities (i.e., water developments, mineral development, and fire and fuels management) and mitigate adverse impacts. These design features would be required to provide a greater level of regulatory certainty than through implementation of Best Management Practices. In general, the design features are accepted practices that are known to be effective when implemented properly at the project level.

Resource management plan (RMP). A land use plan as prescribed by the Federal Land Policy and Management Act that establishes, for a given area of land, land-use allocations, coordination guidelines for multiple-use, objectives, and actions to be achieved.

Short-term effect. The effect occurs only during or immediately after implementation of the alternative.

Stipulation (general). A term or condition in an agreement or contract.

Stipulation (oil and gas). A provision that modifies standard oil and gas lease terms and conditions in order to protect other resource values or land uses and is attached to and made a part of the lease. Typical lease stipulations include No Surface Occupancy, Timing Limitations, and Controlled Surface Use. Lease stipulations are developed through the land use planning process.

Timing Limitation (TL). Areas identified for timing limitations, a moderate constraint, are closed to fluid mineral exploration and development, surface-disturbing activities, and intensive human activity during identified timeframes. This stipulation does not apply to operation and basic maintenance activities, including associated vehicle travel, unless otherwise specified. Construction, drilling, completions, and other operations considered to be intensive are not allowed. Intensive maintenance, such as workover wells, is not permitted. TLs can overlap spatially with no surface occupancy and controlled surface use, as well as with areas that have no other restrictions.

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