Northwest Colorado Greater Sage-Grouse

Proposed Land Use Plan Amendment and Final Environmental Impact Statement

BLM
USFS

Volume I: Executive Summary, Chapters 1, 2, and 3

US Department of the Interior,
Bureau of Land Management
US Department of Agriculture,
Forest Service
June 2015

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.

The Forest Service mission is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations.

BLM/CO/PL-15/010

DOI-BLM-CO-L060-2015-0010-EIS

Cover Photo: Steve Ting

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1. Responsible Agencies: United States Department of the Interior
   Bureau of Land Management

   United States Department of Agriculture
   Forest Service

2. Type of Action: Administrative (X) Legislative ( )

3. Document Status: Draft ( ) Final (X)

4. Abstract: This proposed land use plan amendment and final environmental impact statement (Proposed LUPA/Final EIS) has been prepared by the United States Department of the Interior, Bureau of Land Management (BLM) and United States Department of Agriculture, Forest Service (Forest Service) with assistance from 22 cooperating agencies. It describes and analyzes five alternatives for managing approximately 1.7 million acres of BLM-administered and National Forest System lands and approximately 2.8 million acres of BLM-administered subsurface federal mineral estate that may lie beneath other surface ownership. Surface estate and federal mineral estate is managed by five BLM field offices (Colorado River Valley, Grand Junction, Kremmling, Little Snake, and White River), which make up the BLM Colorado Northwest District, and one national forest (Routt). The analysis area spans portions of 10 northwest Colorado counties: Eagle, Garfield, Grand, Jackson, Larimer, Mesa, Moffat, Rio Blanco, Routt, and Summit. Alternative A is a continuation of current management (no action alternative); use of public lands and resources would continue to be managed under the current BLM RMPs and Forest Service land and resource management plan, as amended. Alternative B describes management actions taken directly from the Sage-Grouse National Technical Team's *A Report on National Greater Sage-Grouse Conservation Measures*. Alternative C describes management actions submitted by various citizen groups. Alternative D describes management actions developed by adapting the National Technical Team measures to Northwest Colorado and was the agencies' preferred alternative in the Draft LUPA. The Proposed LUPA consists of a combination of Alternatives A, B, C, and D. The Proposed LUPA is not a final agency decision but instead an indication of the agencies' preference that reflects the best combination of decisions to achieve BLM and Forest Service goals and policies, meets the purpose and need, addresses the key planning issues, and considers public comments and the recommendations of cooperating agencies and BLM and Forest Service specialists. The alternatives present a range of management actions to achieve the goal of Greater Sage-Grouse conservation for the BLM Colorado Northwest District and the Routt National Forest. Major planning issues addressed include realty actions, oil and gas, minerals, travel management, grazing, and fuels management.

5. Review Period: Protests about the Northwest Colorado Greater Sage-Grouse Proposed LUPA/Final EIS will be accepted for 30 calendar days following publication of the US Environmental Protection Agency's Notice of Availability in the Federal Register.

6. For further information, contact:

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United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Colorado State Office
2850 Youngfield Street
Lakewood, Colorado 80215-7210
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Dear Reader:

Enclosed is the Northwest Colorado Sub-regional Greater Sage-Grouse (GRSG) Proposed Land Use Plan Amendment (Proposed LUPA) and Final Environmental Impact Statement (FEIS), one of 15 sub-regional efforts being conducted as part of the Bureau of Land Management (BLM) and Forest Service National Greater-Sage Planning Strategy. The BLM and Forest Service prepared the Proposed LUPA/FEIS in consultation with cooperating agencies, taking into account public comments received during this planning effort. The purpose of the Proposed LUPA is to amend the Colorado River Valley, Grand Junction, Kremmling, Little Snake and White River BLM Resource Management Plans (RMPs) and the Routt National Forest Service Land and Resource Management Plan (LRMP) to identify and incorporate appropriate conservation measures to conserve, enhance and/or restore Greater Sage-Grouse habitat by reducing, eliminating, or minimizing threats to that habitat. The need for action is in response to the U.S. Fish and Wildlife Service's (USFWS) March 2010 "warranted, but precluded" Endangered Species Act listing petition. The USFWS found that the inadequacy of regulatory mechanisms was identified as a significant threat to GRSG in their finding on the petition to list the GRSG. Land use plan conservation measures were identified as the BLM's and Forest Service's principal regulatory mechanism.

This Proposed LUPA/FEIS has been developed in accordance with the National Environmental Policy Act of 1969, as amended, the Federal Land Policy and Management Act of 1976, as amended, and the National Forest Management Act of 1976, as amended. The Proposed LUPA is largely based on Alternative D, the preferred alternative in the Draft LUPA/DEIS, which was released on August 16, 2013. The Proposed LUPA/FEIS contains the Proposed Plan, a summary of changes made between the Draft LUPA/DEIS and Proposed LUPA/FEIS, impacts of the Proposed Plan, a summary of the written and verbal comments received during the public review period for the Draft LUPA/DEIS, and responses to the comments.

In accordance with 36 C.F.R. § 219.59, the Forest Service will waive their objection procedures of this subpart and instead adopt the BLM's protest procedures outlined in 43 C.F.R. §1610.5-2.

Pursuant to BLM's planning regulations at 43 C.F.R. 1610.5-2, any person who participated in the planning process for this Proposed LUPA and has an interest that is or may be adversely affected by the planning decisions may protest approval of the planning decisions within 30 days from date the Environmental Protection Agency (EPA) publishes the Notice of Availability of the FEIS in the Federal Register. For further information on filing a protest, please see the accompanying protest regulations in the pages that follow (labeled as Attachment # 1). The regulations specify the required elements of your protest. Take care to document all relevant facts. As much as possible, reference or cite the planning documents or available planning records (e.g., meeting minutes or summaries, correspondence, etc.).

Emailed protests will not be accepted as valid protests unless the protesting party also provides the original letter by either regular mail or overnight delivery postmarked by the close of the protest period. Under these conditions, the BLM will consider the emailed protest as an advance copy and will afford it full consideration. If you wish to provide the BLM with such advance notification, please direct emailed protests to: protest@blm.gov.

All protests must be in writing and mailed to one of the following addresses:

Regular Mail:	Overnight Delivery:
Director (210)	Director (210)
Attn: Protest Coordinator	Attn: Protest Coordinator
P.O. Box 71383	20 M Street SE, Room 2134LM
Washington, D.C. 20024-1383	Washington, D.C. 20003

Before including your address, phone number, email address, or other personal identifying information in your protest, be advised that your entire protest – including your personal identifying information – may be made publicly available at any time. While you can ask us in your protest to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

The BLM Director, in agreement with the responsible official for the U.S. Forest Service (USFS), will make every attempt to promptly render a decision on each protest. The decision will be in writing and will be sent to the protesting party by certified mail, return receipt requested. The decision of the BLM Director shall be the final decision of the Department of the Interior on each protest. Responses to protest issues will be compiled and formalized in a Director's Protest Resolution Report made available following issuance of the decisions.

Upon resolution of all land use plan amendment protests, the BLM and USFS will issue an Approved LUPA and Record of Decision (ROD). The Approved LUPA and ROD will be mailed or made available electronically to all who participated in the planning process and will be available on the BLM website at *https://www.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=48133* and the USFS website at http://www.fs.usda.gov/mbr.

Sincerely,

Ruth Welch
State Director

Protest Regulations

[CITE: 43C.F.R.1610.5-2]

TITLE 43--PUBLIC LANDS: INTERIOR
CHAPTER II--BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR
PART 1600--PLANNING, PROGRAMMING, BUDGETING--Table of Contents
Subpart 1610--Resource Management Planning
Sec. 1610.5-2 Protest procedures.

(a) Any person who participated in the planning process and has an interest that is or may be adversely affected by the approval or amendment of a resource management plan may protest such approval or amendment. A protest may raise only those issues that were submitted for the record during the planning process.

(1) The protest shall be in writing and shall be filed with the Director. The protest shall be filed within 30 days of the date the Environmental Protection Agency published the notice of receipt of the final environmental impact statement containing the plan or amendment in the Federal Register. For an amendment not requiring the preparation of an environmental impact statement, the protest shall be filed within 30 days of the publication of the notice of its effective date.

(2) The protest shall contain:

(i) The name, mailing address, telephone number and interest of the person filing the protest;

(ii) A statement of the issue or issues being protested;

(iii) A statement of the part or parts of the plan or amendment being protested;

(iv) A copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issue or issues were discussed for the record; and

(v) A concise statement explaining why the State Director's decision is believed to be wrong.

(3) The Director shall promptly render a decision on the protest.

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

The Federal Land Policy and Management Act of 1976 (FLPMA) directs the United States (US) Department of the Interior (DOI), Bureau of Land Management (BLM) to develop and periodically revise or amend its resource management plans (RMPs), which guide management of BLM-administered lands. The National Forest Management Act of 1976 (NFMA) directs the US Department of Agriculture, Forest Service (Forest Service) to develop and periodically revise or amend its land and resource management plans (LRMPs), which guide management of National Forest System lands. These two agencies' plans will be generically referred to as land use plans (LUPs) throughout this document, unless the reference is to a specific BLM or Forest Service LUP.

The BLM and Forest Service Northwest Colorado Greater Sage-Grouse (GRSG) Proposed Plan provides a layered management approach that offers the highest level of protection for GRSG in the most valuable habitat. Land use allocations in the Proposed Plan would limit or eliminate new surface disturbance in Priority Habitat Management Areas (PHMA), while minimizing disturbance in General Habitat Management Areas (GHMA). In addition to establishing protective land use allocations, the Proposed Plan would implement a suite of management tools, such as disturbance limits, GRSG habitat objectives and monitoring, mitigation approaches, adaptive management triggers and responses, and other protective measures throughout the range. These overlapping and reinforcing conservation measures would work in concert to improve and restore GRSG habitat condition and provide consistency in how the BLM and Forest Service manage activities in GRSG habitat in the planning area.

ES.1.1 Rationale for the Greater Sage-Grouse Planning Strategy and Land Use Plan Amendment

This land use plan amendment (LUPA) is the result of the March 2010 US Fish and Wildlife Service (USFWS) 12-Month Finding for Petitions to List the Greater Sage-Grouse (*Centrocercus urophasianus*) as Threatened or Endangered (75 *Federal Register* 13910, March 23, 2010). In that finding, the USFWS concluded that GRSG was "warranted, but precluded" for listing as a threatened or endangered species. A warranted, but precluded determination is one of three results that may occur after a petition is filed by the public to list a species under the Endangered Species Act (ESA). This finding indicates that immediate publication of a proposed rule to list the species is precluded by higher-priority listing proposals; that is, a species should be listed based on the available science, but listing other species takes priority because they are more in need of protection.

The USFWS reviewed the status of and threats to the GRSG in relation to the five listing factors provided in Section 4(a)(1) of the ESA. Of the five listing factors reviewed, the USFWS determined that Factor A, "the present or threatened destruction, modification, or curtailment of the habitat or range of the GRSG," and Factor D, "the inadequacy of existing regulatory mechanisms," posed "a significant threat to the GRSG now and in the foreseeable future" (75 *Federal Register* 13910, March 23, 2010). The USFWS identified the principal regulatory mechanisms for the BLM and Forest Service as conservation measures in LUPs.

Consistent with the National Greater Sage-Grouse Planning Strategy (BLM 2011),[1] the BLM as the lead agency, together with the Forest Service as a cooperating agency, is preparing 15 environmental impact statements (EISs), with associated plan amendments and revisions. These documents provide a set of management alternatives focused on specific conservation measures across the range of the GRSG (see **Figure ES-1**, Greater Sage-Grouse Planning Strategy Boundaries).

Science-based decision-making and collaboration with state and local partners are fundamental to the Greater Sage-Grouse Planning Strategy. The 15 GRSG LUP/EISs address threats to GRSG identified by state fish and wildlife agencies, the BLM National Technical Team, and the USFWS in the context of its listing decision and the Conservation Objectives Team (COT) report. The COT report was prepared by wildlife biologists from state and federal agencies and provides a blueprint for the overall conservation approach set forth in the BLM and Forest Service GRSG LUP/EISs (USFWS 2013).[2] Where consistent with

[1] BLM (US Department of the Interior, Bureau of Land Management). 2011. Instruction Memorandum 2012-044, BLM National. Greater Sage-Grouse Land Use Planning Strategy. Washington, DC. December 27, 2011.
[2] USFWS (US Department of the Interior, Fish and Wildlife Service). 2013. Greater Sage-grouse *(Centrocercus urophasianus)* Conservation Objectives: Final Report. USFWS, Denver, Colorado. February 2013.

conservation objectives, the GRSG LUP/EISs adopt unique state- and stakeholder-developed approaches and priorities. Additional science-based reviews by the US Geological Survey and related scientific literature provided further guidance on specific issues that arose in developing the final BLM and Forest Service GRSG LUP/EISs. In addition, regular meetings with the Western Governors Association Sage-Grouse Task Force provided additional opportunities for coordination with member states.[3]

Figure ES-1

ES.1.2 Description of the Planning Area and Habitat Management Areas

The planning area is the geographic area within which the BLM and Forest Service will make decisions during this planning effort. The planning area boundary includes all lands regardless of jurisdiction. The Northwest Colorado sub-regional GRSG planning area covers all or a portion of 10 counties in northwestern Colorado: Eagle, Garfield, Grand, Jackson, Larimer, Mesa, Moffat, Rio Blanco, Routt, and Summit. While the planning area consists of all lands

[3] The Western Governors Association Sage-Grouse Task Force works to identify and implement high priority conservation actions and integrate ongoing actions necessary to preclude the need for the GRSG to be listed under the ESA. The Task Force includes designees from the 11 western states where GRSG is found as well as representatives from USFWS, BLM, Natural Resources Conservation Service, Forest Service, US Geological Survey, and Department of the Interior.

regardless of ownership, decisions resulting from this LUPA would apply only to BLM-administered and National Forest System lands in GRSG habitats ("decision area"), including surface and split-estate lands with BLM-administered subsurface mineral rights. **Chapter 3**, Affected Environment, describes the current resource and resource use conditions in the planning area.

GRSG habitat on BLM-administered and National Forest System lands in the decision area consists of lands allocated as PHMA and GHMA (**Table ES-1**, Habitat Management Areas in the Northwest Colorado Planning Area**, and Figure ES-2**, Greater Sage-Grouse Habitat Management Areas – Northwest Colorado GRGS LUPA/EIS). PHMA and GHMA are defined as follows:

- PHMA (926,700 acres)—BLM-administered and National Forest System lands identified as having the highest value to maintaining sustainable GRSG populations. The boundaries and management strategies for PHMA are derived from and generally follow the Preliminary Priority Habitat boundaries identified in the Draft LUPA/EIS (**Chapter 3**) but may be modified based on the objectives of each alternative. Areas of PHMA largely coincide with areas identified as Priority Areas for Conservation in the COT report.
- GHMA (742,900 acres)—BLM-administered and National Forest System lands that require some special management to sustain GRSG populations. The boundaries and management strategies GHMA are derived from and generally follow the Preliminary General Habitat boundaries identified in the Draft LUPA/EIS (**Chapter 3**) but may be modified based on the objectives of each alternative.

The planning area includes other BLM-administered and National Forest System lands that are not allocated as habitat management areas for GRSG. The Northwest Colorado LUPA/EIS does not establish any additional management for these lands; they will be managed according to the existing, underlying LUPs for the area.

Table ES-1
Habitat Management Areas in the Northwest Colorado Planning Area

Habitat Management Area	Acres of BLM-Administered/National Forest System Surface Lands	Percent of BLM-Administered/National Forest System Surface Lands in Planning Area
PHMA	926,700	53
GHMA	742,900	42
Other BLM-administered/National Forest System lands	82,000	5

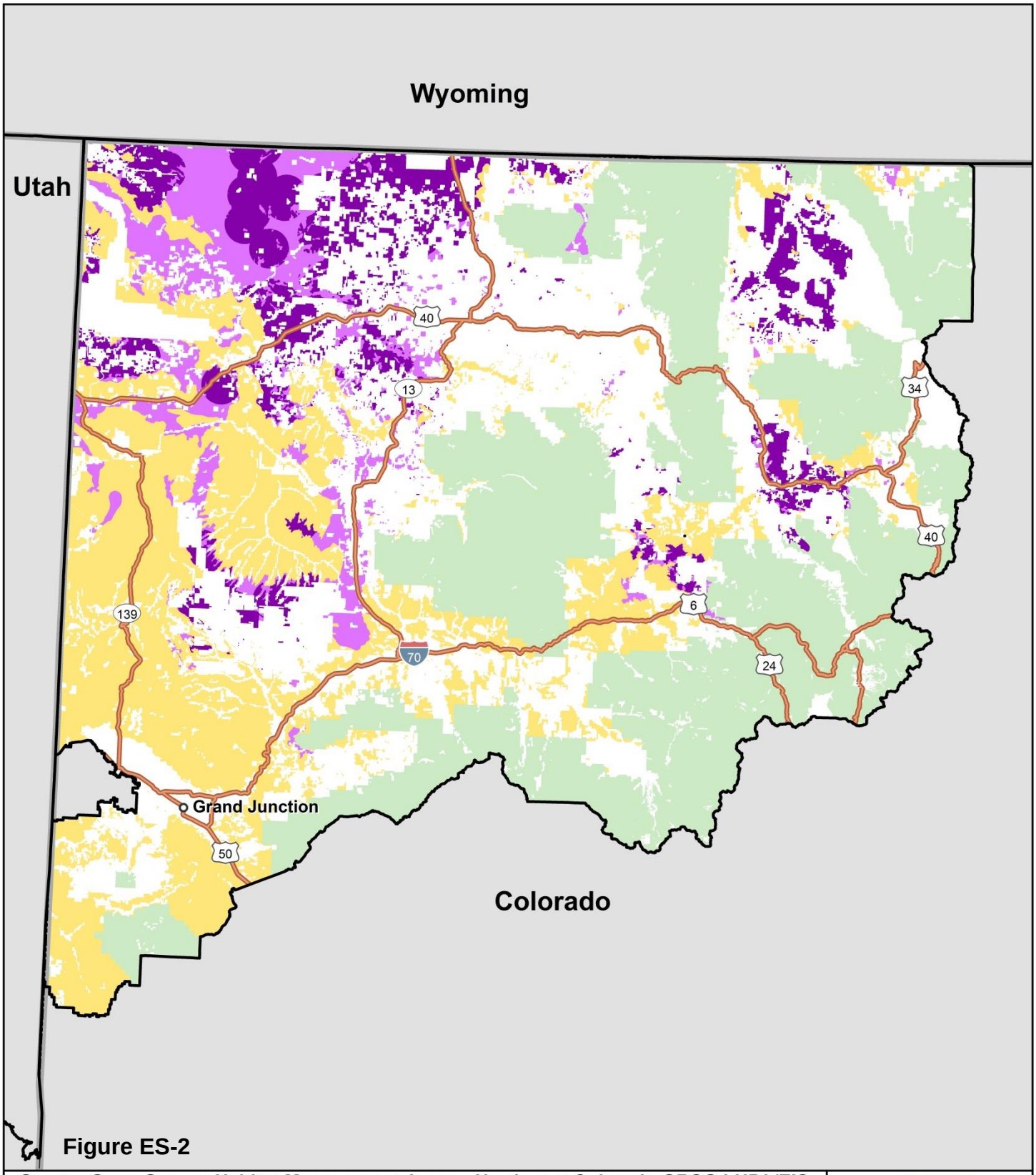

Figure ES-2

Greater Sage-Grouse Habitat Management Areas - Northwest Colorado GRSG LUPA/EIS

- BLM/National Forest System Priority Habitat Management Areas
- BLM/National Forest System General Habitat Management Areas
- Other BLM Lands
- Other National Forest System Lands
- Private, State, and Other Federal Lands
- EIS Boundary
- State Boundary

N W E S

Miles 0 15 30

Map Area

WA MT ND OR ID SD WY NE NV UT CO CA KS AZ NM TX OK

No warranty is made by the Bureau of Land Management (BLM) or the U.S. Forest Service (USFS). The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

ES.2 PURPOSE AND NEED

The purpose of this LUPA is to identify and incorporate appropriate conservation measures to conserve, enhance, and restore GRSG habitat by reducing, minimizing, or eliminating threats to that habitat. The BLM and Forest Service will consider such measures in the context of the multiple-use and sustained yield mandates of FLPMA and the requirements in the National Forest Management Act (NFMA). The major threats identified by the USFWS in the March 2010 listing decision that apply to the Northwest Colorado Sub-region include:

- Wildfire—Loss of large areas of GRSG habitat due to wildfire
- Invasive species—Conversion of GRSG habitat to invasive annual grass- (e.g., cheatgrass) dominated plant communities
- Conifer invasion—Encroachment of pinyon and/or juniper into GRSG habitat
- Infrastructure—Fragmentation of GRSG habitat due to human development activities such as right-of-way (ROW) and renewable energy development
- Climate change—Fragmentation of GRSG habitat due to climate stress
- Grazing—Loss of habitat components due to improper livestock, wild horse and burro, and large wildlife use
- Hard rock mining—Fragmentation of GRSG habitat due to mineral exploration and development
- Oil and gas development—Fragmentation of GRSG habitat due to mineral exploration and development
- Human uses—Fragmentation of GRSG habitat and/or modification of GRSG behavior

This LUPA with associated EIS is needed to respond to the USFWS's March 2010 "warranted, but precluded" ESA listing petition decision (75 *Federal Register* 13910, March 23, 2010). The USFWS identified inadequacy of regulatory mechanisms as a significant factor in its finding on the petition to list the GRSG. In its listing decision, the USFWS noted that changes in management of GRSG habitats are necessary to avoid the continued decline of GRSG populations. Changes in land allocations and conservation measures in the BLM and Forest Service LUPs provide a means to implement regulatory mechanisms to address the inadequacy identified by the USFWS.

ES.3 PROPOSED ACTION

The proposed federal action is the Proposed Plan, which identifies resource management actions in accordance with the multiple-use and sustained yield mandates of FLPMA and requirements in the NFMA. The proposed action is

intended to provide a consistent framework for managing GRSG and its habitat on BLM-administered and National Forest System lands. The alternatives, including the Proposed Plan, comprise desired future outcomes and a range of management actions, allowable uses, and land use allocations that guide management on BLM-administered and National Forest System lands to conserve, restore, and enhance GRSG habitat. The Proposed Plan (see **Section ES.6**, Greater Sage-Grouse Habitat Management Proposed Land Use Plan Amendment and Environmental Effects, and **Chapter 2**) represents the agencies' approach for addressing the purpose and need.

ES.4 DEVELOPMENT OF THE LUPA/EIS

ES.4.1 Scoping

The BLM and Forest Service initiated the LUPA/EIS process on December 9, 2011, with the publication in the *Federal Register* of a Notice of Intent (NOI) to begin a planning effort. A public scoping process began in January 2012 and included a series of seven public meetings in various locations throughout the planning area. Scoping is an early and open process for determining the scope, or range, of issues to be addressed and for identifying the significant issues to consider in the planning process. The scoping process included soliciting input from interested state and local governments, tribal governments, other federal agencies and organizations, and individuals to identify the scope of issues to be addressed in the plan amendment and to assist in the formulation of a reasonable range of alternatives (See **Section 6.5.1**, Scoping Process).

The final Scoping Summary Report, available online at http://www.blm.gov/wo/st/en/prog/more/sagegrouse.html, was prepared in conjunction with all the GRSG LUPAs. It summarizes the scoping and issue-identification process and describes 13 broad issue categories identified during the scoping process (see also **Section 1.5.2**, Issues Identified for Consideration in the Northwest Colorado Greater Sage-Grouse Land Use Plan Amendments).

ES.4.2 Cooperating Agency Collaboration

Throughout this planning effort, the BLM and Forest Service have engaged with multiple federal, state, and local government agencies, as well as Native American tribes. Consistent with the BLM Land Use Planning Handbook (H-1601-1) and FLPMA and Forest Service Manual 1920 and the NFMA, cooperating agencies share knowledge and resources to achieve desired outcomes for public lands and communities within statutory and regulatory frameworks. A total of 22 agencies and tribes signed Memoranda of Understanding to formalize their cooperating agency relationship. The BLM and Forest Service met with and provided relevant information to cooperating agencies throughout the planning process. For more information, see **Chapter 6**, Consultation and Coordination.

ES.4.3 Development of the Draft LUPA/EIS

Development of Management Alternatives

In accordance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality implementing regulations (40 CFR, Part 1500), the Northwest Colorado GRSG LUPA/EIS planning team considered public input and developed a reasonable range of alternatives for the Draft LUPA/EIS.

The planning team developed four unique alternatives, including one No Action Alternative and three action alternatives, which were subsequently analyzed in the Draft LUPA/EIS. Each of the preliminary action alternatives was designed to:

- Respond to USFWS-identified issues and threats to GRSG and its habitat, including specific threats identified in the COT report
- Address the 13 range-wide issues
- Fulfill the purpose and need for the LUPA
- Meet the mandates of the FLPMA and the NFMA

Collectively, the three action alternatives (Alternatives B, C, and D) analyzed in the Draft LUPA/EIS offer a range of possible management approaches for responding to the purpose and need, as well as the planning issues and concerns identified through public scoping. While the overarching goal of the long-term conservation of GRSG and its habitat is the same across alternatives, each alternative contains a discrete set of objectives and management actions, which if selected as the final plan, would constitute a unique LUPA.

Publication of Draft LUPA/EIS

Public Comment Period

A Notice of Availability (NOA) for the Draft LUPA/EIS was published in the *Federal Register* on August 16, 2013. The NOA initiated a 90-day public comment period, which was extended to December 2, 2013, resulting in a 108-day comment period. The BLM and Forest Service also held four three-hour public comment open houses for the Draft LUPA/EIS in October 2013.

Comment Analysis

During the Draft LUPA/EIS public comment period, the BLM and Forest Service received thousands of written comments by mail, e-mail, and submissions at the public meetings. This included 329 unique comment letters, forms, and e-mails and 7,270 form letters. Comments covered a wide spectrum of thoughts, opinions, ideas, and concerns. Upon receipt, the BLM and Forest Service reviewed the comments, grouped similar substantive comments under an appropriate topic heading, and evaluated and wrote summary responses addressing the comment topics. The response indicated whether the commenters' points would result in new information or changes being included in the Proposed LUPA/FEIS. Chapter 6, **Section 6.5.4**, Public Comment on the Draft LUPA/EIS, provides a detailed description of the comment analysis

methodology and an overview of the public comments received on the Draft LUPA/EIS. Complete comment summaries and responses, including rationale and any associated changes made in the Proposed LUPA/FEIS, can be found in **Appendix P**.

ES.5 LUPA/EIS ALTERNATIVES AND ENVIRONMENTAL EFFECTS

ES.5.1 Alternative A: No Action

Under Alternative A, neither the BLM nor Forest Service would develop new management actions to protect GRSG habitat. No PHMA or GHMA would be delineated. Management of existing threats to GRSG populations and habitat, such as infrastructure, invasive species, grazing, mineral development, and wildfire, would continue in accordance with existing land use planning documents.

ES.5.2 Alternative B

GRSG conservation measures in *A Report on National Greater Sage-Grouse Conservation Measures* (NTT 2011)[4] were used to form BLM/Forest Service management direction under Alternative B. Conservation measures under Alternative B are focused on PHMA (areas that have the highest conservation value to maintaining or increasing GRSG populations). Alternative B would apply management actions to PHMA and GHMA, including actions that would exclude ROW development in PHMA and avoid development in GHMA, would close PHMA to fluid mineral leasing, mineral material sales, and nonenergy leasable minerals, and would recommend proposed withdrawal from locatable mineral entry in PHMA. These management actions would reduce surface disturbance in PHMA and would minimize disturbance in GHMA, thereby maintaining GRSG habitat.

ES.5.3 Alternative C

Alternative C is the most restrictive approach to GRSG conservation. Conservation measures under Alternative C are focused on PHMA. These conservation measures include creating an ACEC for all PHMA and a grazing closure over all GRSG habitat in the planning area. Alternative C would eliminate all future ROWs, fluid mineral leasing, nonenergy leasable mineral development, and mineral material sales on GRSG habitat. Alternative C would also recommend proposed withdrawal from locatable mineral entry for all GRSG habitat. This alternative would substantially reduce surface disturbance in all GRSG habitat. Under Alternative C, the BLM would take a passive management approach to vegetation management.

[4] NTT (Sage-Grouse National Technical Team). 2011. A Report on National Greater Sage-Grouse Conservation Measures. December 2011.

ES.5.4 Alternative D

Alternative D, the agencies' preferred alternative from the Draft LUPA/EIS, seeks to allocate resources among competing human interests and land uses and the conservation of natural resource values, including GRSG habitat. At the same time, it would sustain and enhance ecological integrity across the landscape, including plant, wildlife, and fish habitat. Alternative D incorporates local adjustments made in concert with the cooperating agencies in *A Report on National Greater Sage-Grouse Conservation Measures* (NTT 2011).[5] The purpose is to provide a balanced level of protection, restoration, enhancement, and use of resources and services to meet ongoing programs and land uses. Conservation measures under Alternative D are focused on both PHMA and other GRSG habitat. Alternative D would limit disturbance in GRSG habitat by excluding wind and solar energy development, avoiding all other ROW development, applying no surface occupancy stipulations to fluid mineral development in PHMA and GHMA, and closing PHMA and GHMA to nonenergy leasable mineral development and mineral material sales. These management actions would protect GRSG habitat while allowing other activities, subject to conditions.

Under Alternative D, the BLM management would support sagebrush/perennial grass ecosystems enhancements, would increase fire suppression in PHMA and GHMA, and would manage livestock grazing to maintain or enhance sagebrush and perennial grass ecosystems.

ES.6 Greater Sage-Grouse Habitat Management Proposed Plan and Environmental Effects

In consideration of public comments, best available science, cooperating agency coordination, and internal review of the Draft LUPA/EIS, the BLM and Forest Service developed this Greater Sage-Grouse Habitat Management Proposed Plan ("Proposed Plan"). The Proposed Plan represents the BLM's and Forest Service's proposed approach for meeting the purpose and need consistent with the agencies' legal and policy mandates.

The BLM and Forest Service Proposed Plan addresses threats to GRSG and its habitat identified by the USFWS in the March 2010 listing decision that apply to the northwest Colorado planning area, as well as threats described in the COT report. The Proposed Plans seek to provide greater regulatory certainty for management actions intended to conserve the GRSG (**Table ES-2,** Key Components of the Northwest Colorado Proposed Plan Addressing COT Report Threats). In making its determination of whether the GRSG is warranted to be listed as threatened or endangered under the ESA, the USFWS will

[5] NTT (Sage-Grouse National Technical Team). 2011. *A Report on National Greater Sage-Grouse Conservation Measures*. December 2011.

evaluate the degree to which the land use planning decisions proposed in this LUPA/EIS address threats to GRSG and its habitat.

The Proposed Plan would maintain and enhance GRSG populations and habitat. It would apply management actions, subject to valid existing rights, to other uses and resources, such as:

- Providing a framework for prioritizing areas in PHMA and GHMA for wildfire, invasive annual grass, and conifer treatments
- Managing areas as ROW avoidance or exclusion for certain types of lands and realty uses, requiring specific design features, and limiting new development where a disturbance cap has been reached
- Adjusting grazing practices as necessary based on GRSG habitat objectives, Land Health Standards, and ecological site potential
- Applying no surface occupancy (NSO) stipulations, with limited exceptions, to fluid mineral development in PHMA and closing PHMA to nonenergy leasable development and mineral material sales

The Proposed Plan would also establish screening criteria and conditions for new anthropogenic activities in PHMA and GHMA to ensure a net conservation gain to GRSG. The Proposed Plan would reduce habitat disturbance and fragmentation through limitations on surface-disturbing activities, while addressing changes in resource condition and use through monitoring and adaptive management.

The Proposed Plan adopts key elements of the State of Colorado Greater Sage-Grouse Conservation Plan (Colorado Greater Sage-grouse Steering Committee 2008)[6] by establishing conservation measures and focusing restoration efforts in the same key areas most valuable to the GRSG.

For a full description of the BLM and Forest Service Proposed Plan, see **Chapter 2**.

[6] Colorado Greater Sage-grouse Steering Committee. 2008. Colorado Greater Sage-grouse Conservation Plan. Colorado Division of Wildlife, Denver, Colorado.

Table ES-2
Key Components of the Northwest Colorado Proposed Plan
Addressing COT Report Threats

Threats to GRSG and its Habitat (from COT Report)	Key Component of the Northwest Colorado Proposed Plan
All threats	• Implement the Adaptive Management Plan, which allows for more restrictive land use allocations and management actions to be implemented if habitat or population hard triggers are met. • Require and ensure mitigation that provides a net conservation gain to GRSG. • Monitor implementation and effectiveness of conservation measures in GRSG habitats according to the Habitat Assessment Framework. • Apply buffers necessary based on project type and location to address impacts on leks when authorizing actions in GRSG habitat. • Apply Required Design Features (RDFs) when authorizing actions in GRSG habitat. (BLM only) • Incorporate RDFs as land use plan guidelines. (Forest Service only) • Prioritize the leasing and development of fluid mineral resources outside of GRSG habitat. (BLM only) • Work with the operator to locate fluid mineral development outside GRSG habitat. (Forest Service only)
All development threats, including mining, infrastructure, and energy development	• PHMA: Implement the disturbance cap, which provides an anthropogenic disturbance cap of 3% within the Biologically Significant Unit and proposed project analysis areas. • PHMA: Implement a density cap of an average of 1 energy and mining facility per 640 acres.
Energy development—fluid minerals	• PHMA: Open to fluid mineral leasing subject to No Surface Occupancy (NSO) stipulation without waiver or modification, and with limited exception. • GHMA: Open to fluid mineral leasing subject to Timing Limitation stipulations. Open to fluid mineral leasing subject to NSO with waiver, modification, or exception within 2 miles of active leks.
Energy development—wind energy	• PHMA: Exclusion area (not available for wind energy development under any conditions) • GHMA: Avoidance area (may be available for wind energy development with special stipulations)
Energy development—solar energy	• PHMA: Exclusion area (not available for solar energy development under any conditions) • GHMA: Exclusion area (not available for solar energy development under any conditions)
Infrastructure—major ROWs	• PHMA: Avoidance area (may be available for major ROWs with special stipulations) • GHMA: Avoidance area (may be available for major ROWs with special stipulations)

Table ES-2
Key Components of the Northwest Colorado Proposed Plan
Addressing COT Report Threats

Threats to GRSG and its Habitat (from COT Report)	Key Component of the Northwest Colorado Proposed Plan
Infrastructure—minor ROWs	• PHMA: Avoidance area (may be available for minor ROWs with special stipulations) • GHMA: Avoidance area (may be available for minor ROWs with special stipulations)
Mining—locatable minerals	• PHMA: Apply RDFs to locatable minerals consistent with applicable law.
Mining—nonenergy leasable minerals	• PHMA: Closed area (not available for nonenergy leasable minerals)
Mining—salable minerals	• PHMA: Closed area (not available for salable minerals) with a limited exception (may remain open to free use permits and expansion of existing active pits if criteria are met)
Mining—coal	• PHMA is essential habitat for GRSG for purposes of the suitability criteria set forth at 43 CFR 3461.5(o)(1)
Livestock grazing	• Prioritize the review and processing of grazing permits/leases in Sagebrush Focal Areas (SFA) followed by PHMA. (BLM only) • Adjust grazing management to move towards desired habitat conditions consistent with ecological site capability. (Forest Service only) • The NEPA analysis for renewals and modifications of grazing permits/leases will include specific management thresholds, based on the GRSG Habitat Objectives Table, Land Health Standards and ecological site potential, to allow adjustments to grazing that have already been subjected to NEPA analysis. (BLM only) • Consider closure of grazing allotments, pastures, or portions of pastures, or managing the allotment as a forage reserve as opportunities arise under applicable regulations, where removal of livestock grazing would enhance the ability to achieve desired habitat conditions. (Forest Service only) • Prioritize field checks in SFA followed by PHMA to ensure compliance with the terms and conditions of grazing permits. (BLM only)
Free-roaming equid management	• Manage Herd Management Areas (HMAs) in GRSG habitat within established Appropriate Management Level (AML) ranges to achieve and maintain GRSG habitat objectives. • Prioritize rangeland health assessment, gathers and population growth suppression techniques, monitoring, and review and adjustment of AMLs and preparation of Herd Management Area Plans in GRSG habitat.
Range management structures	• Allow range improvements which do not impact GRSG, or which provide a conservation benefit to GRSG such as fences for protecting important seasonal habitats.

Table ES-2
Key Components of the Northwest Colorado Proposed Plan
Addressing COT Report Threats

Threats to GRSG and its Habitat (from COT Report)	Key Component of the Northwest Colorado Proposed Plan
Recreation	• PHMA: Do not construct new recreation facilities. • PHMA: Allow special recreation permits in only if their effects on GRSG and its habitat are neutral or result in a net conservation gain.
Fire	• Identify and prioritize areas that are vulnerable to wildfires and prescribe actions important for GRSG protection. (BLM only) • Protection of GRSG habitat should receive high consideration, along with other high values, when positioning resources. (Forest Service only) • PHMA and GHMA: Prioritize post-fire treatments. (BLM only) • Design fuel treatments to restore, enhance, or maintain GRSG habitat. (Forest Service only)
Nonnative, invasive plant species	• Improve GRSG habitat by treating annual grasses. • Treat sites in PHMA and GHMA that contain invasive species infestations through an integrated vegetation management approach.
Sagebrush removal	• PHMA: Maintain a minimum of 70 percent of lands capable of producing sagebrush with 10 to 30 percent sagebrush canopy cover. • All BLM use authorizations will contain terms and conditions regarding the actions needed to meet or progress toward meeting the habitat objectives for GRSG.
Pinyon and/or juniper expansion	• Remove conifers encroaching into sagebrush habitats, prioritizing occupied GRSG habitat.
Agricultural conversion and exurban development	• PHMA: Retain in federal management.

ES.7 SUMMARY

Since the release of the Draft LUPA/EIS, the BLM and Forest Service have continued to work closely with a broad range of governmental partners, including the United States Department of Agriculture Natural Resources Conservation Service, the USFWS and US Geological Survey in DOI, Indian tribes, governors, state agencies, and county commissioners. Through this cooperation, the BLM and Forest Service have developed the Proposed Plan that, in accordance with applicable law, achieves the long-term conservation of GRSG and its habitat.

Conservation of the GRSG is a large-scale challenge that requires a landscape-scale solution that spans 11 western states. The Northwest Colorado GRSG LUPA/EIS achieves consistent, range-wide conservation objectives, as outlined

below. Additionally, the Northwest Colorado GRSG LUPA/EIS aligns with the State of Colorado's priorities and land management approaches consistent with conservation of GRSG.

Minimize additional surface disturbance. The most effective way to conserve the GRSG is to protect existing intact habitat. The BLM and Forest Service aim to reduce habitat fragmentation and protect key habitat areas. The Northwest Colorado GRSG LUPA/EIS minimizes surface disturbance on over 1.7 million acres of BLM-administered and National Forest System lands by allocating lands as PHMA or GHMA with decisions that aim to conserve GRSG habitat.

The limitations on mineral and ROW development, along with the disturbance cap, lek buffers, and adaptive management, would result in a net conservation gain for GRSG. The Proposed Plan prioritizes development outside of GRSG habitat and focuses on a landscape-scale approach to conserving GRSG habitat. In the context of the planning area, land use allocations under the Proposed Plan would limit or eliminate new surface disturbances in PHMA, while minimizing disturbance in GHMA.

Improve habitat condition. While restoring sagebrush habitat can be very difficult in the short term, particularly in the most arid areas, it is often possible to enhance habitat quality through purposeful management. The Northwest Colorado GRSG LUPA/EIS commits to management actions necessary to achieve science-based vegetation and GRSG habitat management objectives established in the Proposed Plan.

Habitat restoration and vegetation management actions would improve GRSG habitat and prioritize restoration to benefit PHMA. As a result, the restoration and management of vegetation actions would focus on GRSG.

Reduce threat of rangeland fire to sage-grouse and sagebrush habitat. Rangeland fire can destroy sagebrush habitat and lead to the conversion of previously healthy habitat into nonnative cheatgrass-dominated landscapes. Experts have identified fire as one of the greatest threats to sagebrush habitat.

The Northwest Colorado GRSG LUPA/EIS incorporates Secretarial Order 3336 and sets forth protocols to improve the BLM's ability to protect GRSG habitat form damaging wildfire. Prescribed fire would be used only to improve or maintain habitat for GRSG and to meet specific fuels objective standards.

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ACRONYMS AND ABBREVIATIONS

	Full Phrase
ACEC	area of critical environmental concern
ADH	all designated habitat (includes PHMA, GHMA, and LCHMA)
AUM	animal unit month
BER	Baseline Environmental Report
BLM	United States Department of the Interior, Bureau of Land Management
BMP	best management practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
COA	condition of approval
CPW	Colorado Department of Natural Resources, Parks and Wildlife
CRVFO	Colorado River Valley Field Office
CSU	controlled surface use
decision area	public lands and mineral estate managed by the United States Department of the Interior, Bureau of Land Management, and public lands managed by the United States Department of Agriculture, Forest Service, Routt National Forest, that are within the planning area and are encompassed by all designated habitat (ADH)
EIS	environmental impact statement
ERMA	extensive recreation management area
ESA	Endangered Species Act
ESR	emergency stabilization and rehabilitation
federal mineral estate	subsurface mineral estate administered by the United States Department of the Interior, Bureau of Land Management
FLPMA	Federal Land Policy and Management Act of 1976
Forest Plan	United States Department of Agriculture, Forest Service, Land and Resource Management Plan
Forest Service	United States Department of Agriculture, Forest Service
FRCC	fire regime condition class
GH	general habitat
GHMA	general habitat management area
GIS	geographical information system
GJFO	Grand Junction Field Office
GRSG	Greater Sage-Grouse
HMA	herd management area
KFO	Kremmling Field Office
LCHMA	linkage/connectivity habitat management area
LSFO	Little Snake Field Office
LUP	land use plan

MIS	management indicator species
MOU	memorandum of understanding
MZ	management zone
NEPA	National Environmental Policy Act of 1969
NFMA	National Forest Management Act of 1976
NRHP	National Register of Historic Places
NSO	no surface occupancy
NTT	Sage-Grouse National Technical Team
OHV	off-highway vehicle
PDF	preferred design feature
PH	priority habitat
PHMA	priority habitat management area
planning area	Northwest Colorado District boundary, including all lands, regardless of land ownership
PM_{10}	particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
PPH	preliminary priority habitat
project area	the United States Department of the Interior, Bureau of Land Management Northwest Colorado District boundary, including all lands, regardless of ownership
RDF	required design feature
RFDS	reasonable foreseeable development scenario
RMP	resource management plan
RMPA	resource management plan amendment
ROD	record of decision
ROW	right-of-way
SDF	suggested design feature
SGI	Natural Resources Conservation Service's Sage-Grouse Initiative
SO_2	sulfur dioxide
SRMA	Special Recreation Management Area
SRP	special recreation permit
SUA	special use permit
TL	timing limitation
US	United States
USC	United States Code
US EPA	United States Environmental Protection Agency
USFWS	United States Department of the Interior, Fish and Wildlife Service
VRM	visual resource management
WAFWA	Western Association of Fish and Wildlife Agencies
WRFO	White River Field Office
WSA	Wilderness Study Area

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Introduction

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CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

1.1.1 Overview

This initiative is the result of the March 2010 United States (US) Fish and Wildlife Service (USFWS) *12-Month Finding for Petitions to List the Greater Sage-Grouse (*Centrocercus urophasianus*) as Threatened or Endangered* (75 *Federal Register* 13910, March 23, 2010). In that 12-Month Finding, USFWS concluded that Greater Sage-Grouse (GRSG) was "warranted, but precluded" for listing as a threatened or endangered species. The USFWS reviewed the status and threats to the GRSG in relation to the five listing factors provided in Section 4(a)(1) of the Endangered Species Act of 1973 (ESA). Of the five listing factors reviewed, USFWS determined that Factor A, "the present or threatened destruction, modification, or curtailment of the habitat or range of the GRSG," and Factor D, "the inadequacy of existing regulatory mechanisms" in land use plans (LUPs) posed "**a significant threat to the GRSG now and in the foreseeable future**" (emphasis added). The USFWS identified the principal regulatory mechanisms for the US Department of the Interior, Bureau of Land Management (BLM) and US Department of Agriculture, Forest Service (Forest Service) as conservation measures in LUPs. Conservation measures would include both restrictions on land uses and programs that affect GRSG and measures to reduce the impacts of BLM/Forest Service programs or authorized uses. Because the BLM and Forest Service manage 50 percent of GRSG habitat across the range, the agencies have begun the process of amending their LUPs to include the addition of GRSG conservation measures.

The Federal Land Policy and Management Act of 1976 (FLPMA) directs the BLM to develop and periodically revise or amend its Resource Management Plans (RMPs), which guide management of BLM-administered public lands. For the purpose of this document, the term RMP applies to all BLM LUPs, including the BLM's older Management Framework Plans. The National Forest Management

Act of 1976 (NFMA) directs the Forest Service to develop and periodically revise or amend its Land and Resource Management Plans (Forest Plans), which guide management of National Forest System lands. These two agencies' plans are generically referred to as LUPs throughout the remainder of this document.

In response to the USFWS findings, the BLM and the Forest Service intend to prepare LUPAs (LUPAs) with associated environmental impact statements (EISs) to incorporate specific conservation measures across the range of the GRSG, consistent with national BLM and Forest Service policy. The planning strategy will evaluate the adequacy of BLM and Forest Service LUPs and address, as necessary, amendments throughout the range of the GRSG (with the exceptions of the bi-state population in California and Nevada and the Washington State distinct population segment, which will be addressed through other planning efforts). The BLM is the lead agency, and the Forest Service is a cooperating agency in developing these EISs. These EISs have been coordinated under two administrative planning regions: the Rocky Mountain Region and the Great Basin Region. These regions are drawn roughly to correspond with the threats identified by USFWS in the 2010 listing decision, along with the Western Association of Fish and Wildlife Agencies (WAFWA) Management Zones (MZs) framework (Stiver et al. 2006).

The Rocky Mountain Region comprises LUPs in the states of Montana, North Dakota, South Dakota, Wyoming, Colorado, and portions of Utah. This region comprises the WAFWA MZs I (Great Plains), II (Wyoming Basin) and a portion of VII (Colorado Plateau). The Northwest Colorado planning area overlaps two WAFWA MZs, II and VII. Refer to **Figure 1-1**, Greater Sage-Grouse WAFWA MZs and Colorado MZs. The USFWS has identified a number of threats in this region, the greatest of which are habitat loss and fragmentation caused by development (e.g., oil and gas development, energy transmission, and wind energy development).

The Great Basin Region comprises LUPs in California, Nevada, Oregon, Idaho, and portions of Utah and Montana. This region comprises the WAFWA MZs III (Southern Great Basin), IV (Snake River Plain), and V (Northern Great Basin). The USFWS has identified a number of threats in this region, the greatest of which are wildfire, loss of native habitat to invasive species, and habitat fragmentation.

Both the Rocky Mountain and Great Basin regions are further divided into sub-regions. This National Environmental Policy Act (NEPA) EIS analysis is being done at the sub-regional level. These sub-regions are generally based on the identified threats to the GRSG and the WAFWA MZs.

In addition to the WAFWA MZs, the BLM/Forest Service have also identified 21 Colorado MZs based on data from the Colorado Department of Natural Resources, Parks and Wildlife (CPW) in which they identified priority habitat (PH), general habitat (GH), and linkage/connectivity habitat. The Colorado MZs

are used in the analysis to identify site-specific impacts and to differentiate between different areas of identified habitat. Refer to **Figure 1-1**. **Table 1.1** represents acres per Colorado MZ and field office.

Table 1.1
Colorado GRSG Management Zones

Colorado Management Zone	Field Office	Acres (All Ownership)	Acres (BLM/Forest Service Surface)
1	LSFO	15,200	8,400
2	LSFO	172,900	120,100
3	LSFO	547,400	461,800
4	LSFO	244,400	111,100
5	LSFO	258,300	123,100
6	LSFO	307,900	50,600
7	LSFO/Routt National Forest	83,300	18,000
8	LSFO	252,300	4,700
9	LSFO	372,400	150,000
9	WRFO	50,800	21,800
10	LSFO	3,700	100
10	WRFO	282,000	190,300
11	KFO/Routt National Forest	413,200	138,600
12	KFO	18,300	6,800
13	KFO/Routt National Forest	272,400	72,900
14	CRVFO	97,300	41,000
14	LSFO	51,000	2,300
14	KFO/Routt National Forest	0	0
15	WRFO	47,600	3,000
16	WRFO	11,300	11,300
17	CRVFO	37,600	23,900
17	GJFO	78,600	14,500
17	WRFO	237,500	75,900
18	WRFO	19,200	13,000
19	CRVFO	5,400	2,100
19	WRFO	219,800	62,400
19	LSFO	0	0
20	LSFO	40,600	2,200
21	KFO	10,700	2,200
Total		**4,151,100**	**1,732,100**

On a sub-regional level, the BLM Northwest District and the Routt National Forest are proposing to complete this Northwest Colorado EIS to analyze the effects of amending up to six LUPs in order to provide Northwest Colorado-wide consistent management of GRSG habitat for all included BLM-administered and National Forest System lands. These Proposed LUPAs would identify and incorporate appropriate regulatory mechanisms to conserve, enhance, and/or restore GRSG habitat, and would be designed to eliminate, reduce, or minimize

threats to GRSG priority and general habitats on BLM and National Forest System lands in Northwest Colorado. The Proposed LUPAs address both Listing Factors A and D (above). The BLM and Forest Service intend to issue separate Records of Decision (RODs) for the LUPAs of each agency, and expect that they could provide a basis to reduce the need for USFWS to list GRSG as a threatened or endangered species under the ESA. The following LUPs are proposed to be amended during this effort to incorporate appropriate conservation measures:

- BLM Colorado River Valley RMP (projected to be completed in 2015)
- BLM Grand Junction RMP (projected to be completed in 2015)
- BLM Kremmling RMP (projected to be completed in 2015)
- BLM Little Snake RMP (BLM 2011a)
- BLM White River RMP (BLM 1997) and associated amendments (White River Oil and Gas Amendment projected to be completed in 2015; Proposed Plan released in March 2015)
- Routt National Forest Plan/Oil and Gas Leasing Availability Decision, and associated amendments (Forest Service 1997)

While the BLM and Forest Service propose to amend the existing LUPs, there could be conservation measures contained in the LUPs that the BLM and Forest Service consider protective of GRSG and/or GRSG habitat that the BLM and Forest Service would choose not to amend.

Due to the ongoing planning effort on the Roan Plateau RMP and EIS (BLM 2007d), the BLM has analyzed impacts on GRSG habitat in the Roan Plateau planning area but does not anticipate making a decision on these lands during this planning process. Separate decisions will be made for this area in the revised or amended Roan Plateau RMP/EIS (Notice of Intent published in the Federal Register on January 25, 2013).

This LUPA/EIS undertaking is one of seven that are ongoing within the eleven western states that have GRSG occupied habitat. A goal of all such LUPAs is to ensure consistency across each sub-region, as well as across the range of the GRSG.

BLM Instruction Memorandum 2012-044, BLM National Greater Sage-Grouse Land Use Planning Strategy (BLM 2012a) (included as Appendix A to the Draft LUPA/EIS) provides direction for considering GRSG conservation measures in the land use planning process. The Instruction Memorandum advises that the BLM consider conservation measures when revising or amending LUPs in GRSG habitat. The conservation measures that should be considered were developed by the Sage-Grouse National Technical Team (NTT), a group of resource

specialists, land use planners, and scientists from the BLM, state fish and wildlife agencies, USFWS, Natural Resources Conservation Service, and US Geological Survey. The report drafted by the NTT, A Report on National Greater Sage-Grouse Conservation Measures (NTT 2011) provides the latest science and best biological judgment to assist in making management decisions relating to the GRSG. The Instruction Memorandum requires that the BLM consider all applicable conservation measures developed by the NTT when revising or amending its LUPs in GRSG habitat.

This LUPA addresses GRSG habitat within the Northwest District. The BLM's Northwest District office and the Routt National Forest have preliminarily mapped this habitat in coordination with the CPW. GRSG habitat falls into one of the two following categories:

- **Priority habitat (PH)—**Areas that have been identified as having the highest conservation value to maintaining sustainable GRSG populations; these areas include breeding, late brood-rearing, and winter concentration areas
- **General habitat (GH)—**Areas of seasonal or year-round habitat outside of priority habitat
- **Linkage/Connectivity Habitat—**Areas that have been identified as broader regions of connectivity important to facilitate the movement of GRSG and maintain ecological processes

The current delineations of GRSG habitat may be refined in collaboration with CPW, Forest Service, and USFWS as additional information is gained and data are refined regarding GRSG habitats and use.

Through this land use planning process an LUPA, the BLM and Forest Service will refine PH and GH data to: (1) delineate priority habitat management areas (PHMA) and analyze actions within PHMA to conserve GRSG habitat functionality, or where possible, improve habitat functionality; (2) identify general habitat management areas (GHMA) and analyze actions within GHMA that provide for major life history function (i.e., breeding, migration, or winter survival) in order to maintain genetic diversity needed for sustainable GRSG populations; and (3) identify linkage/connectivity habitat management areas (LCHMA) and analyze actions within LCHMA that provide for major life history function (i.e., breeding, migration, or winter survival) in order to maintain genetic diversity needed for sustainable GRSG populations.

According to the BLM Land Use Planning Handbook, the BLM regulation in 43 CFR 1610.5-4 provides that land use plan decisions and supporting components can be maintained to reflect minor changes in data. Maintenance is limited to further refining, documenting, or clarifying a previously approved decision incorporated in the plan. Maintenance must not expand the scope of resource

uses or restrictions or change the terms, conditions, and decisions of the approved plan.

Plan maintenance is not considered a plan amendment and does not require formal public involvement, interagency coordination, or the NEPA analysis required for making new land use plan decisions. Maintenance actions must be documented in the plan or supporting components (i.e., recorded so that the change and Field Manager concurrence are evident). Examples of maintenance actions in the context of this LUPA include:

1. Correcting minor data, typographical, mapping, or tabular data errors in the planning records after a plan or plan amendment has been completed
2. Applying an existing oil and gas lease stipulation to a new area prior to the lease sale based on new inventory data (e.g., apply an existing protective stipulation for GRSG to a newly discovered GRSG lek)
3. Refining the known habitat of a special status species addressed in the plan based on new information
4. Modifying or waiving the lease stipulation language in the LUP consistent with the criteria outlined in the LUP

Plan maintenance must occur continuously so that the LUPA and its supporting records reflect the current status of decision implementation and knowledge of resource conditions. See BLM Planning Process, below.

On November 21, 2014, the USGS published "Conservation Buffer Distance Estimates for Greater Sage-Grouse—A Review" (Manier et al. 2014). The USGS review provided a compilation and summary of published scientific studies that evaluate the influence of anthropogenic activities and infrastructure on GRSG populations. The BLM has reviewed this information and examined how lek buffer-distances were addressed through land use allocations and other management actions in the Draft Northwest Colorado LUPA. Based on this review, when analyzing BLM actions, and consistent with valid and existing rights and applicable law in authorizing third-party actions, the BLM will apply the lek buffer distances in the USGS report (Manier et al. 2014) when analyzing impacts of proposed projects with potential to impact GRSG or GRSG habitat (Open File Report 2014-1239) in both PHMA and GHMA, as detailed in [**Appendix B**, Buffer Distances and Evaluation of Impacts on Leks].

While habitat loss and fragmentation have been identified as the primary threat to the GRSG within its eastern range, this area is not immune to the threat of wildfire. Within the Rocky Mountain region, wildfire was identified by the COT report (USFWS 2013) as a present and widespread threat in 7 of 13 Priority Areas for Conservation and as a present but localized threat in the remaining Priority Areas for Conservation. While fire is a naturally occurring disturbance

in the sagebrush steppe, the incursion of nonnative annual grasses is facilitating an increase in mean fire frequency, which can preclude the opportunity for sagebrush to become re-established. As such, the LUPA includes requirements (**Appendix O**, Greater Sage-grouse Wildfire and Invasive Species Habitat Assessment) that landscape-scale fire and invasive species assessments be completed and updated regularly to more accurately define specific areas to be treated to address threats to sagebrush steppe habitat. Within the Rocky Mountain region, assessments have not yet been completed but will be scheduled based on the need to identify and address potential threats. Additionally, the Secretary of Interior issued Secretarial Order 3336 on January 5, 2015, which establishes the protection, conservation, and restoration of "the health of the sagebrush-steppe ecosystem and, in particular, GRSG habitat, while maintaining safe and efficient operations as a critical fire management priority for the Department." The Secretarial Order will result in a final report of activities to be implemented prior to the 2016 western fire season. This will include prioritization and allocation of fire resources and the integration of emerging science, enhancing existing tools to implement the LUPA and improving the BLM and Forest Service's ability to protect sagebrush steppe from damaging wildfires.

1.1.2 Partner Agency Involvement

Forest Service Involvement

The Forest Service is a cooperating agency with BLM as part of the GRSG planning strategy. Across the range of the GRSG, the Forest Service manages approximately 8 percent of the total GRSG habitat, that combined with the approximately 50 percent managed by the BLM, represents approximately 58 percent GRSG habitat across its range.

The Forest Service has partnered with the BLM to help complete the LUPAs and EISs to implement the GRSG planning strategy. As part of the initial Notice of Intent published in the Federal Register on December 9, 2011, numerous Forest Service LUPs were identified to be amended through this combined effort. After further evaluation, a Notice of Correction was published in the Federal Register on February 10, 2012, which added several additional Forest Service LUPs to the list of plans to be amended through this process.

The Forest Service has structured their involvement similar to the BLM strategy, with involvement at the national, regional and sub-regional levels. Since December 2011, the BLM and Forest Service have been working jointly through scoping, issue and alternative development, impact analysis, and document completion. At the culmination of this process, the Forest Service intends to issue Forest Service-specific RODs to amend Forest Service LUPs based on the analysis and evaluation presented in the Draft and Final EISs.

US Fish and Wildlife Service Involvement

The USFWS is a cooperating agency with the BLM as part of the GRSG planning strategy. The USFWS is ultimately responsible for the evaluation and findings regarding potential ESA listing of the GRSG. The March 2010 USFWS *12-Month Finding for Petitions to List the Greater Sage-Grouse (*Centrocercus urophasianus*) as Threatened or Endangered* (75 *Federal Register* 13910, March 23, 2010) indicated that GRSG is warranted for listing but precluded by higher-priority listing actions ("warranted but precluded"). This designation placed the GRSG on the federal list of candidate species.

The USFWS, in a separate but related effort, created the Conservation Objectives Team to identify conservation objectives to ensure the long-term viability of the GRSG. Recognizing the management expertise and authority of state wildlife agencies, this team is composed of state and USFWS representatives. The Conservation Objectives Team identified the major threats to each GRSG population across the range of the species, identified range-wide conservation objectives for the GRSG, and defined "…the degree to which threats need to be reduced or ameliorated to conserve [GRSG] so that it is no longer in danger of extinction or likely to become in danger of extinction in the foreseeable future." Those range-wide conservation and objectives for GRSG were published in the final Conservation Objectives Team Report (COT report) in February 2013 (USFWS 2013). The COT report is built on the guiding concepts of redundancy – multiple, geographically dispersed population and habitats across a species' range; ecological diversity; and resilience – and the ability of the species and/or its habitat to recover from disturbances. The COT report includes areas identified as priority areas for conservation, the most important areas needed for maintaining GRSG representation, redundancy, and resilience across the landscape. The COT report also identifies conservation objectives that are targeted at maintaining redundant, representative, and resilient GRSG habitats and populations. The priority areas for conservation and the conservation objectives are incorporated into the planning strategy as appropriate for assessment and evaluation in the EIS. The alternatives included in this EIS were developed directly in response to the specific threats and conservation objectives identified in the COT report for GRSG populations in Northwest Colorado.

In 2012, the Director of the USFWS asked the Conservation Objectives Team, consisting of state and USFWS representatives, to produce recommendations regarding the degree to which the threats need to be reduced or ameliorated to conserve GRSG so that it would no longer be in danger of extinction or likely to become in danger of extinction in the foreseeable future. The COT report (USFWS 2013) provides objectives based upon the best scientific and commercial data available at the time of its release. The BLM/Forest Service planning decisions analyzed in the LUPA/EISs are intended to ameliorate threats identified in the COT report and to reverse the trends in habitat condition. The COT report can be viewed at the following Internet website:

http://www.fws.gov/mountain-prairie/species/birds/sagegrouse/COT/COT-Report-with-Dear-Interested-Reader-Letter.pdf.

The highest-level objective in the COT report is identified as meeting the objectives of WAFWA's 2006 GRSG Comprehensive Strategy of "reversing negative population trends and achieving a neutral or positive population trend."

The COT report provides a WAFWA MZ and Population Risk Assessment. The report identifies localized threats from sagebrush elimination, fire, conifer encroachment, weed and annual grass invasion, mining, free-roaming wild horses and burros, urbanization, and widespread threats from energy development, infrastructure, grazing, and recreation (USFWS 2013a, p. 18).

Key areas across the landscape that are considered "necessary to maintain redundant, representative, and resilient populations" are identified within the COT report. The USFWS, in concert with the respective state wildlife management agencies, identified these key areas as Priority Areas for Conservation.

Within Northwest Colorado, Priority Areas for Conservation consist of 2,274,000 acres, regardless of ownership. Under the Proposed LUPA, Priority Areas for Conservation consist of 914,000 acres of PH managed by the BLM/Forest Service. There are no acres of GH managed by the BLM/Forest Service, and there are 600 acres of non-habitat managed by the BLM/Forest Service within Priority Areas for Conservation.

The USFWS will evaluate the adequacy of the BLM and Forest Service LUPAs by determining if listing the GRSG as threatened or endangered under the ESA is warranted.

Colorado Department of Natural Resources Involvement

The Colorado Department of Natural Resources is involved as a cooperating agency with the BLM as part of the GRSG planning strategy.

In 2008, the Colorado Division of Wildlife (now Colorado Parks and Wildlife) developed a comprehensive Colorado Greater Sage-Grouse Conservation Plan. Among the components of that plan is a section entitled "Conservation Strategy," which identifies key issues facing GRSG conservation and tasks designed to address those issues. In a separate but related effort, the Colorado Department of Natural Resources created the "Colorado Package." The Colorado Package was assembled by the Colorado Department of Natural Resources in conjunction with relevant county, state, federal, and private entities. For each issue identified in the Colorado Greater Sage-Grouse Conservation Plan, described above, Colorado Department of Natural Resources compiled information from those stakeholders. The information included a comprehensive list of whether the implementation task had been completed and to what extent, and included the effectiveness of the efforts for

conservation of GRSG or GRSG habitat. The list of tasks and supporting evidence are included in the Colorado Package (**Appendix C**).

The Colorado Package was compiled to help inform the USFWS of GRSG conservation efforts happening in Colorado on mainly state and private lands, but also relevant actions on federal lands. The Colorado Package was intended to bring up to date the status of conservation efforts for GRSG in Colorado and to compliment the Northwest Colorado LUPA process.

Colorado Parks and Wildlife Involvement

CPW is involved as a cooperating agency with the BLM as part of the GRSG planning strategy. CPW is also participating in the process through membership on the Regional Management Team and the Regional Interdisciplinary Team. CPW identified PH, GH, and linkage/connectivity areas. These delineations of habitat are used in the analysis to identify site-specific impacts and to differentiate between different areas of identified habitat.

1.2 PURPOSE OF AND NEED FOR THE LAND USE PLAN AMENDMENTS

The BLM and Forest Service are preparing LUPAs with associated EISs for LUPs containing GRSG habitat. This effort responds to the need to inform USFWS's March 2010 "warranted, but precluded" ESA listing petition decision. Inadequacy of regulatory mechanisms was identified as a significant threat in the USFWS finding on the petition to list the GRSG. The need is to ensure that the BLM and Forest Service have adequate regulatory mechanisms in its LUPs for consideration by USFWS a year in advance of its anticipated 2015 listing. USFWS identified the principal regulatory mechanisms for the BLM and the Forest Service as conservation measures embedded in LUPs. Changes in management of GRSG habitats are necessary to avoid the continued decline of populations that are anticipated across the species' range. These LUPAs will focus on areas affected by threats to GRSG habitat identified by USFWS in the March 2010 listing decision.

The purpose of these plan amendments is to identify and incorporate appropriate Sage-grouse conservation measures into the plans. Consistent with Instruction Memorandum 2012-044 guidance, the measures to be considered include appropriate conservation measures developed by the NTT. For the purposes of this planning effort, conservation measures include both restrictions on land uses and programs that affect GRSG and measures to reduce the impacts of BLM/Forest Service programs or authorized uses. The BLM and Forest Service will consider such measures in the context of their multiple-use missions and propose to incorporate measures that will help conserve, enhance and/or restore GRSG habitat by reducing, eliminating, or minimizing threats to that habitat.

1.3 DESCRIPTION OF THE GREATER SAGE-GROUSE PLANNING AREA

1.3.1 Overview

The Northwest Colorado GRSG LUPA/EIS planning area is part of the larger Rocky Mountain Region and encompasses approximately 15 million acres, including 8.5 million acres of public lands managed by five BLM field offices (Colorado River Valley, Grand Junction, Kremmling, Little Snake, and White River) and the Routt National Forest in the 10 northwest Colorado counties of Eagle, Garfield, Grand, Jackson, Larimer, Mesa, Moffat, Rio Blanco, Routt, and Summit. In addition, the planning area encompasses National Park Service, US Department of Defense, USFWS, State of Colorado, County, City, and private lands (**Table 1.2**), totaling an additional approximately 7 million acres. A map of the planning area is provided as **Figure 1-2** in **Appendix A**, Figures.

The planning area encompasses a diverse range of elevations and habitat types. Elevations in the planning area range from approximately 4,000 to over 9,000 feet above sea level. Habitat types range from desert scrub in the low deserts to aspen groves and conifer forests in the higher elevations.

The planning area includes PH, the historic GRSG distribution zone (GH), linkage/connectivity habitat, and additional non-habitat lands. Though the planning area includes private and other lands, decisions in this LUPA are only made for BLM-administered and National Forest System surface (totaling approximately 1.7 million acres) and BLM-administered federal mineral estate that may lie beneath other surface ownership (approximately 2.9 million acres) within PH, GH, or linkage/connectivity habitat; these comprise the decision area.

GRSG habitat on BLM-administered and National Forest System lands in the planning area consists of 926,700 acres (921,500 acres BLM and 5,200 acres Forest Service) of PH, 742,900 acres (728,100 acres BLM and 14,800 acres Forest Service) of GH, and 82,000 acres of linkage/connectivity habitat (all BLM acres; there are no National Forest System lands within linkage/connectivity habitat). PH, GH, and linkage/connectivity habitat were mapped in cooperation with the CPW. **Table 1.2** provides acres of PH and GH by landowner. **Table 1.3** provides acres of PH and GH by type of subsurface federal mineral estate in the decision area.

Figure 1-3 and **Figure 1-4** in **Appendix A** depict areas mapped as PH, GH, and linkage/connectivity habitat. **Table 1.4** provides acres of habitat within each BLM Field Office and the Routt National Forest.

Table 1.2
Planning Area Land Ownership and GRSG Habitat (in Acres)

County	GRSG Habitat Type	BLM[1]	Forest Service[1]	National Park Service	USFWS	State	State, County, and City	Private	Unclassified
Eagle	PH	20,900	0	0	0	700	0	15,100	0
	GH	16,100	2,500	0	0	0	0	15,600	0
	Linkage	0	0	0	0	0	0	0	0
Garfield	PH	24,800	0	0	0	0	300	123,700	0
	GH	35,900	0	0	0	0	600	35,600	0
	Linkage	0	0	0	0	0	45	7600	0
Grand	PH	60,700	1,000	0	0	20,300	5,200	116,500	0
	GH	11,300	1,600	0	0	2,300	0	40,500	0
	Linkage	6,700	0	0	0	0	0	0	0
Jackson	PH	137,600	800	0	22,800	25,200	2,600	195,100	0
	GH	1,100	100	0	0	8,000	500	27,000	0
	Linkage	2,200	0	0	0	1,000	0	7,500	0
Larimer	PH	0	0	0	0	0	0	0	0
	GH	6,700	0	0	0	2,100	2,100	9,400	0
	Linkage	0	0	0	0	0	0	0	0
Mesa	PH	0	0	0	0	0	0	0	0
	GH	4,500	300	0	0	0	800	8,700	0
	Linkage	0	0	0	0	0	0	0	0
Moffat	PH	623,300	0	3,600	0	116,200	13,900	540,400	200
	GH	542,000	0	6,300	11,900	53,500	1,000	357,000	100
	Linkage	1,700	0	0	0	0	0	5,300	0
Rio Blanco	PH	36,400	0	0	0	0	5,500	52,300	0
	GH	108,800	200	0	0	0	1,800	83,600	0
	Linkage	69,100	0	0	0	0	6,100	147,900	0
Routt	PH	17,100	600	0	0	25,100	1,300	151,600	0
	GH	1,600	10,200	0	0	5,400	0	74,500	0
	Linkage	2,200	0	0	0	3,600	0	34,800	0
Summit	PH	700	2,800	0	0	0	0	1,800	0
	GH	0	0	0	0	0	0	0	0
	Linkage	0	0	0	0	0	0	0	0
Total[2]		**1,731,400**	**20,100**	**9,900**	**34,700**	**263,400**	**41,745**	**2,051,500**	**300**

Source: CPW 2012
[1]BLM and Forest Service subsurface federal mineral estate data
[2]There is no PH or GH on US Department of Defense lands in the planning area
*Decisions in this document apply only to BLM-administered and National Forest System surface and split-estate lands

Table 1.3
Decision Area Subsurface Federal Mineral Estate and GRSG Habitat (in Acres)

County	GRSG Habitat Type	All Minerals	Coal, Oil and Gas	Coal	Oil and Gas	Other	No Minerals	Decision Area Subtotal PH + GH	Decision Area Total
Eagle	PH	27,200	0	0	2,200	0	7,300	**56,600**	**857,000**
	GH	26,600	0	0	700	0	7,000		
Garfield	PH	28,800	0	0	0	23,900	96,200	**107,900**	**1,262,700**
	GH	11,400	500	0	0	43,300	16,800		
Grand	PH	89,100	700	10,200	2,400	1,100	99,000	**127,000**	**768,700**
	GH	22,100	300	400	600	80	30,500		
Jackson	PH	190,000	400	11,800	2,000	14,800	164,900	**230,200**	**442,900**
	GH	10,100	200	700	200	10	25,600		
Larimer	PH	0	0	0	0	0	0	**11,800**	**364,400**
	GH	11,800	0	0	0	0	6,500		
Mesa	PH	0	0	0	0	0	0	**6,600**	**1,447,700**
	GH	6,500	0	0	100	0	7,600		
Moffat	PH	804,500	11,000	162,900	17,000	9,200	293,000	**1,801,800**	**703,800**
	GH	653,400	7,800	131,000	5,000	100	174,400		
Rio Blanco	PH	43,300	300	900	300	17,300	32,100	**222,600**	**1,560,300**
	GH	132,200	1,300	2,600	800	23,600	33,900		
Routt	PH	54,000	1,600	43,500	400	800	95,500	**141,600**	**868,300**
	GH	21,900	200	18,100	1,100	70	50,200		
Summit	PH	4,800	0	0	300	0	200	**5,200**	**314,100**
	GH	0	0	0	0	0	0		
TOTALS		**2,137,700**	**24,300**	**382,100**	**33,100**	**134,260**	**1,140,700**	**2,711,300**	**8,589,900**

Table 1.4
Total Priority Habitat and General Habitat in the Planning Area

BLM Field Office or National Forest	All Surface Land Ownership (Acres)			BLM-Administered or National Forest System Surface Estate (Acres)		
	PH	GH	Nonhabitat	PH	GH	Nonhabitat
Colorado River Valley	69,800	62,400	1,167,100	24,700	40,200	502,100
Grand Junction	49,300	29,000	1,940,400	5,600	8,900	1,263,100
Little Snake	1,353,100	928,400	1,101,800	570,400	479,700	288,900
Kremmling	585,800	106,800	648,900	198,900	18,900	161,100
White River	299,100	328,900	1,664,000	122,000	180,200	1,154,400
Routt National Forest	5,200	14,900	1,364,800	1,600	10,900	1,242,500
White River National Forest*	3,700	4,000	2,405,200	2,800	2,800	2,215,000
Grand Mesa, Uncompahgre, Gunnison National Forest*	0	200	380,800	0	200	372,600
Arapaho Roosevelt National Forest*	1,000	1,000	789,200	700	800	745,900
Pike San Isabel National Forest*	0	0	70	0	0	70
Manti La Sal National Forest*	0	0	1,800	0	0	1,800
Total	**2,367,000**	**1,475,600**	**11,464,070**	**926,700**	**742,600**	**7,947,470**

Source: CPW 2012
*National Forests not participating in the Northwest Colorado GRSG LUPA/EIS

Colorado River Valley Field Office

Current populations within the Colorado River Valley Field Office (CRVFO) are north of Eagle, Gypsum, and Wolcott on scattered BLM-administered and private lands. This habitat is where the majority of the mapped PH falls within the CRVFO boundary. Based on 2004 lek counts, this population of GRSG numbers from 304 to 489 (CPW 2004).

The Northern Eagle/Southern Routt GRSG population is one of the smaller populations in Colorado. A significant portion of remaining GRSG habitat in the Northern Eagle portion of the population is managed by the CRVFO.

Grand Junction Field Office

The southern end of the Parachute-Piceance-Roan Plateau population of the GRSG occurs on the northeastern side of the Grand Junction Field Office (GJFO), and Colorado has identified 5,600 acres of PH and 8,900 acres of GH. Sixteen active and inactive GRSG leks occur within the GJFO; three occur on BLM-administered lands, and thirteen occur on private lands. Of these 16 leks, 7 are considered active. One of the active leks occurs on BLM-administered lands on 4A ridge. In winter 2008, GRSG droppings were found within the GJFO just

north of the town of Mesa (Sunnyside) in an area between occupied Gunnison sage-grouse habitat and GRSG habitat. A follow-up study was conducted in winter 2009 by the Rocky Mountain Bird Observatory where numerous droppings and cecal casts were discovered, suggesting the area is an important wintering area. Genetic information could not be collected from the droppings and cecal casts; therefore, the species of sage-grouse (Gunnison or Greater) is still unknown (Beason 2009). However, it is believed to be GRSG; as a result, this area has been mapped as GH.

Kremmling Field Office

In Jackson County, there are approximately 32 active leks, 5 inactive leks, and 19 historic leks (CPW 2010). Of the active leks, 20 are on BLM-managed public lands. In Grand County, there are 19 active leks, 1 inactive lek, and 41 historic leks (2010 data). Seven of those 19 leks are on BLM-managed public lands. In Larimer County, there is 1 historic lek (last active in the 1960s). In Summit County there is 1 active lek and 1 historic lek (2010 data). In Eagle County, there are no leks within the planning area. Sagebrush habitat in Jackson County is largely intact, and there is little threat of fragmentation. Currently, oil and gas development and related infrastructure is low; however, in 2006, there was an increased interest in coal bed methane exploration. In Grand County there is a high risk of habitat fragmentation and loss due to urban development and related infrastructure, especially at the east end of the county.

Little Snake Field Office

In Routt County, there are four distinct GRSG groups:

- two areas with fair population density (near the towns of Toponas and Hayden) and approximately equal numbers and range;
- one area in the upper Slater Creek and Snake River areas in the extreme northern part of Routt County with a light population in the summer months and a wintering area near the Wyoming line; and;
- one area north of Steamboat Springs and west of Clark on Deep Creek with small range and numbers.

The highest concentration of GRSG in the county was in the Twentymile area southeast of Hayden on the upper Sage and Fish Creek drainages.

Within the Little Snake Field Office (LSFO) today, essentially all of the land west of State Highway 13 (except the area on the south side of Cold Spring Mountain and the lands closest to the Yampa and Green River drainages) is within GRSG range. The central portion of this area (north, west, and southeast of Maybell), as well as a broad area along the northern boundary of the planning area from Middle Mountain near the northwest corner of Colorado to Baker Peak east of State Highway 13, provides winter range. A number of comments in the BLM Little Snake Field Office's land health assessments focus on GRSG populations

and habitat. The following comments characterize the attention given to this species:

- Axial. GRSG habitat types in the Axial Basin Landscape include strutting grounds, brood-rearing habitat, and winter range. Thirty leks have been documented within this landscape. Of these, 11 (37 percent) are active; 6 (20 percent) are inactive (no activity the last 5 years); 11 (37 percent) are historic (no activity the last 6 years or longer), and 2 (7 percent) are unknown.
- Douglas Draw. The watershed does have potential to support GRSG near Sheephead Basin. There has not been any documented use by GRSG in this area, but treatments of encroaching juniper may make the area more attractable to GRSG.
- Cold Spring Mountain. The large expanses of sagebrush steppe intermixed with wet meadows provide important GRSG nesting and brood-rearing habitats. GRSG numbers are up since the early 1990s, with lek counts remaining stable over the last 3 years; however, GRSG are only at 50 to 60 percent of their historic population numbers for the area.
- Douglas Mountain. Sagebrush grasslands and sagebrush mixed shrub habitat types have the potential to support GRSG within this landscape. There are no known leks within the landscape; however, efforts to locate breeding GRSG in the landscape have been minimal.
- Dry Creek. The large expanses of sagebrush steppe intermixed with wet meadows provides important GRSG nesting and brood-rearing habitats along Vermillion Creek, although there are no known leks within this watershed. Heavy historic grazing, especially in mesic areas at the higher elevations, has reduced the quality of brood-rearing habitat essential for GRSG in the area.
- Four Mile Creek. The entire landscape is considered a GRSG production area, although the quality of brood-rearing habitat has been reduced by heavy historic grazing, especially in mesic areas at the higher elevations. The large expanses of sagebrush steppe intermixed with wet meadows provide important GRSG nesting and brood-rearing habitats along Timberlake Creek. Fourteen GRSG leks have been identified, and brood-rearing habitats have been documented.
- Green River. The Green River landscape provides habitat for GRSG and the various life cycle stages for which they are used. There are no known leks or nesting habitat within the landscape; however, hens with broods are often observed in the Ryegrass area. GRSG are also observed near Chicken Springs and Five Springs. A small

amount (200 acres) of winter habitat is located near Five Springs. Sagebrush in this area was in good condition, providing suitable winter habitat for GRSG. Overall, the Green River Watershed provides productive habitat for GRSG.

- Lay Creek. The majority of this watershed provides habitat for GRSG, which use the watershed throughout the year for breeding, nesting, brood rearing, and wintering. This watershed is an important production area for GRSG in Colorado. There are seven active leks within this watershed, with two additional active leks within 1 mile of the watershed boundary. Breeding, nesting, brood-rearing, and wintering habitat are all found within the boundaries of this watershed. Some portions of the watershed are capable of providing all four habitat requirements in the same area.
- Powder Wash. This is an important area for GRSG breeding, nesting, and brood rearing, containing 10 known leks and approximately 2,400 acres of GRSG winter range.
- Sand Hills. Available habitats provide winter range, nesting, and brood rearing for GRSG.
- Sand Wash. This is an import production area for GRSG nesting and winter range. The numerous historic leks on Seven Mile Ridge are no longer active.
- Williams Fork. Sagebrush grasslands and sagebrush mixed shrub habitat types have the potential to support GRSG within this landscape. There are no identified leks or critical habitat, such as nesting or winter, located in the Williams Fork watershed.

White River Field Office

The Northwest Colorado GRSG population area is composed of several distinct segments that differ widely in character for GRSG. The Blue Mountain portion of this population (higher-elevation sagebrush communities north of US Highway 40) represents the White River Field Office's (WRFO) largest continuous block of suitable and occupied GRSG habitat. Broods gradually disperse and drift to higher elevations (e.g., Moosehead Mountain), such that essentially all sagebrush habitat on Blue Mountain is considered brood range. Blue Mountain's capacity for strong production and recruitment is largely attributable to an abundance of wet meadow habitats and well-developed herbaceous understories.

The remaining segments of the Northwest Colorado population area in the WRFO consist of: (1) isolated and sporadically occupied parcels in the Douglas Creek drainage south of the White River; (2) extremely small and insular groups of birds along and probably once connected by habitats along the White River valley; (3) a sparsely populated southern extension of the larger Sagebrush Draw population located in the adjoining Little Snake Field Office; and (4) most notably, an expansive low-elevation salt-desert complex extending west from

Pinyon Ridge along the US Highway 40 corridor and south to the White River. This area supports limited year-round occupation by GRSG, but these xeric habitats, whose ground cover is often dominated by invasive annuals weeds, are considered marginal in their support of nesting and brood-rearing functions. These areas have been known to support concentrated high-density winter use. The breeding population in the western half of this area (west of Massadona) had begun to collapse prior to the mid-1970s, and this trend continued through the 1980s. The only remaining active lek is located on the far eastern end of the area. Suitable sagebrush stands along US Highway 40 are relatively limited. These predominantly salt desert habitats are characteristically traversed by deeply incised channels, which assume the role of brood habitat, although the regular occurrence of broods along the White River probably originate from the lower Red Wash and Boise Creek areas. The origin of large numbers of wintering birds in lower Wolf Creek is unclear but likely involves much of the US Highway 40 population.

The Crooked Wash complex is administratively split between the WRFO and the LSFO to the north, and is composed of a high percentage of private lands. Although upland sagebrush conditions are superficially adequate for nesting in the WRFO, upper portions of the basin are likely preferred. Late season brood use has been noted, although brood habitat conditions are considered suboptimal in portions of the basin within the WRFO. Although a number of channels in the area support persistent flow, riparian expression is extremely limited. Concentrated winter use in the Crooked Wash area is assumed to represent the major fraction of this complex. The small summer population in Black's Gulch seems to be a fragment of the Crooked Wash complex. This area has also supported concentrated winter use in the past.

The Parachute-Piceance-Roan Plateau area is comprised of roughly 152,600 acres of GRSG PH and 84,400 acres of GH. Virtually all seasonal use functions take place on relatively narrow mid-elevation ridges, with a drift toward higher elevations along the Piceance Rim and Roan Plateau through the brood and general summer use periods. Winter use appears to occur at all elevations, depending on accumulated snow depth and snow texture. Broad ridges at lower elevations may support the bulk of wintering birds during extreme conditions.

The Magnolia area has, within the past decade, become heavily industrialized. This area is comprised entirely of BLM-administered lands and contains approximately 7,500 acres of GRSG PH and 3,700 acres of GH.

The Meeker GRSG population area encompasses approximately 47,600 acres in the area outside the Piceance Basin (13,000 acres of PH and 34,600 acres GH). Federal mineral estate underlies about 15,500 acres (31 percent) of all mapped range, but estate associated with habitats currently supporting GRSG use (north of the White River and across the north flank of LO7 15 Hill) are limited to about 460 acres in 7 parcels (less than 4 percent). The largest parcel, approximately 300 acres, consists primarily of private agricultural lands but

supports consistent use by this remnant flock of birds. The BLM-administered surface estate that presently supports habitat potentially suited for this population of GRSG is limited to approximately 300 acres.

Approximately 115 leks have been identified in the WRFO, of which about 55 are active. The status of approximately 20 leks is unknown because of limited or irregular use. The count of males at leks in the WRFO in 2012 was 290 birds.

Routt National Forest

On the Routt National Forest, GRSG habitat is largely peripheral and represents extensions of GRSG habitat occurring predominately on lower-elevation non-National Forest System lands. GRSG habitat on the Routt National Forest occurs in Colorado MZs 7, 11, 13, and 14, with the majority of habitat occurring in the California Park and Slater Park areas north of Hayden in Colorado MZ 7. The Slater Park area has one historic GRSG lek, which has not been utilized for over 10 years. There are no other active or inactive GRSG leks on the Routt National Forest.

The planning area includes the Routt National Forest and portions of three other National Forests: the White River, the Arapaho Roosevelt, and the Grand Mesa-Gunnison and Uncompahgre. Early in the planning process it was decided that only the Routt National Forest would be included in this LUPA/EIS. Although most GRSG habitat on the National Forests is peripheral, the Routt National Forest was included because it had a more significant amount of GRSG habitat compared to the other Forests, as well as a historic GRSG lek. The Grand Mesa-Gunnison and Uncompahgre National Forest has only a very small amount (200 acres) of GRSG habitat, and all of it is secondary. Additionally, the Grand Mesa-Gunnison and Uncompahgre National Forest includes habitat for the Gunnison Sage-Grouse, and the Forest has additional measures in place to manage for the species. The White River National Forest has two active GRSG leks and some PH and GH. The White River National Forest Plan was revised in 2002; at that time, it included direction for GRSG habitat management based on best available science (Connelly et al. 2000). Because of this existing plan direction and limited habitat, it was determined that the management direction in the White River National Forest Plan is adequate. The Arapaho Roosevelt National Forest is not included in this amendment process because it contains very limited amounts of PH and GH and contains no active or historic GRSG leks.

On the Routt National Forest, GRSG habitat occurs within 10 management prescription designations identified in the Routt National Forest Plan, as indicated in **Table 1.5**. Wildlife habitat conservation objectives currently apply to all of these areas, with many of these areas emphasizing wildlife conservation goals and objectives. The 2.1, Special Interest Area, and 5.41, Deer and Elk Winter Range, management areas have wildlife conservation emphasis; these areas encompass 67 percent of the GRSG habitat on the Routt National Forest.

As identified in **Table 1.5**, these changes would apply to a very small percentage of acres within each of the 10 affected management prescription designations and would affect only approximately 1 percent of the land area managed by the Routt National Forest.

Table 1.5
Management Areas on the Routt National Forest with GRSG Habitat

Management Area Code	Management Area Description	Forest-wide Management Area Acres	Acres in GRSG Habitat	Portion Affected by the Proposed LUPA
1.32	Backcountry Recreation Nonmotorized with Limited Motorized Use in Winter	261,500	200	0.1%
1.5	National River System Wild Rivers Designated and Eligible	5,400	200	3.9%
2.1	Special Interest Areas Limited Use and Interpretation	28,700	6,700	23.4%
3.31	Backcountry Recreation Year-Round Motorized	27,800	600	2.2%
4.2	Scenery	29,700	2,300	7.6%
4.3	Dispersed Recreation	40,200	30	0.1%
5.11	General Forest and Rangelands Forest Vegetation Emphasis	273,600	300	0.1%
5.12	General Forest and Rangelands Range Vegetation Emphasis	37,800	400	1.1%
5.13	Forest Products	203,700	40	0.0%
5.41	Deer and Elk Winter Range	53,800	1,700	3.2%

Source: Forest Service 2013

1.3.2 Land Uses

Major land uses on public and private lands within the planning area include, but are not limited to:

- Leasable minerals development, including fluid mineral and coal exploration and development
- Livestock grazing
- Rights-of-way (ROWs), including roads, power lines, pipelines, and communication sites
- Recreation, including hunting, hiking, and camping
- Locatable and salable mineral development

1.4 PLANNING PROCESSES

1.4.1 BLM Planning Process

The FLPMA requires the BLM to use RMPs as tools by which "present and future use is projected" (43 United States Code [USC] 1701[a][2]). FLPMA's implementing regulations for planning (43 Code of Federal Regulations [CFR] Part 1600) state that LUPs are a preliminary step in the overall process of managing public lands "designed to guide and control future management actions and the development of subsequent, more detailed and limited scope plans for resources and uses" (43 CFR Part 1601.0-2). Public participation and input are important components of land-use planning.

Under BLM regulations, all RMP revisions and any RMP amendments to existing plans that have significant environmental effects require preparation of an EIS under NEPA. This EIS accompanies the amendment of the existing RMPs and analyzes the impacts of various numbers of alternatives for the Northwest Colorado LUPAs, including the no action alternative.

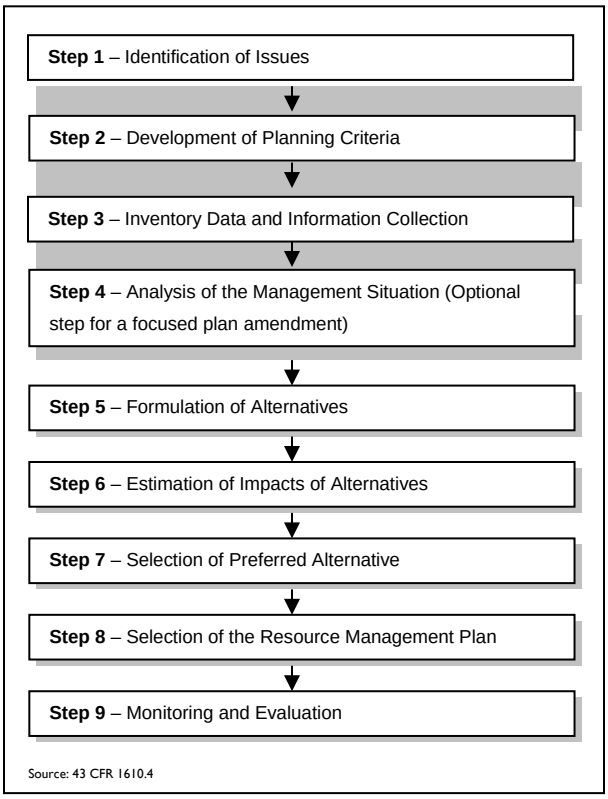
The BLM uses a nine-step planning process (**Diagram 1-1**) to develop or revise RMPs (43 CFR Part 1600 and planning program guidance in the BLM Handbook H-1601-1, Land Use Planning Handbook [BLM 2005a]). The planning process is designed to help the BLM identify the uses of BLM-administered lands desired by the public and to consider these uses to the extent that they are consistent with the laws established by Congress and the policies of the executive branch of the federal government.

Once an RMP is approved, it may be changed through amendment. An amendment can be initiated in response to monitoring and evaluation findings, new data, new or revised policy, a change in circumstances, or a proposed action that may result in a change in the scope of resource uses or a change in the terms, conditions, and decisions of the approved plan. If the BLM decides to prepare an EIS, the amending process shall follow the same procedure required for preparation and approval of the plan, but the focus shall be limited to that portion of the plan being amended (43 CFR 1610.5-5).

As depicted in **Diagram 1-1**, the planning process is issue-driven (**Step 1**). The planning process is undertaken to resolve management issues and problems as well as to take advantage of management opportunities. The BLM utilizes the public scoping process to identify planning issues to direct (drive) a revision or amendment of an existing plan. The scoping process also is used to introduce the public to preliminary planning criteria, which set the parameters, or sideboards, for conducting the planning process (**Step 2**).

The BLM uses existing data from files and other sources and collects new data to address planning issues and to fill data gaps identified during public scoping (**Step 3**). Using these data, information concerning the resource management

Diagram 1-1. Nine-Step Planning Process



programs, and the planning criteria, the BLM completes an Analysis of the Management Situation (**Step 4**) to describe current management and develop or inform the affected environment portion of the RMP. Typically, the Analysis of the Management Situation is conducted at the outset of planning for an entire RMP or RMP revision and is incorporated by reference into development of a single-focus RMPA. In this case, direction for the RMPA is provided through new national policy (BLM Instruction Memorandum 2012-044; BLM 2012a). The affected environment is also incorporated by reference into the RMPA and updated with new information to the degree necessary to set the context for the analysis in the accompanying EIS. The GRSG EISs may not conduct formal Analyses of the Management Situation, as Analyses of the Management Situation are required for RMP revisions but not necessarily for RMPAs.

Results of the first four steps of the planning process clarify the purpose and need and identify key planning issues that need to be addressed by the amendment. Key planning issues reflect the focus of the LUPA and are described in more detail in **Section 1.5.2**, Issues Identified for Consideration in the Northwest Colorado Greater Sage-Grouse Land Use Plan Amendments.

Alternatives constitute a range of management actions that set forth different priorities and measures to emphasize certain uses or resource values over other uses or resource values. The alternatives usually represent a continuum

from extraction and development to preservation and conservation, pursuant to the multiple-use and sustained yield mandate, so as to achieve certain goals or objectives consistent with the purpose and need. During alternative formulation (**Step 5**), the BLM collaborates with cooperating agencies to identify goals and objectives (desired outcomes) for resources and resource uses within the planning area. The alternatives represent a reasonable range of planning strategies for managing resources and resource uses. **Chapter 2** of this document, Alternatives, describes and summarizes the preferred alternative and the other draft alternatives considered in detail.

The Draft LUPA/EIS included an analysis of the impacts of the preferred alternative and the other draft alternatives in **Chapter 4**, Environmental Consequences (**Step 6**). With input from cooperating agencies and BLM specialists, and consideration of planning issues, planning criteria, and the impacts of alternatives, the BLM identified and recommended a preferred alternative from among the alternatives presented in the EIS (**Step 7**). This is documented in the Draft LUPA/EIS, which was then distributed for a 90-day public review and comment period.

Step 8 of the land-use planning process occurs following receipt and consideration of public comments on the Draft LUPA/EIS. In preparing the Proposed LUPA/Final EIS, the BLM has considered all comments it received during the public comment period. The Proposed LUPA has been crafted from the draft alternatives.

Step 9 is the monitoring and evaluation process. Monitoring is the repeated measurement of activities and conditions over time. Evaluation is a process in which the plan and monitoring data are reviewed to see if management goals and objectives are being met and if management direction is sound. Monitoring data gathered over time are examined and used to draw conclusions on whether management actions are meeting stated objectives, and if not, why. Conclusions are then used to make recommendations on whether to continue current management or what changes need to be made in management practices to meet objectives.

The two types of monitoring that are tied to the planning process include implementation and effectiveness monitoring. LUP monitoring is the process of (1) tracking the implementation of land use planning decisions and (2) collecting and assessing the information necessary to evaluate the effectiveness of land use planning decisions.

- **Implementation Monitoring:** Implementation monitoring is the most basic type of monitoring and simply determines whether planned activities have been implemented in the manner prescribed by the plan. Some agencies call this compliance monitoring. This monitoring documents BLM's progress toward full implementation

of the LUP decision. There are no specific thresholds or indicators required for this type of monitoring.

- **Effectiveness Monitoring:** Effectiveness monitoring is aimed at determining if the implementation of activities has achieved the desired goals and objectives. Effectiveness monitoring asks the question: Was the specified activity successful in achieving the objective? This requires knowledge of the objectives established in the RMP as well as indicators that can be measured. Indicators are established by technical specialists in order to address specific questions and, thus, to focus on collection of only necessary data. Success is measured against the benchmark of achieving desired future conditions established by the plan.

Regulations in 43 CFR 1610.4-9 require that the Proposed LUPA establish intervals and standards, as appropriate, for monitoring and evaluation of the plan, based on the sensitivity of the resource decisions involved. Progress in meeting the plan objectives and adherence to the management framework established by the plan is reviewed periodically. Council on Environmental Quality (CEQ) regulations implementing NEPA state that agencies may provide for monitoring to assure that their decisions are carried out and should do so in important cases (40 CFR 1505.2[c]). To meet these requirements, the BLM and Forest Service will review the plan on a regular schedule in order to provide consistent tracking of accomplishments and provide information that can be used to develop annual budget requests to continue implementation.

LUPAs. LUP decisions are subsequently changed through either an LUPA or another LUP revision. The process for conducting LUPAs is basically the same as the land use planning process used in developing or revising LUPs. The primary difference is that circumstances may allow for completing a LUPA through the environmental assessment (EA) process, rather than through an EIS. LUPAs (43 CFR 1610.5-5) change one or more of the terms, conditions, or decisions of an approved LUP. LUPAs are most often prompted by the need to consider a proposal or action that does not conform to the LUP; implement new or revised policy that changes LUP decisions; respond to new, intensified, or changed uses on BLM land; or consider significant new information from resource assessments, monitoring, or scientific studies that change LUP decisions.

LUPA Maintenance. During the life of the LUP, the BLM expects that new information gathered from field inventories and assessments, other agency studies, and other sources will update geographic information system data and best management practices. To the extent that this new information or actions address issues covered in the plan, the BLM will integrate the data through plan maintenance. BLM regulations in 43 CFR 1610.5-4 provide that LUP decisions and supporting actions can be maintained to reflect minor changes in data. Maintenance is limited to further refining, documenting, or clarifying a previously

approved decision incorporated in the LUP. Maintenance must not expand the scope of resource uses or restrictions or change the terms, conditions, and decisions of the approved LUP.

LUP evaluations will be used by the BLM and Forest Service to determine if the decisions in the LUPA, supported by the accompanying NEPA analysis, are still valid. Evaluation of the LUPA will generally be conducted every 5 years per BLM policy, unless unexpected actions, new information, or significant changes in other plans, legislation, or litigation triggers an evaluation. LUP evaluations determine if decisions are being implemented, whether mitigation measures are satisfactory, whether there are significant changes in the related plans of other entities, whether there are new data of significance to the plan, and if decisions should be changed through amendment or revision. Evaluations will follow the protocols established by the BLM Land Use Planning Handbook H-1601-1 (BLM 2005a) in effect at the time the evaluation is initiated. Specific monitoring and evaluation needs are identified by resource/uses throughout **Chapter 2**, Alternatives.

1.4.2 Forest Service Planning Process

The Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the NFMA (16 USC 1600 et seq.), requires the Forest Service to develop, maintain, and, as appropriate, revise land and resource management plans (Forest Plans) for units of the National Forest System using a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences. Consistent with the Multiple-Use Sustained-Yield Act of 1960 (16 USC 528-531), the overall goal of managing the National Forest System is to sustain the multiple uses of its renewable resources in perpetuity while maintaining the long-term productivity of the land. Forest Plans provide broad guidance and information for project and activity decision-making. In particular, Forest Plans coordinate outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness. Public participation and input are important components of land use planning.

The process of amending an LRMP is outlined in 36 CFR 219. The current version of this regulation states that plan amendments that were initiated before May 9, 2015, may be developed in conformance with the provisions of the prior planning regulation. Therefore, the LRMP amendments in this document were developed according to direction in the 1982 version of the CFR 25 219. An LRMP includes plan components, proposed and possible actions, the monitoring program, and maps. The objectives of LRMPs are:

1. Establishing Forest-wide or Grassland-wide multiple use goals and objectives, including desired conditions
2. Establishing Forest-wide or Grassland-wide management requirements, including standards and guidelines

3. Establishing management area direction, including prescriptions and associated standards and guidelines
4. Identifying lands suitable or unsuitable for various uses
5. Recommending any Wilderness, rivers eligible or suitable for designation under the National Wild and Scenic Rivers Act, or other designated areas
6. Establishing requirements for monitoring and evaluation

Forest Plans are never completed or final, as the NFMA requires plans to be maintained, amended, and revised. Adaptive management requires ongoing adjustment of goals, objectives, management area prescriptions, standards, and guidelines constraining land uses. An amendment can be started in response to monitoring and evaluation findings, new data, new or revised policy, a change in circumstances or a proposed action that may result in a change in the scope of resource uses, or a change in the standards and guidelines of the approved plan. Plan revisions and amendments are part of the collaborative and adaptive cycle of planning: plan development; plan implementation; plan monitoring, inventory, and assessment; and plan review and evaluation.

The Forest Service responsible official may amend a plan in response to the need for change. For this amendment, the process involves eight steps:

1. Public notice for initiating plan amendment;
2. Consideration of need for change;
3. Documentation of affected environment and environmental consequences in an EIS;
4. Development of the proposed LUPA;
5. Public notice for proposed LUPA, draft EIS, and 90-day comment period;
6. Response to comments;
7. Public notice of the beginning of the 60-day objection period before approval and availability of the plan amendment, EIS, and draft plan decision document; and
8. Upon resolution of the objection (36 CFR 219 subpart B), approval of the plan by the responsible official.

Under Forest Service regulations, a Forest Plan revision or amendment of an existing plan is a federal action requiring appropriate NEPA documentation. Thus, this EIS accompanies the amendment of the Routt National Forest Plan (Forest Service 1997). This EIS analyzes the impacts of various alternatives for the LUPA, including the no action alternative. The Proposed LUPA direction, Forest Plan Standards and Guidelines, is described for Alternative D in **Chapter**

2, **Section 2.6.3**, Forest Service Proposed Plan Amendment. Regulations at 36 CFR 228.102 require the Forest Service to decide which National Forest System lands are administratively available for oil and gas leasing. This decision includes identifying necessary lease stipulations to protect surface resources. The oil and gas leasing availability decision for the Routt National Forest was originally made in March 1993 and was updated in February 1998 when the Forest Plan was revised. In addition to amending the Routt National Forest Plan, the decision resulting from this analysis will also amend the Routt National Forest's leasing availability decision to incorporate necessary GRSG conservation measures as required lease stipulations. For simplicity throughout this EIS, a reference to amending the Routt National Forest Plan also refers to amending its oil and gas leasing decision. An amendment to the Routt National Forest Plan to include direction for GRSG conservation is anticipated to be a non-significant amendment to the Forest Plan under the NFMA (which is a different determination than significance under NEPA).

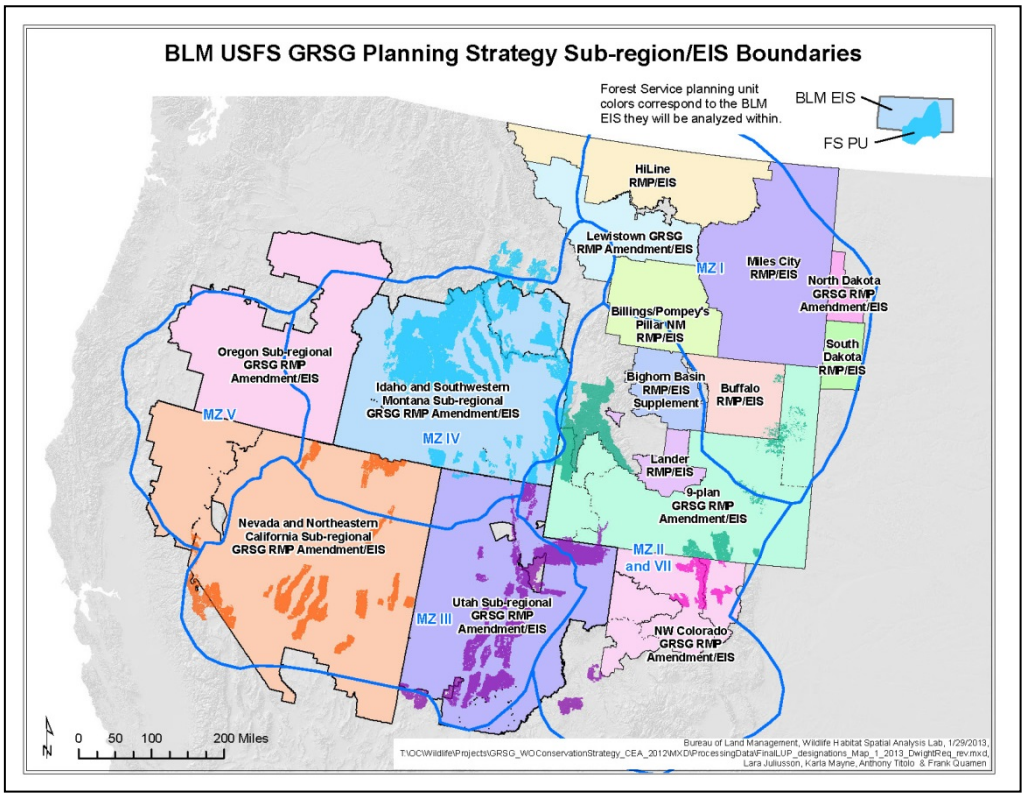
1.4.3 National Greater Sage-Grouse Planning Strategy

On December 9, 2011, a Notice of Intent was published in the Federal Register to initiate the BLM and Forest Service GRSG Planning Strategy across nine western states, including California, Oregon, Nevada, Idaho, Utah, and Southwest Montana in the Great Basin Region and Northwest Colorado, Wyoming, Montana, South Dakota, and North Dakota in the Rocky Mountain Region. This Northwest Colorado GRSG LUPA/EIS is 1 of 15 separate EISs that are currently being conducted to analyze and incorporate specific conservation measures across the range of the GRSG, consistent with National BLM and Forest Service policy (**Diagram 1-2**).

On December 27, 2011, the BLM Washington Office released Instruction Memorandum 2012-044, BLM National Greater Sage-Grouse Land Use Planning Strategy (BLM 2012a), which recommended that all of the planning efforts across the GRSG range to consider all applicable conservation measures when revising or amending its LUPs in GRSG habitat, including the measures developed by the NTT that were presented in their December 2011 document, A Report on National Greater Sage-Grouse Conservation Measures (NTT 2011). Instruction Memorandum 2012-044 recommended that all planning efforts associated with the national strategy consider and analyze (as appropriate) the conservation measures presented in the report.

Along with the applicable measures that were outlined in the NTT report (NTT 2011), planning efforts associated with this National GRSG Planning Strategy have also analyzed applicable conservation measures that were submitted to the BLM and Forest Service from various state governments and from citizens during the public scoping process. It is the goal of the BLM and Forest Service to make a final decision on these plans by the summer of 2015, so that adequate regulatory mechanisms are incorporated in place before USFWS makes a listing decision in 2015.

Diagram 1-2. BLM/Forest Service GRSG Planning Strategy Sub-region/EIS Boundaries



1.5 Scoping and Identification of Issues For Development of Draft Alternatives

1.5.1 The Scoping Process

Scoping is an early and open process for determining the scope, or range, of issues to be addressed and for identifying the significant issues to consider in the planning process. Scoping identifies the affected public and agency concerns, defines the relevant issues and alternatives that will be examined in detail in the EIS, and eliminates those that are not relevant. A planning issue is defined as a major controversy or dispute regarding management or uses on public lands that can be addressed through a range of alternatives. The environmental impacts of these alternative management scenarios are analyzed and addressed in the draft EIS.

A public scoping period was initiated on December 9, 2011, with the Federal Register publication of a Notice of Intent to begin a planning effort. Scoping is designed to be consistent with the public involvement requirements of the FLPMA, NFMA, and NEPA. The cooperative process included soliciting input from interested state and local governments, tribal governments, other federal agencies and organizations, and individuals, to identify the scope of issues to be addressed in the LUPA, and to assist in the formulation of reasonable

alternatives. The scoping process is a method for opening dialogue between the BLM, Forest Service, and the general public about management of GRSG and their habitats on public lands, and for identifying the concerns of those who have an interest in this subject and in the GRSG habitats. As part of the scoping process, the BLM also requested that the public submit nominations for potential Areas of Critical Environmental Concern (ACECs) for GRSG and their habitats.

Public scoping was extended through a Notice of Correction published February 10, 2012, and ended on March 23, 2012. Scoping included open-house meetings in Walden, Lakewood, Silt, and Craig, Colorado. In addition, news releases were used to notify the public regarding the scoping period and the planning process and to invite the public to provide written comments from many sources including via email, fax, and US Mail. Comments obtained from the public during the scoping period were used to define the relevant issues that would be addressed by a reasonable range of alternatives.

For the Northwest Colorado planning process, scoping comments received from the public were placed in one of three categories:

1. Issues identified for consideration in the Northwest Colorado LUPAs;
2. Issues to be addressed through policy or administrative action (and therefore not addressed in the LUPAs); and
3. Issues eliminated from detailed analysis because they are beyond the scope of the LUPAs (and therefore not addressed in the LUP).

Some important issues to be addressed in the LUPAs were identified by the public and the agencies during the scoping process for the planning effort. The Scoping Summary Report (BLM and Forest Service 2012) prepared in conjunction with these LUPAs summarizes the scoping process. The issues identified in the Final Scoping Summary fall into one of several broad categories (see **Section 1.5.2**, Issues Identified for Consideration in the Northwest Colorado Greater Sage-Grouse Land Use Plan Amendments). Other resource and use issues are identified in the BLM Planning Handbook and Manual (H-1610-1) (BLM 2005a) and Forest Service Handbook 1909.15. All of these issues were considered in developing the alternatives brought forward for analysis.

1.5.2 Issues Identified for Consideration in the Northwest Colorado Greater Sage-Grouse Land Use Plan Amendments

The issues identified for consideration in the Northwest Colorado GRSG LUPAs are:

- GRSG habitat management
- Fluid minerals

- ROWs, including transmission
- Livestock grazing
- Locatable and salable minerals
- Fire
- Invasive species

1.6 PLANNING CRITERIA

Planning criteria are based on appropriate laws, regulations, BLM and Forest Service Manual and Handbook sections, and policy directives, as well as on public participation and coordination with cooperating agencies, other federal agencies, state and local governments, and Native American tribes. Planning criteria are the standards, rules, and factors used as a framework to resolve issues and develop alternatives. Planning criteria are prepared to ensure decision making is tailored to the issues, and to ensure that the BLM and Forest Service avoid unnecessary data collection and analysis. The preliminary planning criteria are:

- The BLM and Forest Service will use the WAFWA Conservation Assessment of Greater Sage-Grouse and Sagebrush Habitats (Connelly et al. 2004), and any other appropriate resources, to identify GRSG habitat requirements and best management practices (BMPs).
- The approved LUPAs will be consistent with BLM Instruction Memorandum 2012-044, BLM National Greater Sage-Grouse Land Use Planning Strategy (BLM 2012a).
- The approved LUPAs will comply with FLPMA; NEPA; CEQ regulations at 40 CFR 1500–1508; US Department of the Interior regulations at 43 CFR 46 and 43 CFR 1600; Forest Service regulations at 36 CFR 220; BLM Land Use Planning Handbook (H-1601-1) (BLM 2005a), Appendix C (Program-Specific and Resource-Specific Decision Guidance Requirements) for the affected resource programs; the BLM NEPA Handbook (H-1790-1) (BLM 2008a); Forest Service Handbook 1909.15; and all other applicable BLM and Forest Service policies and guidance.
- The approved Forest Plan amendments will comply with NFMA, NEPA, CEQ regulations at 40 CFR 1500–1508, Regulations of the Secretary of Agriculture at 36 CFR 219, Forest Service Regulation for Leasing analyses and decisions at 36 CFR 228.102, Forest Service Manual 1920, and Forest Service Handbook 1909.12.
- The LUPAs will be limited to making land use planning decisions specific to the conservation of GRSG habitats.

- The BLM and Forest Service will consider allocative and/or prescriptive standards to conserve GRSG habitat, as well as objectives and management actions to restore, enhance, and improve GRSG habitat.
- The LUPAs will recognize valid existing rights.
- Lands addressed in the LUPAs will be public lands, including surface estate and split-estate lands, managed by the BLM and Forest Service in GRSG habitats. Any decisions in the LUPAs will apply only to federal lands administered by either the BLM or the Forest Service.
- The BLM and Forest Service will use a collaborative and multi-jurisdictional approach, where appropriate, to determine the desired future condition of BLM-administered and National Forest System lands for the conservation of GRSG and their habitats.
- As described by law and policy, the BLM and Forest Service will strive to ensure that conservation measures are as consistent as possible with other planning jurisdictions within the planning area boundaries.
- The BLM and Forest Service will consider a range of reasonable alternatives, including appropriate management prescriptions that focus on the relative values of resources while contributing to the conservation of the GRSG and its habitat.
- The BLM and Forest Service will address socioeconomic impacts of the alternatives. Socioeconomic analysis will use an accepted input-output quantitative model such as impact analysis for planning (IMPLAN).
- The BLM and Forest Service will endeavor to use current scientific information, research, technologies, and results of inventory, monitoring, and coordination to determine appropriate local and regional management strategies that will enhance or restore GRSG habitats.
- Management of GRSG habitat that intersects with Wilderness Study Areas (WSA) on BLM-administered lands will be guided by BLM Manual 6330, Management of WSAs (BLM 2012b). Land use allocations made for WSAs must be consistent with the manual and with other laws, regulations, and policies related to WSA management.
- For BLM-administered lands, all activities and uses within GRSG habitats will follow existing BLM Colorado Public Land Health Standards. Standards and guidelines for livestock grazing and other programs that have developed standards and guidelines will be applicable to all alternatives for BLM lands.

- The BLM and Forest Service will consult with Native American tribes to identify sites, areas, and objects important to their cultural and religious heritage within GRSG habitats.
- The BLM and Forest Service will coordinate and communicate with state, local, and tribal governments to ensure that the BLM and Forest Service consider provisions of pertinent plans, seek to resolve inconsistencies between state, local, and tribal plans, and provide ample opportunities for state, local, and tribal governments to comment on the development of amendments.
- The BLM and Forest Service will develop vegetation management objectives, including objectives for managing noxious weeds and invasive species, including identification of desired future condition for specific areas, within GRSG habitat.
- The LUPAs will be based on the principles of adaptive management.
- Reasonable Foreseeable Development Scenarios (RFDSs) and planning for fluid minerals will follow BLM Handbook H-1624-1 and current fluid minerals manual guidance for fluid mineral (oil and gas, coal-bed methane, oil shale) and geothermal resources. For National Forest System lands, the Forest Service will use applicable and relevant policy and procedures.
- The LUPAs will be developed using an interdisciplinary approach to prepare RFDSs, identify alternatives, and analyze resource impacts, including cumulative impacts on natural and cultural resources and the social and economic environment.
- The most current approved BLM and Forest Service corporate spatial data will be supported by current metadata and will be used to ascertain GRSG habitat extent and quality. Data will be consistent with the principles of the Information Quality Act of 2000.
- State game and fish agencies' GRSG data and expertise will be utilized to the fullest extent practicable in making management determinations on federal lands. Analysis of impacts in the LUPAs will address the resources and resource programs identified in the NTT report (NTT 2011) and alternatives, which contain specific management measures for conservation of GRSG habitat.
- Resources and resource programs that do not contain specific management direction for GRSG and that may be indirectly affected by proposed management actions will be identified and discussed only to the degree required to fully understand the range of effects of the proposed management actions.
- An additional criterion was received in public scoping comments during the scoping period (December 9, 2011, to March 23, 2012)

and was added to the planning criteria. This comment was that state game and fish agencies have the responsibility and authority to manage wildlife.

- Where more restrictive land use allocations or decisions are made in existing RMPs, those more restrictive land use allocations or decisions will remain in effect and will not be amended by this LUPA.

1.7 LAWS AND REGULATIONS THAT APPLY TO THE LUPA

This EIS complies with the National Environmental Policy Act of 1969, as amended; CEQ regulations for Implementing the Procedural Provisions of NEPA, outlined in 40 CFR Parts 1500-1508; DOI NEPA regulations at 43 CFR 46; DOI and BLM policies and manuals (BLM NEPA Handbook H-1790-1; BLM 2008c); and the BLM Land Use Planning Handbook H-1601-1 (BLM 2005c).

Other federal laws applicable to the LUPA include, but are not limited to, the following:

- FLPMA
- Clean Water Act
- Clean Air Act
- Energy Policy Act of 2005
- Endangered Species Act
- Migratory Bird Treaty Act of 1918, as amended
- Fish and Wildlife Conservation Act of 1980
- Taylor Grazing Act of 1934
- National Historic Preservation Act of 1966, as amended

1.8 RELATIONSHIP TO OTHER POLICIES, PLANS, AND PROGRAMS

This planning process will recognize the many ongoing programs, plans, and policies that are being implemented in the planning area by other land managers and government agencies. The BLM and Forest Service will seek to be consistent with or complementary to other management actions whenever possible. While the BLM and Forest Service are not obligated to seek consistency, the agencies are required to describe the inconsistencies between the proposed action and other plans, policies, and controls within the EIS. This information has been updated in the Proposed LUPA/Final EIS. Plans that need to be considered during the GRSG planning effort include the following:

1.8.1 Programmatic National-Level Environmental Impact Statement Documents

- Vegetation Treatment on BLM Lands in Thirteen Western States (BLM 1991) (common to the Proposed LUPA and draft alternatives)

- Final Vegetation Treatments on BLM Lands in 17 Western States Programmatic EIS and Associated ROD (FES 07-21) (BLM 2007a)
- Approved RMPAs/ROD for Designation of Energy Corridors on BLM-administered Lands in the 11 Western States (US Department of Energy, Forest Service, and BLM 2009)
- ROD and RMPAs for Geothermal Leasing in the Western US (BLM and Forest Service 2008b)
- Final Programmatic EIS on Wind Energy Development on BLM-administered Lands in the Western US (FES 05-11) (BLM 2005b)
- Final Programmatic EIS for Solar Energy Development in Six Southwestern States (BLM 2012c)

1.8.2 State Plans (Developed by Local Working Groups)

- Middle Park Greater Sage-Grouse Conservation Plan (CPW 2000)
- Northern Eagle and Southern Routt Greater Sage-Grouse Conservation Plan (CPW 2004)
- North Park Greater Sage-Grouse Conservation Plan (CPW 2001)
- Northwestern Colorado Greater Sage-Grouse Conservation Plan (CPW 2008a)
- Parachute-Piceance-Roan Plateau Greater Sage-Grouse Conservation Plan (CPW 2008b)
- Parachute-Piceance-Roan Plateau Greater Sage-Grouse Work Group (CPW 2008c)

1.8.3 County Land Use Plans

- Eagle County Comprehensive Plan (Eagle County 2005)
- Garfield County Land Use Resolution (Garfield County 2008)
- Grand County Master Plan (Grand County 2011)
- Jackson County Master Plan (Jackson County 1998)
- Larimer County Master Plan (Larimer County 1997)
- Mesa County Master Plan (Mesa County 2000)
- Moffat County Land Use Plan (Moffat County 2001)
- Rio Blanco County Master Plan (Rio Blanco County 2011)
- Routt County Master Plan (Routt County 2003)
- Summit County General Plan (Summit County 2006)
- Garfield County Greater Sage-Grouse Conservation Plan (Garfield County 2013) (included as an appendix to the Draft LUPA/EIS)

1.8.4 Other Federal Plans

- BLM Colorado River Valley RMP, In Progress
- BLM Grand Junction RMP, In Progress
- BLM Kremmling RMP, In Progress
- BLM Little Snake RMP (BLM 2011a)
- BLM White River RMP (BLM 1997)
- BLM White River Oil and Gas Development RMPA, In Progress
- Routt National Forest Land and Resource Management Plan (Forest Service 1997)

1.8.5 Endangered Species Recovery Plans

Endangered species recovery plans are prepared by USFWS to promote the recovery of threatened and endangered species. The relevant plans include the following:

- Black-footed Ferret Recovery Plan (USFWS 1988)
- Bonytail Recovery Goals (USFWS 2002a)
- Canada Lynx Recovery Outline (USFWS 2005)
- Colorado Pikeminnow Recovery Goals (USFWS 2002b)
- Greenback Cutthroat Trout Recovery Plan (USFWS 1998a)
- Humpback Chub Recovery Goals (USFWS 2002c)
- Razorback Sucker Recovery Plan (USFWS 1998b)

1.8.6 Memoranda of Understanding

- Memorandum of Understanding (MOU) between the BLM and Forest Service Concerning Oil and Gas Leasing Operations. In 2006, the BLM and the Forest Service signed an MOU Concerning Oil and Gas Leasing Operations for the purpose of efficient, effective compliance with statutory and regulatory requirements. The purpose of this MOU is to establish joint BLM and Forest Service policies and procedures for managing oil and gas leasing and operational activities pursuant to oil and gas leases on National Forest System lands that are consistent with applicable law and policy. The MOU establishes the roles of the Forest Service and the BLM in processing Applications for Permits to Drill and review of subsequent operations.
- MOU between the BLM and Colorado Department of Natural Resources concerning geothermal leasing, permitting, and administration in Colorado (March 2011).

- MOU among the US Department of Agriculture, US Department of Commerce, US Department of Defense, US Department of Energy, US Environmental Protection Agency (EPA), CEQ, Advisory Council on Historic Preservation, US Department of Interior, and Federal Energy Regulatory Commission (October 2009) to improve coordination among project applicants, federal agencies, and states and tribes involved in the siting and permitting process; to improve uniformity, consistency, and transparency; and to provide a single point of contact for significant transmission lines defined as high voltage (generally, though not necessarily, 230 kilovolts or more) and their attendant facilities.
- MOU among the US Department of Agriculture, US Department of the Interior, and US Environmental Protection Agency regarding air quality analyses and mitigation for federal oil and gas decisions through the NEPA process.

1.8.7 Activity Plans and Amendments

- BLM Emerald Mountain Transportation Management Plan, LSFO (BLM 2007c)
- BLM Wilson Creek Travel Management Plan, WRFO (BLM 2005d)
- Northwest Colorado Fire Program Area Fire Management Plan (BLM 2012d)
- BLM White River Oil and Gas Resource Management Plan Amendment, In Progress.
- GJFO and CRVFO Fire Management Plans (updated annually).
- Routt National Forest Oil and Gas Leasing Final EIS and Record of Decision (Forest Service 1993, 1998).

1.8.8 Habitat Management Plans

A Habitat Management Plan provides guidance for managing a defined habitat for a target wildlife species, protecting and improving habitat for that species and other species utilizing the habitat. These plans are usually written in coordination with state wildlife agencies.

- Lower Colorado River Habitat Partnership Program Habitat Management Plan (CPW 2008c)
- Northwest Colorado Habitat Partnership Program Habitat Management Plan (CPW 2009)

1.8.9 Other Greater Sage-grouse-Specific Policies

- National Sage-grouse Habitat Conservation Strategy (BLM 2004)
- WAFWA Conservation Assessment
- BLM Special Status Species Policy (BLM Manual 6840) (BLM 2008c)

- National Greater Sage-grouse Planning Strategy (BLM 2011b)

1.9 DESCRIPTION OF THE PUBLIC COMMENT PROCESS

1.9.1 Distribution of the Draft Land Use Plan Amendment/Environmental Impact Statement

The formal public comment period for the Draft LUPA/EIS began on August 16, 2013, with the publication of the Notice of Availability (NOA) in the Federal Register. The NOA, advertisements in local newspapers, and an email postcard sent to all those agencies, organizations, and members of the public that were on the project distribution list announced the availability of the Draft LUPA/EIS and listed the time and place for the scheduled BLM/Forest Service open house meetings.

Copies of the Draft LUPA/EIS were distributed to those who had previously requested copies and to those who submitted requests subsequent to the publication of the NOA. The Draft LUPA/EIS was also available for download from the BLM's ePlanning project website.

1.9.2 Comment Period and Open House Meetings

Under CEQ regulations, the public comment period must last for at least 45 days. Initially, the BLM/Forest Service set a 90-day public comment period. Before the end of the comment period, BLM/Forest Service received multiple requests to extend the comment period. BLM extended the comment period to December 2, 2013. The total comment period lasted 108 days.

The BLM hosted four open house meetings to provide the public with opportunities to ask questions about the project and the planning process, to meet the LUPA team members, and to offer comments (see **Table 1.6**). The open house format was chosen over the more formal public meeting format to encourage broader participation and to allow attendees to ask questions of BLM/Forest Service representatives in an informal setting.

Table 1.6
Public Comment Open House Information

Venue	Location (Colorado)	Date	Number of Attendees
The Wattenburg Center	Walden	October 22, 2013	13
Lakewood Heritage Center	Lakewood	October 23, 2013	30
Colorado River Valley Field Office	Silt	October 28, 2013	24
Craig Hospital	Craig	October 29, 2013	33
		Total	**100**

Note: All meetings were held from 4:00 to 7:00 pm.

1.9.3 Comment Collection and Analysis

See **Chapter 6**, **Section 6.5.4** for a detailed description of the comments received during the public comment period, as well as the comment analysis methodology used.

1.10 CHANGES BETWEEN THE DRAFT LAND USE PLAN AMENDMENT/ENVIRONMENTAL IMPACT STATEMENT AND THE PROPOSED LAND USE PLAN AMENDMENT/FINAL ENVIRONMENTAL IMPACT STATEMENT

As a result of public comments, best science, cooperating agency coordination, and internal review of the Draft LUPA/EIS, the BLM and Forest Service developed the Proposed LUPA for managing BLM-administered and National Forest System lands within the Northwest Colorado sub-region. Alternative D (the Preferred Alternative) from the Draft LUPA/EIS was not selected. Rather, the Proposed LUPA consists of a combination of various management actions from all the alternatives and is now considered the Proposed LUPA for managing BLM-administered and National Forest System lands within the Northwest Colorado sub-region. The Proposed LUPA focuses on addressing public comments, while continuing to meet the BLM's and Forest Service's legal and regulatory mandates.

Throughout the development of the Proposed LUPA/Final EIS, editorial changes were made to improve clarity, and technical changes were made to correct errors. New information on resources or resource uses was added. New program policies were recognized.

The NEPA requires agencies to prepare a supplement to the Draft LUPA/EIS if: 1) the agency makes substantial changes in the proposed action that are relevant to environmental concerns; or 2) if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. A supplement is not necessary if a newly formulated alternative is a minor variation of one of the alternatives and is qualitatively within the spectrum of alternatives analyzed in the Draft LUPA/EIS.

The Proposed LUPA includes components of the alternatives analyzed in the Draft LUPA/EIS. Taken together, these components present a suite of management decisions that present a minor variation of alternatives identified in the Draft LUPA/EIS and are qualitatively within the spectrum of alternatives analyzed.

The BLM and Forest Service have determined that the Proposed LUPA is a minor variation and that its impacts would not affect the human environment in a substantial manner or to a significant extent not already considered in the EIS. The impacts disclosed in the Proposed LUPA/Final EIS are similar or identical to those described in the Draft LUPA/EIS.

1.10.1 Changes to Geographic Information Systems Information

GIS information (e.g., acreage figures and associated quantifications) was updated as follows:

- Surface ownership data were updated per geographic coordinate database standards and land exchange information available since the Draft LUPA/EIS. This resulted in recalculating datasets, with totals reflecting these corrections.
- Datasets used in the Draft LUPA/EIS were refined with new surface ownership and federal mineral ownership layers for more accurate and specific totals.
- Some datasets were corrected because of mapping errors due to inaccurate datasets, unknown sources, or outdated information.

1.10.2 Changes to the Alternatives (Chapter 2)

Management objectives and actions in **Chapter 2** were updated. The following are the management actions and objectives that underwent the most changes between the Draft LUPA/EIS and the Proposed LUPA/Final EIS.

- Lands and Realty. The Proposed LUPA management action in line 10 of **Table 2.8**, Description of Alternatives B, C, D, and BLM and Forest Service Proposed LUPAs, was changed to: "Areas within PHMA and GHMA would be avoidance areas. No new roads or aboveground structures would be authorized within 1 mile of an active lek. 68,000 acres would be managed as avoidance areas for large transmission lines. PHMA would be exclusion areas for large transmission lines. Any new projects would be subject to the 3 percent disturbance cap. Surface occupancy and surface-disturbing activities would be prohibited within 4 miles of active leks during lekking, nesting, and early brood-rearing (March 1 to July 15)."
- Wind Energy Development/Industrial Solar. Under the Proposed LUPA, PHMA would be an exclusion area for wind energy and industrial solar development. GHMA would be an avoidance area for wind energy and industrial solar development.
- Range Management. The objective for range management was updated to: "GRSG objectives and well-managed livestock operations are compatible because forage availability for livestock, and hiding cover for GRSG, are both dependent on healthy plant communities. Agreements with partners that promote sustainable GRSG populations concurrent with sustainable ranch operations offer long-term stability. In the context of sustainable range operations, manage the range program to: 1) maintain or enhance vigorous and productive plant communities; 2) maintain residual herbaceous cover to reduce predation during GRSG nesting and

early brood-rearing; 3) avoid direct adverse impacts on GRSG-associated range project infrastructure; and 4) employ grazing management strategies that avoid concentrating animals on key GRSG habitats during key seasons."

- Fluid Minerals – Unleased Fluid Minerals. The objective for unleased fluid minerals was updated: "Manage fluid minerals to avoid, minimize, and mitigate: 1) direct disturbance, displacement, or mortality of GRSG; 2) direct loss of habitat, or loss of effective habitat through fragmentation; and 3) cumulative landscape-level impacts. Priority will be given to leasing and development of fluid mineral resources, including geothermal, outside of PHMA and GHMA. When analyzing leasing and authorizing development of fluid mineral resources, including geothermal, in PHMA and GHMA, and subject to applicable stipulations for the conservation of GRSG, priority will be given to development in non-habitat areas first and then in the least suitable habitat for GRSG. The implementation of these priorities will 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)."

  The Proposed LUPA management action for line 46 in **Table 2.8**, Description of Alternatives B, C, D, and BLM and Forest Service Proposed LUPAs, was changed to: "No new leasing within 1 mile of active leks in ADH; NSO within 2 miles of active leks in ADH, with no exceptions anticipated; NSO on the remainder of PHMA (see **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations); 3 percent disturbance cap in PHMA, with disturbances limited to 1 per 640 density calculated by Colorado MZ; and no new leasing in PHMA if disturbance cap exceeds 3 percent for the Colorado MZ or 1 per 640 density. In addition to NSO stipulations, no activity associated with construction, drilling or completions within 4 miles from active leks during lekking, nesting, and early brood-rearing (March 1 to July 15)."

- Fluid Minerals – Leased Fluid Minerals. The objective for leased fluid minerals was updated to: "Where a proposed fluid mineral development project on an existing lease could adversely affect GRSG 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 will work with the lessee, operator, or project proponent in developing an Application for Permit to Drill for the lease to avoid and minimize impacts on GRSG or its habitat and will ensure that the best information about GRSG and its habitat informs and helps guide development of such federal leases."

The Proposed LUPA management action for line 47 in **Table 2.8**, Description of Alternatives B, C, D, and BLM and Forest Service Proposed LUPAs, was changed to: "Disturbance, disruptive activities, and occupancy would be precluded within 1 mile of active leks. If it is determined that this restriction would render the recovery of fluid minerals infeasible or uneconomic, considering the lease as a whole, or where development of existing leases requires that disturbance density exceeds 1 per 640 and/or the 3 percent disturbance cap, use the criteria listed in **Chapter 2** to site proposed lease activities to meet GRSG habitat objectives and require mitigation as described in **Section 2.7.3**, Regional Mitigation. Based on site-specific conditions, prohibit construction, drilling and completion within PHMA within 4 miles of a lek during lekking, nesting, and early brood-rearing (March 1 to July 15). In consultation with the State of Colorado, this timing limitation may be adjusted based on application of the criteria. To authorize an activity based on the criteria above, the environmental record of review must show no significant direct disturbance, displacement, or mortality of GRSG."

- The disturbance cap in the Proposed LUPA/Final EIS was changed from 5 percent in lands that support sagebrush to 3 percent in PHMA. The disturbance cap was also revised to provide additional detail, such as enhanced descriptions of what types of activities would count towards the disturbance totals, where disturbance activities would count against the cap, reclamation and habitat requirements for a disturbed area for both temporary and permanent disturbance, and how the cap would be implemented and monitored. See **Appendix E**, Methodology for Calculating Disturbance Caps, for additional details about how the disturbance caps would be calculated.

1.10.3 Changes to Other Chapters and Appendices

- In **Chapter 2**, Alternatives, additional language was added describing the adaptive management approach for the LUPA/Final EIS.
- Mitigation and monitoring were further defined as a national monitoring framework and regional mitigation strategy, detailed in **Chapter 2**, Alternatives, **Appendix F**, Greater Sage-Grouse Monitoring Framework, and **Appendix G**, Greater Sage-Grouse Mitigation Strategy.
- Additional literature was reviewed and added to the baseline information in **Chapter 3**, Affected Environment.

- **Chapter 4**, Environmental Consequences, was updated with new information and analysis related to the Proposed LUPA and revised for consistency with **Chapter 3**, Affected Environment.
- In **Chapter 5**, Cumulative Effects, a more comprehensive list of cumulative projects, past and future, was developed and was used to support a more detailed analysis of cumulative impacts. Cumulative impacts were reviewed for consistency with the rest of the LUPA.
- Additions were made to **Chapter 6**, Consultation and Coordination, to describe the public comment process on the Draft LUPA/EIS.
- In various chapters and appendices, clarifications were made on specific topics commenters found confusing or deficiently described, including implementation-level decisions.
- All comments citing editorial changes to the document were reviewed and incorporated as appropriate. The Proposed LUPA/Final EIS was edited and revised to correct typographic errors, missing references, definitions, acronyms, calculations, and other inconsistencies.

Chapter 2
Alternatives

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CHAPTER 2
PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

The LUPA/EIS complies with NEPA, which directs the BLM and Forest Service to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources…" (NEPA Section 102[2][e]). At the heart of the alternative development process is the required development of a range of reasonable alternatives. Public and internal (within BLM and Forest Service) scoping (see **Section 1.5**, Scoping and Identification of Issues for Development of Draft Alternatives) identified issues that present opportunities for alternative courses of action, while the purpose and need for action described in **Section 1.2**, Purpose of and Need for the Land Use Plan Amendments, provides sideboards for determining "reasonableness."

This chapter introduces and details the Proposed Plan. The Proposed Plan is a mix of management actions selected from the range of alternatives in the Draft LUPA/EIS and is based on best science, public scoping comments, public comments on the Draft LUPA/EIS, and internal agency discussion. The alternatives that were in the Draft LUPA/EIS are also included in this chapter. These include the No Action Alternative, which would continue the existing policies of the BLM and Forest Service; three action alternatives; and the alternatives considered but eliminated from detailed analysis.

The identification of the Preferred Alternative in the Draft LUPA/EIS did not constitute a commitment or decision in principle, and there is no requirement to select the Preferred Alternative or any of the separate alternatives presented in the Draft LUPA/EIS in the Final LUPA/EIS as the Proposed Plan. The BLM and Forest Service have the discretion to select any of the alternatives as their Preferred Alternative in the Draft LUPA/EIS. The agencies also have the discretion to modify the Preferred Alternative between the Draft EIS and the Final EIS into the Proposed Plan. The modifications are allowable as long as the

actions presented in the Proposed Plan within the Proposed LUPA/Final EIS within the range of alternatives analyzed in the Draft EIS. The various parts of the separate alternatives that were analyzed in the Draft EIS can be "mixed and matched" to develop an alternative – known as the Proposed Plan – in the Final EIS, as long as the reasons for doing so are explained (40 CFR 1506.2(b)).

2.2 CHANGES BETWEEN THE DRAFT LAND USE PLAN AMENDMENT/ ENVIRONMENTAL IMPACT STATEMENT AND THE PROPOSED LAND USE PLAN AMENDMENT/ FINAL ENVIRONMENTAL IMPACT STATEMENT

As a result of public comments, best science, cooperating agency coordination, and internal review of the Draft LUPA/EIS, the BLM and Forest Service have developed the Proposed LUPA/Final EIS for managing BLM-administered and National Forest System lands in the Northwest Colorado sub-region. The Proposed LUPA/Final EIS focuses on addressing public comments, while continuing to meet the BLM's and Forest Service's legal and regulatory mandates. The Proposed LUPA/Final EIS is a variation of the preferred alternative (Alternative D) and is within the range of alternatives analyzed in the Draft EIS.

Changes made to the Proposed LUPA/Final EIS from the preferred alternative (Alternative D) in the Draft LUPA/EIS are:

- Allocations for PHMA and GHMA—Allocations in the Proposed LUPA/Final EIS provide more opportunities for uses in GHMA, while still maintaining conservation management by establishing screening criteria for project/activity review in GRSG habitat (see **Appendix H**, Guidelines for Implementation).
- USGS Buffer Study—The Proposed LUPA includes a management action to incorporate the lek buffer distances identified in the USGS report, *Conservation Buffer Distance Estimates for Greater Sage Grouse—A Review: USGS Open File Report 2014-1239* (Mainer et al. 2014), during NEPA analysis at the implementation stage. Although the buffer report was not available at the time of the Draft EIS, applying these buffers was addressed in the Draft EIS and is qualitatively within the spectrum of alternatives analyzed. Accordingly, the management decision to require analysis of lek buffers for development within certain habitat types is within the range of alternatives analyzed.
- Adaptive management—The Proposed LUPA identifies hard and soft adaptive management triggers for population and habitat and identifies appropriate management responses. Chapter 2 of the Draft EIS identified that the BLM/Forest Service would further develop the adaptive management approach by identifying hard and soft triggers and responses. All of the adaptive management hard trigger responses were analyzed within the range of alternatives.

For example, if a hard trigger is reached in GHMA, and GHMA would be managed as open to saleable minerals in the Proposed LUPA, the response would be to manage it as closed to saleable minerals. This closure was analyzed under Alternative C in the Draft EIS.

- Monitoring and Disturbance—The monitoring framework was further refined in the Final EIS, and further clarification about how disturbance cap calculations would be measured were developed. During the Draft EIS public comment period, the BLM received comments about how monitoring and disturbance cap calculations would occur at implementation. The Draft EIS outlined the major components of the monitoring strategy and provided a table portraying a list of anthropogenic disturbances that would count against the disturbance cap. A BLM and Forest Service disturbance and monitoring sub-team further enhanced the two appendices (**Appendix E and F**) in the Final EIS.
- Mitigation Strategy; Net Conservation Gain— The Proposed LUPA provides for a net conservation gain standard of mitigation when the BLM and Forest Service authorize activities in PHMA. The net conservation gain strategy is in response to the overall landscape-scale goal to enhance, conserve, and restore GRSG and its habitat. All of the action alternatives provided management actions to meet the landscape-scale goal.
- WAFWA MZ Cumulative Effects Analysis on GRSG—A quantitative cumulative effects analysis for GRSG is included in the Final EIS. This analysis was completed to analyze the effects of management actions on GRSG at a range-wide biologically significant scale, which was determined to be the WAFWA MZ. The Draft EIS, in Chapter 4 (Environmental Consequences), included a qualitative analysis and identified that a quantitative analysis would be completed for the Final EIS at the WAFWA MZ scale.
- Forest Service LUPA—Chapter 2 separates the Forest Service Proposed LUPA and the BLM Proposed LUPA. The Forest Service has different guidance for writing planning language; however, the actions are the same for both the BLM and Forest Service under the Proposed LUPA.
- Public Comment on Draft EIS—The Final EIS is updated based on public comment received on the Draft EIS (**Appendix P**, Response to Comments on the Draft Land Use Plan Amendment/Environmental Impact Statement).
- For an additional list of changes between the Draft EIS and Final EIS, see Chapter 1, **Section 1.10**, Changes Between the Draft Land Use Plan Amendment/Environmental Impact Statement and the

Proposed Land Use Plan Amendment/Final Environmental Impact Statement.

The NEPA requires agencies to prepare a supplement to the Draft LUPA/EIS if: 1) the agency makes substantial changes in the proposed action that are relevant to environmental concerns; or 2) if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. A supplement is not necessary if a newly formulated alternative is a minor variation of one of the alternatives and is qualitatively within the spectrum of alternatives analyzed in the Draft LUPA/EIS.

The Proposed LUPA includes components of the alternatives analyzed in the Draft LUPA/EIS. Taken together, these components present a suite of management decisions that present a minor variation of alternatives identified in the Draft LUPA/EIS and are qualitatively within the spectrum of alternatives analyzed.

The BLM and Forest Service have determined that the Proposed LUPA is a variation of Alternative D and that its impacts would not affect the human environment in a substantial manner or to a significant extent not already considered in the EIS. The impacts disclosed in the Proposed LUPA/Final EIS are similar or identical to those described in the Draft LUPA/EIS.

2.3 INTRODUCTION TO DRAFT ALTERNATIVES

LUP decisions consist of identifying and clearly defining goals and objectives (desired outcomes) for resources and resource uses, followed by developing allowable uses and management actions necessary for achieving the goals and objectives. These critical determinations guide future land management actions and subsequent site-specific implementation actions to meet multiple use and sustained yield mandates while sustaining land health.

2.3.1 Components of Alternatives

Goals are broad statements of desired (LUP-wide and resource- or resource-use-specific) 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. Forest Service objectives are also time specific.

Management actions and allowable uses are designed to achieve objectives. Management actions are measures that guide day-to-day and future activities. Allowable uses delineate which uses 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 on-the-ground actions and are typically not addressed in LUPs.

On National Forest System lands, forest plans guide management activities and contain desired conditions and objectives as well as standards and guidelines that provide direction for project planning and design. Desired conditions are descriptions of specific social, economic, and/or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be directed. Standards are mandatory constraints on project and activity decision making. Not meeting a standard would require a site-specific Forest Plan amendment. A guideline is a constraint on project and activity decision making that allows for departure from its terms, so long as the purpose of the guideline is met.

2.3.2 Purpose of Alternatives Development

Land use planning and NEPA regulations require the BLM and Forest Service to formulate a reasonable range of alternatives. Alternative development is guided by established planning criteria (as outlined for the BLM at 43 CFR 1610) (see **Chapter 1**).

The NEPA regulations at 40 CFR Part 1501.2(c) state that federal agencies shall: "Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflict concerning alternatives uses of available resources…."

The basic goal of alternative development is to produce distinct potential management scenarios that:

- Address the identified major planning issues;
- Explore opportunities to enhance management of resources and resource uses;
- Resolve conflicts among resources and resource uses; and
- Meet the purpose of and need for the LUP or LUPA.

Pursuit of this goal provides the BLM, Forest Service, and the public with an appreciation for the diverse ways in which conflicts regarding resources and resource uses might be resolved, and offers the decision maker a reasonable range of alternatives from which to make an informed decision. The components and broad aim of each alternative considered for the Northwest Colorado Greater Sage-Grouse LUPA are discussed below.

2.4 ALTERNATIVE DEVELOPMENT PROCESS FOR THE NORTHWEST COLORADO GREATER SAGE-GROUSE LAND USE PLAN AMENDMENT

The Northwest Colorado Greater Sage-Grouse LUPA planning team employed the BLM planning process (outlined in **Section 1.4**, Planning Process) to develop a reasonable range of alternatives for the LUPA/EIS. The BLM and Forest Service complied with NEPA and the CEQ implementing regulations at 40 CFR Part 1500 in the development of alternatives for this Proposed

LUPA/EIS, including seeking public input and analyzing reasonable alternatives. Where necessary to meet the planning criteria, to address issues and comments from cooperating agencies and the public, or to provide a reasonable range of alternatives, the alternatives include management options for the planning area that would modify or amend decisions made in the applicable LUP. Since this LUPA/EIS will specifically address GRSG conservation, many decisions within existing LUPs that do not impact GRSG are acceptable and reasonable; in these instances, there is no need to develop alternative management prescriptions.

Public input received during the scoping process was considered to identify significant issues deserving of detailed study to help identify alternatives. The planning team developed planning issues to be addressed in the LUPA/EIS, based on broad concerns or controversies related to conditions, trends, needs, and existing and potential uses of planning area lands and resources. All comments were reviewed to determine whether they identified significant issues or unresolved conflicts.

2.4.1 Develop a Range of Reasonable Alternatives

Based on scoping and collaboration efforts, the BLM and Forest Service finalized their planning criteria and identified seven key planning issues to help frame the alternatives development process. Following the close of the public scoping period in March 2012, the BLM and the Forest Service began the alternatives development process. Between May and September 2012, the planning team (BLM, Forest Service, and cooperating agencies) met to develop management goals and to identify objectives and actions to address the goals. The various groups met numerous times throughout this period to refine their work. As outcomes of this process, the planning team:

- Developed one No Action Alternative (Alternative A) and two preliminary action alternatives. The first action alternative (Alternative B) is based on *A Report on National Greater Sage-Grouse Conservation Measures* (NTT 2011)
- One alternative (Alternative C) is based on a proposed alternative submitted by conservation groups

  Blended goals, objectives, and actions from the two action alternatives to formulate a third action alternative (Alternative D) that strives for balance among competing interests and has the greatest potential to effectively address the planning issues

Each of the preliminary action alternatives in the Draft LUPA/EIS was designed to:

- Address the planning issues (identified in **Section 1.5.2**)
- Fulfill the purpose and need for the LUPA (outlined in **Section 1.2**, Purpose of and Need for the Land Use Plan Amendments)

- Meet the multiple use mandates of the FLPMA (43 CFR 1716), Multiple Use Sustained Yield Act of 1960 and NFMA

2.4.2 Resulting Range of Alternatives in Draft Land Use Plan Amendments/ Environmental Impact Statement

The three resulting action alternatives (Alternatives B, C, and D) in the Draft LUPA/EIS offer a range of management approaches to maintain or increase GRSG abundance and distribution of GRSG by conserving, enhancing, or restoring the sagebrush ecosystem upon which GRSG populations depend in collaboration with other conservation partners. While the goal is the same across all the alternatives, each alternative contains a discrete set of objectives and management actions constituting a separate LUPA. The goal is met in varying degrees, with the potential for different long-range outcomes and conditions.

The relative emphasis given to particular resources and resource uses differs as well, including allowable uses, restoration measures, and specific direction pertaining to individual resource programs. When resources or resource uses are mandated by law or are not tied to planning issues, there are typically few or no distinctions between alternatives.

The meaningful differences among the alternatives are described in **Section 2.8**, Comparison of Proposed Plan Amendment and Draft Alternatives. **Section 2.9**, Detailed Description of Draft Alternatives, also provides a complete description of the proposed decisions for each alternative, including the project goal and objectives, management actions, and allowable uses for individual resource programs. Maps and figures in **Appendix A** provide a visual representation of differences between alternatives. In some instances, varying levels of management overlap a single area, or polygon, due to management prescriptions from different resource programs. In instances where varying levels of management prescriptions overlap a single polygon, the stricter of the management prescriptions would apply.

2.4.3 Selection of and Rationale for Identifying the Preferred Alternative

The BLM and Forest Service selected Alternative D as their preferred alternative, which was presented in the Draft RMP/EIS, released in August 2013. The BLM and Forest Service selected the preferred alternative based on interdisciplinary team recommendations, environmental consequences analysis of the alternatives, cooperating agency input, and public input during scoping. Comments submitted by other government agencies, public organizations, state and tribal entities, and interested individuals were given careful consideration. Public scoping efforts enabled the BLM to identify and shape significant issues pertaining to GRSG habitat, energy development, livestock grazing, potential ACECs, public land access, and other program areas. Cooperating agencies participated, reviewed, and provided comments at critical intervals during the alternative development process, as well as the EIS process in general.

All of the action alternatives were developed to employ resource programs to address the USFWS-identified threats to GRSG and its habitat. **Table 2.1** identifies the threats and the applicable BLM and Forest Service resource programs in RMPs and LUPs for addressing the threats. The major threats to GRSG identified by USFWS in WAFWA MZs II and VII include oil and gas development, infrastructure, agriculture and urbanization, and livestock grazing (Manier et al. 2013, p 253-256).

The BLM's NEPA handbook (H-1790-1) requires the BLM to identify a preferred alternative in the Draft LUPA/EIS. Formulated by the planning team, 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 exclusive responsibility of the BLM and Forest Service. The BLM's preferred alternative in the Draft LUPA/EIS was Alternative D. Alternatives A, B, and C were determined to be less effective at resolving planning issues and balancing resource issues. See **Section 2.6.1**, Development of Proposed Land Use Plan Amendments, for a discussion of the how the Proposed LUPAs were developed.

Table 2.1
USFWS-Identified Threats to GRSG and Its Habitat and Applicable BLM/Forest Service RMP/LUP Resource Programs for Addressing Threats

USFWS-identified Threat to GRSG and Its Habitat[1]	COT Report-Identified Threats to GRSG and Its Habitat (2013)	Applicable BLM/Forest Service LUPA Resource Program for Addressing the Threat
Oil and Gas Development	Energy Development	**BLM/Forest Service Program**: Fluid Minerals **Decisions**: Identify open and closed areas to fluid mineral leasing; identify open areas with no surface occupancy (NSO), controlled surface use (CSU), and timing limitation (TL) stipulations
		BLM/Forest Service Program: Lands and Realty **Decisions**: Issue ROW grant; identify ROW avoidance or exclusion areas
Infrastructure • Power lines/pipeline • Roads • Communication Sites • Railroads	Infrastructure	**BLM/Forest Service Program**: Lands and Realty – Utilities **Decisions**: Issue ROW grant; identify ROW avoidance or exclusion areas; identify utility corridors
Range Improvements		**BLM/Forest Service Program**: Lands and Realty – Communication Sites

Table 2.1
USFWS-Identified Threats to GRSG and Its Habitat and Applicable BLM/Forest Service RMP/LUP Resource Programs for Addressing Threats

USFWS-identified Threat to GRSG and Its Habitat[1]	COT Report-Identified Threats to GRSG and Its Habitat (2013)	Applicable BLM/Forest Service LUPA Resource Program for Addressing the Threat
		Decisions: Issue ROW grant; identify ROW avoidance or exclusion areas
		BLM/Forest Service Program: Range Management – Fences **Decisions**: Installation or removal of fences
		BLM/Forest Service Program: Comprehensive Trails and Travel Management/Range Management – Fences/culverts/stream crossings **Decisions**: Installation or removal of fences, culverts or stream crossings
		BLM/Forest Service Program: Comprehensive Trails and Travel Management – Roads **Decisions**: Identify travel management areas; identify modes of access and travel; identify areas open, limited, or closed to off-highway vehicles (OHVs)
		BLM/Forest Service Program: Lands and Realty – Railroads **Decisions**: Issue ROW grant; identify ROW avoidance or exclusion areas
Invasive Species	Nonnative, Invasive Plant Species	**BLM/Forest Service Program**: Vegetation Management, Range Management, Wildland Fire Management and Recreation **Decisions**: Weed control, suppression, or eradication via natural processes; restrictions on allowable uses; active management or treatment
Wildland fire	Fire	**BLM/Forest Service Program**: Wildland Fire Management **Decisions**: Changes to fire management strategies; identify areas suitable/unsuitable for managed wildland fire; identify priority areas for suppression

Table 2.1
USFWS-Identified Threats to GRSG and Its Habitat and Applicable BLM/Forest Service RMP/LUP Resource Programs for Addressing Threats

USFWS-identified Threat to GRSG and Its Habitat[1]	COT Report-Identified Threats to GRSG and Its Habitat (2013)	Applicable BLM/Forest Service LUPA Resource Program for Addressing the Threat
Grazing	Grazing	**BLM/Forest Service Program**: Range Management **Decisions**: Identify acres open and closed to grazing; establish animal unit months (AUMs); manage grazing systems; conduct range improvements; identify season of use; identify stocking rates
		BLM/Forest Service Program: Wild Horse and Burro **Decisions**: Identify herd areas and herd management areas (HMAs)
		BLM/Forest Service Program: Special Status Species **Decisions**: Identify habitat management
Agriculture	Agricultural Conversion and Ex-Urban Development	**BLM/Forest Service Program**: Lands and Realty **Decisions**: Identify retention, disposal, and acquisition areas
Disease	No similar threat identified	**BLM/Forest Service Program**: Comprehensive Trails and Travel Management/Range Management **Decisions**: Establish design features and BMPs
		BLM/Forest Service Program: Minerals **Decisions**: Establish design features and BMPs
		BLM/Forest Service Program: Range Management **Decisions**: Identify number, location, and type of range water developments
Urbanization	Urbanization	**BLM/Forest Service Program**: Lands and Realty **Decisions**: Identify retention, disposal, and acquisition areas

Table 2.1
USFWS-Identified Threats to GRSG and Its Habitat and Applicable BLM/Forest Service RMP/LUP Resource Programs for Addressing Threats

USFWS-identified Threat to GRSG and Its Habitat[1]	COT Report-Identified Threats to GRSG and Its Habitat (2013)	Applicable BLM/Forest Service LUPA Resource Program for Addressing the Threat
Coal/Strip Mining	Mining	**BLM/Forest Service Program**: Coal **Decisions**: Identify suitable and unsuitable areas for coal development; identify areas withdrawn from coal development; identify open areas with NSO, CSU, and TL stipulations
Weather	No similar threat identified	There is no resource program in RMPs for addressing this threat to GRSG and its habitat.
Predation	No similar threat identified	**BLM/Forest Service Program**: Lands and Realty **Decisions**: Establish design features and Preferred Design Features (PDFs)/Required Design Features (RDFs)
		BLM/Forest Service Program: Minerals **Decisions**: Establish design features and PDFs/RDFs
Prescribed Fire	Loss of Sagebrush	**BLM/Forest Service Program**: Wildland Fire Management, Fuels Management **Decisions**: Establish fire management strategies; identify areas suitable and unsuitable for prescribed fire use
Conifer Encroachment	Pinyon and/or Juniper Expansion	**BLM/Forest Service Program**: Vegetation **Decisions**: Conduct vegetation treatments
Water Development	No similar threat identified	Not applicable
Hard Rock Mining	Mining	**BLM/Forest Service Program**: Locatable Minerals **Decisions**: Petition for withdrawal lands from locatable mineral development; establish terms, conditions, or special considerations

Table 2.1
USFWS-Identified Threats to GRSG and Its Habitat and Applicable BLM/Forest Service RMP/LUP Resource Programs for Addressing Threats

USFWS-identified Threat to GRSG and Its Habitat[1]	COT Report-Identified Threats to GRSG and Its Habitat (2013)	Applicable BLM/Forest Service LUPA Resource Program for Addressing the Threat
		BLM/Forest Service Program: Salable Mineral Materials **Decisions**: Identify open and closed areas to mineral materials disposal; establish terms, conditions, or special considerations
		BLM/Forest Service Program: Nonenergy Leasable Minerals **Decisions**: Identify open and closed areas to nonenergy leasable minerals; Establish terms, conditions, or special considerations
Hunting	No similar threat identified	The BLM/Forest Service have no authority over this use; therefore, there is no resource program for addressing this threat to GRSG and its habitat.
Climate Change	No similar threat identified	There is no one resource program for addressing this threat to GRSG and its habitat; however, this threat has been considered as part of individual resource concerns and monitored trends.
Contaminants	No similar threat identified	**BLM/Forest Service Program**: Minerals **Decisions**: Plan of operations requirements
		BLM/Forest Service Program: Public Health and Safety **Decisions**: Remediate and resolve illegal dumping

[1]USFWS 2010

2.5 BLM/Forest Service Resource Programs for Addressing GRSG Threats

The action alternatives are directed toward responding to USFWS-identified issues and threats to GRSG and its habitat. The USFWS threats do not necessarily align with BLM and Forest Service resource program areas, and are often integrated into several different agency resource program areas. **Table 2.1** provides a cross-walk between each of the USFWS listing decision and COT identified threats and the BLM and the Forest Service resource program areas

and shows how those threats were addressed in the BLM and the Forest Service LUP.

2.6 PROPOSED PLAN AMENDMENT

2.6.1 Development of Proposed Land Use Plan Amendments

As a result of public comments, best available science, cooperating agency coordination, and internal review of the Draft LUPA/EIS, the BLM and Forest Service have developed the Proposed LUPAs/Final EIS. The Proposed LUPAs carry forward Alternative D (the Preferred Alternative) from the Draft LUPA/EIS, as well as the other alternatives analyzed in the Draft LUPA/EIS. The Proposed LUPAs consist of a combination of all the alternatives and are now considered the Proposed LUPAs for managing BLM-administered and National Forest System lands within the Northwest Colorado sub-region. The Proposed LUPAs focus on addressing public comments, while continuing to meet the BLM's and Forest Service's legal and regulatory mandates.

The BLM/Forest Service have refined the Proposed LUPA to provide a layered management approach that offers the highest level of protection for GRSG in the most valuable habitat. Land use allocations in the Proposed LUPA would limit or eliminate new surface disturbance in PHMA while minimizing disturbance in GHMA. In addition to establishing protective land use allocations, the Proposed LUPA would implement a suite of management tools, such as disturbance limits, GRSG habitat objectives, and monitoring (**Appendix E and Appendix F**), GRSG habitat desired conditions, mitigation approaches (**Appendix G**), adaptive management triggers and responses, and lek buffer distances (**Appendix B**) throughout the range. These overlapping and reinforcing conservation measures will work in concert to improve GRSG habitat condition and provide clarity and consistency on how the BLM/Forest Service manage activities in GRSG habitat.

For the sake of clarity, BLM and Forest Service decisions have been separated into two sections, as described in **Table 2.2** and **Table 2.4**, respectively.

Since release of the Draft LUPA/EIS, the BLM/Forest Service have continued to work closely with a broad range of governmental partners, including Governors, State Fish and Game agencies, USFWS, Indian tribes, and county commissioners. Through this cooperation, the BLM/Forest Service have developed a Proposed Plan/LUPA that takes into account state, tribal, and local plans, policies, and strategies in accordance with applicable law and contributes to the long-term conservation of GRSG. The BLM/Forest Service also received many substantive public comments on the Draft LUPA/EIS (**Appendix P,** Response to Comments on the Draft Land Use Plan Amendment/Environmental Impact Statement), which informed the BLM/Forest Service's development of the Proposed Plan/LUPA.

The BLM/Forest Service Proposed Plan/LUPA considers documents related to the conservation of GRSG that have been released since the publication of the Draft LUPA/EIS. For example, this Proposed LUPA/Final EIS considers the US Geological Survey November 21, 2014, report *Conservation Buffer Distance Estimates for Greater Sage-Grouse—A Review* (Manier et al. 2014).

The BLM and Forest Service management actions are separated into two columns in **Table 2.8**.

2.6.2 BLM Proposed Land Use Plan Amendment

The Proposed LUPA incorporates the following GRSG goals:

Conserve, enhance, and restore the sagebrush ecosystem upon which GRSG populations depend in an effort to maintain and/or increase their abundance and distribution, in cooperation with other conservation partners.

The Proposed LUPA seeks to allocate resources among competing human interests and land uses and conserve natural resource values, including GRSG habitat. At the same time, it would sustain and enhance ecological integrity across the landscape, including plant, wildlife, and fish habitat. The Proposed LUPA incorporates adjustments made in response to public comments on the Draft LUPA, as well as cooperating agency input. Conservation measures under the Proposed LUPA are focused on PHMA and GHMA as well as active leks (regardless of which type of habitat the active lek is located within).

Table 2.2 describes the management actions and allowable uses that comprise the BLM Proposed LUPA.

Table 2.2
Description of BLM Proposed Land Use Plan Amendment[1]

Objective: Maintain and enhance populations and distribution of GRSG by protecting and improving sagebrush habitats and ecosystems that sustain GRSG populations.
Travel and Transportation
Objective: Manage travel and transportation to 1) reduce mortality from vehicle collisions, 2) limit change in GRSG behavior, 3) avoid, minimize, and compensate for habitat fragmentation, 4) limit the spread of noxious weeds, and 5) limit disruptive activity associated with human access.
(PHMA) Limit OHV travel to existing roads, primitive roads, and trails at a minimum. Special Zone Provision: Colorado MZ 13 – Manage the Wolford Mountain open OHV area.
(PHMA) Evaluate and consider permanent or seasonal road or area closures as needed to address a current threat.
(PHMA) Complete activity level travel plans as soon as possible, subject to funding. During activity level planning, where appropriate, designate routes with current administrative/agency purpose or need to administrative access only.
(PHMA) Complete activity level travel plans as soon as possible, subject to funding. Limit route construction to routes that will not adversely affect GRSG populations due to habitat loss or disruptive activities.

Table 2.2
Description of BLM Proposed Land Use Plan Amendment[1]

(PHMA) Use existing roads or realignments whenever possible. If it is necessary to build a new road, and the use of existing roads would cause adverse impacts to GRSG, construct new roads to the appropriate minimum Gold Book standard and add the surface disturbance to the total disturbance in the PHMA if it meets the criteria in **Appendix H**, Guidelines for Implementation. Construct no new roads if the biologically significant unit (Colorado populations) and proposed project analysis area (Colorado MZ) is over the 3 percent disturbance cap, unless there is an immediate health and safety need, or to support valid existing rights that cannot be avoided. Evaluate and implement additional, effective mitigation necessary to offset the resulting loss of GRSG habitat.
(PHMA) Allow upgrades to existing routes after documenting that the upgrade will not adversely affect GRSG populations due to habitat loss or disruptive activities.
(PHMA) Conduct restoration of roads, primitive roads and trails not designated in travel management plans. This also includes primitive route/roads that were not designated in WSAs and within lands with wilderness characteristics that have been selected for protection in previous LUPs.
(PHMA) When reseeding roads, primitive roads and trails, use appropriate seed mixes and consider the use of transplanted sagebrush.
Recreation
Objective: Manage Recreation to avoid activities that 1) disrupt GRSG, 2) fragment GRSG habitat, or 3) spread noxious weeds.
(PHMA) Do not allow SRPs/SUAs with the potential to adversely affect GRSG or GRSG habitat.
Lands and Realty Management
Objective: Manage the Lands and Realty program to avoid, minimize, and compensate for the loss of habitat and habitat connectivity through the authorizations of ROWs, land tenure adjustments, proposed land withdrawals, agreements with partners, and incentive programs.
Rights-of-Way (ROW)
Manage areas within PHMA as avoidance areas for BLM ROW permits or Forest Service SUA permits. (See Special Stipulations applicable to **GRSG PHMA ROW Avoidance, Proposed LUPA.**) Manage areas within GHMA as avoidance areas for major (transmission lines greater than 100 kilovolts and pipelines greater than 24 inches) and minor BLM ROW permits or Forest Service SUA permits. (See Special Stipulations applicable to **GRSG PHMA ROW Avoidance, Proposed LUPA.**) No new roads or above-ground structures would be authorized within 1 mile of an active lek. Above-ground structures are defined as structures that are located on or above the surface of the ground, including but not limited to: roads, fences, communication towers, and/or any structure that would provide perches. Above ground structures would only be authorized if: 1. It is consistent with the overall objective of the RMP Amendment; 2. The effect on GRSG populations or habitat is nominal or incidental; 3. Allowing the exception prevents implementation of an alternative more detrimental to GRSG or similar environmental concern, and; 4. Rigid adherence to the restriction would be the only reason for denying the action. PHMA and GHMA are designated as avoidance areas for high-voltage transmission line ROWs, except

Table 2.2
Description of BLM Proposed Land Use Plan Amendment[1]

for the transmission projects specifically identified below. All authorizations in these areas, other than the excepted projects, must comply with the conservation measures outlined in this Proposed LUPA, including the RDFs and avoidance criteria presented in this document. The BLM is currently processing applications for the TransWest and Energy Gateway South Transmission Line projects, and the NEPA review for these projects is well underway. The BLM is analyzing GRSG mitigation measures through these projects' NEPA review processes.

GRSG PHMA ROW Avoidance, Proposed LUPA. ROWs/SUAs may be issued after documenting that the ROWs/SUAs would not adversely affect GRSG populations based on the following criteria:

- Location of proposed activities in relation to critical GRSG habitat areas as identified by factors, including, but not limited to, average male lek attendance and/or important seasonal habitat.
- An evaluation of the potential threats from proposed activities that may affect the local population as compared to benefits that could be accomplished through compensatory or off-site mitigation (see **Section 2.7.3**, Regional Mitigation)
- An evaluation of the proposed activities in relation to the site-specific terrain and habitat features. For example, within 4 miles from a lek, local terrain features such as ridges and ravines may reduce the habitat importance and shield nearby habitat from disruptive factors.

Any new projects within PHMA would be subject to the 3 percent disturbance cap as described in **Appendix H**, Guidelines for Implementation. If the 3 percent disturbance cap is exceeded in PHMA in any Colorado MZ, no new ROW would be authorized in PHMA within that biologically significant unit (Colorado populations) and proposed project analysis area (Colorado MZ), unless site-specific analysis documents no impact to GRSG.

GRSG PHMA ROW TL, Proposed LUPA: Prohibit surface occupancy and surface-disturbing activities associated with BLM ROW or Forest Service SUA permits within 4 miles from active leks during lekking, nesting, and early brood-rearing (March 1 to July 15). (See Special Stipulations applicable to **GRSG PHMA ROW TL, Proposed LUPA**).

Same as Alternative D, except special stipulations described in **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations, would apply.

(PHMA) Only issue ROWs/SUAs after documenting that the ROWs/SUAs will not adversely affect GRSG populations due to habitat loss or disruptive activities (independent of disturbance cap), except where such limitation would make accessing valid existing rights impracticable.

Construct new roads to the appropriate Gold Book standard and add the surface disturbance to the total disturbance in the PHMA.

Any new ROW/SUA authorizations would be subject to the 3 percent disturbance cap, and would be evaluated based on an analysis of the following:

- Location of proposed activities in relation to critical GRSG habitat areas as identified by factors, including, but not limited to, average male lek attendance and/or important seasonal habitat.
- An evaluation of the potential threats from proposed activities that may affect the local population as compared to benefits that could be accomplished through compensatory or off-site mitigation (see **Section 2.7.3**, Regional Mitigation).

Table 2.2
Description of BLM Proposed Land Use Plan Amendment[1]

- An evaluation of the proposed activities in relation to the site-specific terrain and habitat features. For example, within 4 miles from a lek, local terrain features such as ridges and ravines may reduce the habitat importance and shield nearby habitat from disruptive factors.

GRSG PHMA ROW TL, Proposed LUPA: Prohibit surface occupancy and surface-disturbing activities associated with BLM ROW or Forest Service SUA permits within 4 miles from active leks during lekking, nesting, and early brood-rearing (March 1 to July 15).

(PHMA) In PHMA, or within 4 miles of an active lek, for ROW/SUA renewals, where existing facilities cannot be removed, buried, or modified, require perch deterrents.

(PHMA) Reclaim and restore ROWs considering GRSG habitat requirements.

(PHMA) Designate new ROW corridors in GRSG PHMA only where there is a compelling reason to do so and location of the corridor within PHMA will not adversely affect GRSG populations due to habitat loss or disruptive activities.

Land Tenure Adjustment

(PHMA) Retain public ownership of GRSG PHMA. Consider exceptions where:

(PHMA) 1) The agency can demonstrate that disposal of the lands will provide a net conservation gain to the GRSG, or 2) the agency can demonstrate that the disposal of the lands will have no direct or indirect adverse impact on GRSG conservation.

(PHMA) Consider land ownership adjustments when there is mixed ownership, and land exchanges would allow for additional or more contiguous federal ownership patterns within the GRSG PHMA.

(PHMA) In isolated federal parcels, only allow tract disposals that are beneficial or neutral to long-term management of GRSG populations.

(GHMA) For lands in GHMA that are identified for disposal, the BLM would only dispose of such lands consistent with the goals and objectives of this LUPA, including, but not limited to, the LUPA objective to maintain or increase GRSG abundance and distribution.

(ADH) Consider GRSG habitat values in acquisitions.

For example: Identify key GRSG habitats on private or state land, adjacent to existing BLM/Forest Service land, where acquisition and protection by BLM/Forest Service could substantially benefit the local GRSG population. This could be accomplished via purchase, exchange, or donation to satisfy mitigation requirements.

Wind Energy Development

(PHMA) Manage PHMA as exclusion areas for wind energy development.

(GHMA) Manage GHMA as avoidance areas for wind energy development.

Industrial Solar

(PHMA) Manage PHMA as exclusion areas for industrial solar projects.

(GHMA) Manage GHMA as avoidance areas for industrial solar projects.

Range Management

Objectives: GRSG objectives and well-managed livestock operations are compatible because forage availability for livestock and hiding cover for GRSG are both dependent on healthy plant communities. Agreements with partners that promote sustainable GRSG populations concurrent with sustainable

Table 2.2
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ranch operations offer long-term stability. In the context of sustainable range operations, manage the range program to: 1) maintain or enhance vigorous and productive plant communities; 2) maintain residual herbaceous cover to reduce predation during GRSG nesting and early brood-rearing; 3) avoid direct adverse impacts to GRSG-associated range project infrastructure; and 4) employ grazing management strategies that avoid concentrating animals on key GRSG habitats during key seasons.
(ADH) Within ADH, incorporate GRSG habitat objectives and management considerations into all BLM and Forest Service grazing allotments through Allotment Management Plans or permit renewals and/or Forest Service Annual Operating Instructions.
(ADH) Work cooperatively on integrated ranch planning within GRSG habitat. Develop management strategies that are seamless with respect to actions on public and private lands within BLM and/or Forest Service grazing allotments.
(PHMA) The BLM will 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 will 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 to urgent natural resource concerns (e.g., fire) and legal obligations.
(ADH) Conduct land health assessments that include (at a minimum) indicators and measurements of vegetation structure/condition/composition specific to achieving GRSG habitat objectives (Doherty et al. 2011b). If local/state seasonal habitat objectives are not available, use GRSG habitat recommendations from Connelly et al. 2000a and Hagen et al. 2007.
Implementing Management Actions after Land Health and Habitat Evaluations
(ADH) Develop specific objectives—through NEPA analysis conducted in accordance with the permit/lease renewal process—to conserve, enhance, or restore GRSG habitat. Base benchmarks on Ecological Site/Range Site Descriptions. When existing on Ecological Site/Range Site Descriptions have not been developed, or are too general to serve adequately as benchmarks, identify and document local reference sites for areas of similar potential that exemplify achievement of GRSG habitat objectives and use these sites as the benchmark reference. Establish measurable objectives related to GRSG habitat from baseline monitoring data, ecological site descriptions, or land health assessments/evaluations, or other habitat and successional stage objectives.
(ADH) Manage for vegetation composition and structure consistent with ecological site potential and within the reference state subject to habitat objectives, including successional stages.
(ADH) Include terms and conditions on grazing permits and leases that address disruptive activities that affect GRSG and assure plant growth requirements are met and residual forage remains available for GRSG hiding cover. Specify as necessary: 1. Season or timing of use 2. Numbers of livestock (include temporary non-use or livestock removal) 3. Distributions of livestock use

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4. Intensity of use (utilization or stubble height objectives) 5. Kind of livestock (e.g., cattle, sheep, horse, llama, alpaca, and goat) 6. Class of livestock (e.g., yearlings versus cow/calf pairs) 7. Locations of bed grounds, sheep camps, trail routes, and the like
(ADH) Develop drought contingency plans at the appropriate landscape unit that provide for a consistent/appropriate BLM/Forest Service response. Plans should establish policy for addressing ongoing drought and post-drought recovery for GRSG habitat objectives.
The NEPA analysis for renewals and modifications of livestock grazing permits/leases that include lands within PHMA would include specific management thresholds based on **Table 2.3**, Land Health Standards (43 CFR 4180.2) (**Appendix K**), ecological site potential, and one or more defined responses that would allow the authorizing officer to make adjustments to livestock grazing that have already been subject to NEPA analysis..
Allotments within PHMA, 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 could include monitoring for actual use, utilization, and use supervision.
Riparian Areas and Wet Meadows
(ADH) Manage riparian areas and wet meadows for proper functioning condition or other similar methodology (Forest Service only) within ADH.
(ADH) Within ADH, manage wet meadows to maintain diverse species richness, including a component of perennial forbs, relative to site potential (i.e., reference state).
(ADH) Establish permit/lease terms and conditions in conjunction with grazing strategies to ensure that the timing and level of utilization results in wet meadows with diverse species richness, including a component of perennial forbs, relative to site potential (i.e., reference state).
(ADH) Authorize new water development only after determining that the project will not adversely impact GRSG from habitat loss. Ensure that adequate long-term grazing management is in effect before authorizing water developments that may increase levels of use or change season of use. Give specific consideration to adjacent or downstream wetland habitat when a project entails a diversion from a spring or seep.
(ADH) Analyze springs, seeps and associated pipelines to determine if modifications are necessary to maintain the continuity of the predevelopment riparian area. If necessary to maintain GRSG populations or reverse a downward population trend caused by habitat loss, modify the project as necessary to restore the applicable wetland habitat.
Treatments to Increase Forage for Livestock/Wild Ungulates
(ADH) Manage for a habitat objective that is primarily sagebrush with a mosaic of seral stages and sagebrush in all age classes. On a site-by-site basis, do not allow treatments that would adversely affect GRSG populations. See **Appendix H**, Guidelines for Implementation.
(PHMA) Evaluate the role of existing seedings that are currently composed of primarily introduced perennial grasses in and adjacent to GRSG PHMA to determine if they should be restored to sagebrush or habitat of higher quality for GRSG. If these seedings are part of an Allotment Management Plan/Conservation Plan or if they provide value in conserving or enhancing the rest of PHMA, then no restoration would be necessary. Assess the compatibility of these seedings for GRSG habitat or as a component of a grazing system during the land health assessments (or other analyses [Forest Service

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only]) (Davies et al. 2011). For example: Some introduced grass seedings are an integral part of a livestock management plan and reduce grazing pressure in important sagebrush habitats or serve as a strategic fuels management area.
Structural Range Improvements and Livestock Management Tools
(ADH) Design new range improvement projects to enhance livestock distribution and to control the timing and intensity of utilization. Examples of structural range improvement projects are cattle guards, fences, corrals, pipelines, troughs, storage tanks, windmills, ponds/reservoirs, solar panels, and spring developments. Include a plan to monitor and control invasive plant species following any related ground disturbance. Place mineral or salt supplements away from water sources and leks in locations that enhance livestock distribution.
(PHMA) Where conditions create the potential for impacts from West Nile virus from developments or modification of water developments, use PDFs/RDFs to mitigate the potential impacts. See **Appendix I** (Required Design Features, Preferred Design Features, and Suggested Design Features).
(PHMA) Evaluate existing structural range improvements to determine if modifications are necessary to maintain GRSG populations or reverse a downward population trend caused by habitat loss. Modify, relocate, or remove projects as necessary. Place mineral and salt supplements away from water sources and leks in locations that enhance livestock distribution.
(ADH) Mark fences in high risk areas (Christiansen 2009; Stevens 2011). (PHMA) Where marking fences does not reduce fence-related GRSG mortality, modify fences. Where modification does not reduce GRSG mortality and the fence-related mortality is sufficient to adversely affect GRSG populations, remove fences.
(ADH) Monitor for and treat invasive species associated with existing range improvements (Gelbard and Belnap 2003; Bergquist et al. 2007).
Retirement of Grazing Privileges
(ADH) At the time a permittee or lessee voluntarily relinquishes a permit or lease, the BLM will consider whether the public lands where that permitted use was authorized should remain available for livestock grazing or be used for other resource management objectives, such as reserve common allotments or fire breaks. When a permittee or lessee voluntarily relinquishes grazing preference, consider conversion of the allotment to a reserve common allotment that will remain available for use on a temporary, nonrenewable basis for the benefit of GRSG habitat. Authorize temporary nonrenewal permits in Reserve Common Allotments to meet resource objectives elsewhere such as rest or deferment due to fire or vegetation treatments. Temporary use of reserve common allotments would not be allowed due to drought or overuse of customary allotments.
Wild Horse Management
Objective: Manage wild horses in a manner designed to 1) avoid reductions in grass, forb, and shrub cover, and 2) avoid increasing unpalatable forbs and invasive plants such as cheatgrass.
(ADH) Manage wild horse population levels within established appropriate management levels.
(ADH) Same as Alternative B, but consider GRSG habitat requirements in conjunction with all resource values managed by the BLM, and give preference to GRSG habitat unless site-specific circumstances

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warrant an exemption.
(PHMA) Within PHMA, develop or amend BLM HMA plans and Forest Service Wild Horse Territory Plans to incorporate GRSG habitat objectives and management considerations for all BLM HMAs and Forest Service Wild Horse Territories. When developing HMA plans, apply all appropriate conservation measures from the range program, including, but not limited to, utilization of forage and structural range improvements.
(PHMA) For all BLM HMAs and Forest Service Wild Horse Territories within PHMA, prioritize the evaluation of all appropriate management levels based on indicators that address vegetation structure/condition/composition and measurements specific to achieving GRSG habitat objectives. Consider GRSG habitat requirements in conjunction with all resource values managed by the BLM, and give preference to GRSG habitat unless site-specific circumstances warrant an exemption.
(ADH) Coordinate with other resources (range, wildlife, and riparian) to conduct land health assessments to determine existing vegetation structure/condition/composition within all BLM HMAs and Forest Service Wild Horse Territories.
(PHMA) When conducting NEPA analysis for wild horse management activities, water developments, or other rangeland improvements for wild horses in PHMA, address the direct and indirect effects to GRSG populations and habitat. Implement any water developments or rangeland improvements using the criteria identified for domestic livestock identified above in PHMA.
Fluid Minerals Management[1]
Objective: Manage fluid minerals to avoid, minimize, and compensate for: 1) direct disturbance, displacement, or mortality of GRSG; 2) direct loss of habitat or loss of effective habitat through fragmentation; and 3) cumulative landscape-level impacts. Priority will be given to leasing and development of fluid mineral resources, including geothermal, outside PHMA and GHMA. When analyzing leasing and authorizing development of fluid mineral resources, including geothermal, in PHMA and GHMA, and subject to applicable stipulations for the conservation of GRSG, priority will be given to development in nonhabitat areas first and then in the least suitable habitat for GRSG. The implementation of these priorities will 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).
Unleased Fluid Minerals
No new leasing 1 mile from active leks in ADH (Blickley et al. 2012; Harju 2012).
NSO without waiver or modification in PHMA. See **Appendix D** (Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations) for exceptions. In GHMA, any new leases would include appropriate TL stipulations to protect GRSG and its habitat. In addition, in GHMA, NSO with waivers, exceptions, and modification within 2 miles of active leks (**Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations).
3 percent disturbance cap in PHMA (by biologically significant unit) with disturbances limited to 1 disturbance per 640 acres density calculated by Colorado MZ and proposed project analysis area would apply to new lease activities.

[1] The Oil Shale and Tar Sands Programmatic EIS (March 2013) excludes from oil shale leasing all core/priority GRSG habitat (PHMA in Colorado). Note that in GHMA, the management actions for fluid minerals also pertain to oil shale resources through all alternatives. Decisions for leasable fluid minerals also apply to uranium.

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No new leasing in PHMA if disturbance cap exceeds 3 percent calculated by biologically significant unit (Colorado populations) and proposed project analysis area (Colorado MZ) or 1 disturbance per 640 acres density is exceeded. The following stipulations would apply (**Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations): **GRSG NSO-46e**: See **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations, for waiver, modification, and exception criteria. **GRSG TL-46e**: No activity associated with construction, drilling, or completions within 4 miles from active leks during lekking, nesting, and early brood-rearing (March 1 to July 15). Authorized Officer could grant an exception, modification, or waiver in consultation with the State of Colorado (**Appendix F**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations). **GRSG LN-46e**: Any lands leased in PHMA are subject to the restrictions of 1 disturbance per 640 acres calculated by biologically significant unit (Colorado populations) and proposed project analysis area (Colorado MZ) to allow clustered development (**Appendix F**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations).
(PHMA) Allow geophysical exploration within PHMA to obtain information for existing federal fluid mineral leases or areas adjacent to state or fee lands within PHMA. Allow geophysical operations only using helicopter-portable drilling, wheeled or tracked vehicles on existing roads, or other approved methods conducted in accordance with seasonal TLs and other restrictions that may apply. Geophysical exploration shall be subject to seasonal restrictions that preclude activities in breeding, nesting, brood-rearing, and winter habitats during their season of use by GRSG.
Leased Fluid Minerals
Objective: Where a proposed fluid mineral development project on an existing lease could adversely affect GRSG populations or habitat, the BLM will 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 will work with the lessee, operator or project proponent in developing an Application for Permit to Drill for the lease to avoid, minimize, and compensate for impacts to GRSG or its habitat and will ensure that the best information about GRSG and its habitat informs and helps guide development of such federal leases.
Within 1 mile of active leks, disturbance, disruptive activities, and occupancy are precluded. If it is determined that this restriction would render the recovery of fluid minerals infeasible or uneconomic, considering the lease as a whole, or where development of existing leases requires that disturbance density exceeds 1 disturbance per 640 acres and/or the 3 percent disturbance cap, use the criteria below to site proposed lease activities to meet GRSG habitat objectives and require mitigation as described in **Appendix G** (Greater Sage-Grouse Mitigation Strategy). In PHMA and within 4 miles of an active lek, the criteria below would be applied to guide development of the lease or unit that would result in the fewest impacts possible to GRSG. Based on site-specific conditions, prohibit construction, drilling, and completion within PHMA within 4 miles of a lek during lekking, nesting, and early brood-rearing (March 1 to July 15). In consultation with the State of Colorado, this TL may be adjusted based on application of the criteria below.

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Criteria*:

- Location of proposed lease activities in relation to critical GRSG habitat areas as identified by factors, including, but not limited to, average male lek attendance and/or important seasonal habitat
- An evaluation of the potential threats from proposed lease activities that may affect the local population as compared to benefits that could be accomplished through compensatory or off-site mitigation (see **Section 2.7.3**, Regional Mitigation)
- An evaluation of the proposed lease activities, including design features, in relation to the site-specific terrain and habitat features. For example, within 4 miles from a lek, local terrain features such as ridges and ravines may reduce the habitat importance and shield nearby habitat from disruptive factors. This is particularly likely in Colorado MZ 17, which has an atypical GRSG habitat featuring benches with GRSG habitat interspersed with steep ravines

To authorize an activity based on the criteria above, the environmental record of review must show no significant direct disturbance, displacement, or mortality of GRSG.

GRSG PHMA Notice to Lessees-54e. Within PHMA, operators would be encouraged to complete Master Development Plans in consultation with the State of Colorado, instead of single-well Applications for Permit to Drill for all but exploratory wells.

(Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)

(PHMA) When necessary, conduct effective mitigation in 1) GRSG PHMA or—less preferably—2) GHMA (dependent upon the area-specific ability to increase GRSG populations and in consultation with the State of Colorado).

(PHMA) Conduct effective compensatory mitigation first within the same Colorado MZ where the impact is realized; if not possible, then conduct mitigation within the same population as the impact, or in other Colorado GRSG populations, in consultation with the State of Colorado.

(ADH) For future actions, require a full reclamation bond specific to the site in accordance with 43 CFR 3104.2, 3104.3, and 3104.5. Ensure bonds are sufficient for costs relative to reclamation (Connelly et al. 2000a; Hagen et al. 2007) that would result in full restoration of the lands to the condition it was found prior to disturbance. Base the reclamation costs on the assumption that contractors for the BLM and Forest Service will perform the work.

Solid Minerals

Objective: Manage solid mineral programs to avoid, minimize, and compensate for adverse impacts to GRSG habitat to the extent practical under the law and BLM/Forest Service jurisdiction.

Coal

(ADH) *Existing Coal Leases:* During the term of the lease, encourage the lessee to voluntarily follow PDFs (**Appendix I**, Required Design Features, Preferred Design Features, and Suggested Design Features) to reduce and mitigate any adverse impacts to GRSG.

At the time an application for a new coal lease or lease modification is submitted to the BLM, the BLM will determine whether the lease application area is "unsuitable" for all or certain coal mining methods pursuant to 43 CFR 3461.5. PHMA is essential habitat for maintaining GRSG for purposes of the suitability criteria set forth at 43 CFR 3461.5(o)(1).

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To authorize expansion of existing leases, the environmental record of review must show no significant direct disturbance, displacement, or mortality of GRSG based on these criteria:

- Important GRSG habitat areas as identified by factors, including, but not limited to, average male lek attendance and/or important seasonal habitat
- An evaluation of the threats affecting the local population as compared to benefits that could be accomplished through compensatory or off-site mitigation (see **Section 2.7.3**, Regional Mitigation)
- An evaluation of terrain and habitat features. For example, within 4 miles from a lek, local terrain features such as ridges and ravines may reduce the habitat importance and shield nearby habitat from disruptive factors.

(PHMA) No new surface coal mine leases would be allowed in PHMA.

At the time an application for a new coal lease or lease modification is submitted to the BLM, the BLM would determine whether the lease application area is "unsuitable" for all or certain coal mining methods pursuant to 43 CFR 3461.5. PHMA is essential habitat for maintaining GRSG for purposes of the suitability criteria set forth at 43 CFR 3461.5(o)(1).

New Underground Coal Mine Leases would be subject to: Special Stipulations:

- All surfaces disturbances will be placed more than 2 miles from active leks.
- No surface disturbance on remainder of PHMA subject to the following conditions:

If, after consultation with the State of Colorado, and in consideration of the following criteria, there is no significant direct disturbance, displacement, or mortality of GRSG or impact to GRSG habitat;

- 3 percent disturbance cap in PHMA with disturbances limited to 1 disturbance per 640 acres density calculated by Colorado MZ and proposed project analysis area would apply to new lease activities
- No new leasing in PHMA if disturbance cap exceeds 3 percent for the biologically significant unit (Colorado populations) and proposed project analysis area (Colorado MZ) or 1 disturbance per 640 acres is exceeded

(ADH) Underground mining exemption criteria for new leases:

1. Federal lands with coal deposits that would be mined by underground mining methods shall not be assessed as unsuitable where there would be no surface coal mining operations, as defined in 43 CFR 3400.0-5(mm) of this title, on any lease, if issued.
2. Where underground mining will include surface operations and surface impacts on federal lands to which a criterion applies, the lands shall be assessed as unsuitable unless the surface management agency find that a relevant exception or exemption applies. See 43 CFR 3461.1(b). Where practicable, limit permitted disturbances as defined in **Appendix H**, Guidelines for Implementation, to 3 percent in any biologically significant unit (Colorado populations) and proposed project analysis area (Colorado MZ). Where disturbance exceeds 3 percent in any biologically significant unit (Colorado populations) and proposed project analysis area (Colorado MZ), make additional, effective mitigation necessary to offset the resulting loss of GRSG habitat.

(PHMA) See 43 CFR 3461.4 (a) and (b), Exploration. Authorized exploration activities may be conducted only if the Authorized Officer reviews any application for an exploration license on such lands to ensure

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that any exploration does not harm any value for which the area has been assessed as unsuitable and determines that the exploration will not adversely affect GRSG populations due to habitat loss or disruptive activities or that the impact can be fully mitigated. Where practicable, limit permitted disturbances as defined in **Appendix H**, Guidelines for Implementation, to 3 percent in PHMA any biologically significant unit (Colorado populations) and proposed project analysis area (Colorado MZ). Where disturbance exceeds 3 percent in any biologically significant unit (Colorado populations) and proposed project analysis area (Colorado MZ), make additional, effective mitigation necessary to offset the resulting loss of GRSG habitat.
(PHMA) *Underground mining – lease renewals:* • Require that all surface mining appurtenant facilities for underground mining be located outside of PHMA (unless the lessee establishes that that such location is not technically feasible). • If surface mining facilities must be located in PHMA, require the facilities be located in areas of existing disturbance and to have the smallest footprint possible utilizing design strategies to minimize disturbance, such as those identified in the PDF section of this table. • Apply as conditions of lease renewal all appropriate conservation measures, PDFs, and mitigation designed to avoid or minimize impacts to GRSG. (ADH) *Surface mining – lease renewals/ readjustments:* Apply as conditions of lease renewal all appropriate conservation measures, PDFs, and mitigation designed to avoid or minimize impacts to GRSG.
(ADH) Recommend or require as appropriate during all relevant points of the coal leasing and authorization process, minimization of surface-disturbing or disrupting activities (including operations and maintenance) where needed to reduce the impacts of human activities on important seasonal GRSG habitats. Apply these measures during activity-level planning (jurisdiction is managed by the State). The Office of Surface Mining or a delegated State Regulatory authority under the Surface Mining Control and Reclamation Act of 1977 authorizes surface-disturbing activities of active coal mining operations on federal mineral estate. The BLM/Forest Service coordinates with the Surface Mining Control and Reclamation Act of 1977 in overseeing coal leasing and permitting on federal lands. The resource recovery and protection plan for which BLM/Forest Service recommends approval to the Secretary integrates the reclamation plan recommended by the Surface Mining Control and Reclamation Act of 1977 for active coal mines on federal mineral estate. Approval of coal mining plans on lands containing leased federal coal is reserved to the Secretary of the Interior (30 CFR 740.4). BLM and Forest Service issue coal leases and exploration licenses for right of entry to promote development of minerals on federal lands. See the following in regards to BLM exploration: 43 CFR 3461.4, Exploration. States with delegated authority on federal lands from the Office of Surface Mining may have their own GRSG guidance in association with state wildlife agencies and such guidance may differ from state to state.
(ADH) (a) Assessment of any area as unsuitable for all or certain stipulated methods of coal mining operations pursuant to Section 522 of the Surface Mining Control and Reclamation Act of 1977 (30 USC 1272) and the regulations of this subpart does not prohibit exploration of such area under 43 CFR 3410 and 43 CFR 3480. 43 CFR 3461.4(a)
(ADH) (b) An application for an exploration license on any lands assessed as unsuitable for all or certain stipulated methods of coal mining shall be reviewed by the BLM/Forest Service to ensure that exploration does not harm any value for which the area has been assessed as unsuitable (43 CFR 3461.4(b))

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Locatable Minerals
(PHMA) In plans of operations required prior to any proposed surface-disturbing activities include as appropriate effective mitigation for conservation in accordance with existing policy (BLM Washington Office Instruction Memorandum 2013-142). (PHMA) Where applicable to prevent unnecessary or undue degradation, apply seasonal restrictions if deemed necessary.
Nonenergy Leasable Minerals
New nonenergy mineral leases: No new nonenergy mineral leasing in PHMA. Existing nonenergy mineral leases: Apply the following conservation measures as COAs where applicable and feasible: Preclude new surface occupancy on existing leases within 1 mile of active leks (Blickley et al. 2012; Harju 2012). If the lease is entirely within 1 mile of an active lek, require any development to be placed in the area of the lease least harmful to GRSG based on vegetation, topography, or other habitat features (**Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations). Preclude new surface disturbance on existing leases within 2 miles of active leks within PHMA. If the lease is entirely within 2 miles of an active lek, require any development to be placed in the area of the lease least harmful to GRSG based on vegetation, topography, or other habitat features (**Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations). Limit permitted disturbances to 1 disturbance per 640 acres average across the landscape in PHMA. Disturbances may not exceed 3 percent in PHMA in any biologically significant unit (Colorado populations) and proposed project analysis area (Colorado MZ). **GRSG TL-47-51** – Based on site-specific conditions, prohibit surface occupancy or disturbance within PHMA within 4 miles of a lek during lekking, nesting, and early brood-rearing (March 1 to July 15).
Salable Mineral Materials
(PHMA) Close PHMA to new mineral material sales. However, these areas would remain open to free use permits and the expansion of existing active pits, only if the following criteria are met: • The activity is within the biologically significant unit and the project area disturbance cap • The activity is subject to the provisions set forth in the mitigation strategy (**Appendix G**) • All applicable required/preferred design features are applied; and [if applicable] the activity is permissible under the regional screening criteria (**Appendix H**, Guidelines for Implementation).
(ADH) Restore salable mineral pits no longer in use to meet GRSG habitat conservation objectives. Require reclamation/restoration of GRSG habitat as a viable long-term goal to improve the GRSG habitat (**Appendix H**, Guidelines for Implementation)
Mineral Split Estate
Objective: Utilize federal authority to protect GRSG habitat on split-estate lands to the extent provided by law.

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(PHMA/GHMA) Where the federal government owns the mineral estate in PHMA and GHMA, and the surface is in nonfederal ownership, apply the same stipulations, COAs, and/or conservation measures and RDFs/PDFs applied if the mineral estate is developed on BLM-administered lands in that management area, to the maximum extent permissible under existing authorities, and in coordination with the landowner.
(PHMA/GHMA) Where the federal government owns the surface and the mineral estate is in nonfederal ownership in PHMA and GHMA, apply appropriate surface use COAs, stipulations, and mineral RDFs/PDFs through ROW grants or other surface management instruments, to the maximum extent permissible under existing authorities, in coordination with the mineral estate owner/lessee.
Wildfire Suppression, Fuels Management, and Fire Rehabilitation
Fuels Management
Objective: Manage the fuels program to avoid GRSG habitat loss and restore damaged habitat.
(PHMA) Do not reduce sagebrush canopy cover to less than 15 percent (Connelly et al. 2000a; Hagen et al. 2007) in a project area unless a vegetation management objective requires additional reduction in sagebrush cover to meet strategic protection of GRSG PHMA and conserve habitat quality for the species, in consultation with the State of Colorado.
(PHMA) Apply appropriate seasonal restrictions for implementing vegetation management treatments according to the type of seasonal habitats present in a Colorado MZ.
(PHMA) Allow no treatments in known winter range unless the treatments are designed to strategically reduce wildfire risk around or in the winter range and will maintain winter range habitat quality, unless in consultation with the State of Colorado it is deemed necessary to reduce risk to life and property.
(ADH) Do not use fire to treat sagebrush in less than 12-inch precipitation zones (e.g., Wyoming big sagebrush or other xeric sagebrush species) (Connelly et al. 2000a; Hagen et al. 2007; Beck et al. 2009). However, if as a last resort and after all other treatment opportunities have been explored, and site-specific variables allow, the use of prescribed fire or natural ignition fire for fuels breaks that would disrupt fuel continuity or enhance land health could be considered where cheatgrass is deemed a minor threat. If prescribed fire is used in GRSG habitat, the NEPA analysis for the burn plan will address: • why alternative techniques were not selected as viable options • how GRSG goals and objectives would be met by its use • how the COT report objectives would be addressed and met • a risk assessment to address how potential threats to GRSG habitat would be minimized Prescribed fire as a vegetation or fuels treatment shall only be considered after the NEPA analysis for the burn plan has addressed the four bullets outlined above. Prescribed fire could be used to meet specific fuels objectives that would protect GRSG habitat in PHMA (e.g., creating fuel breaks that would disrupt the fuel continuity across the landscape in stands where annual invasive grasses are a minor component in the understory, burning slash piles from conifer-reduction treatments, or being used as a component with other treatment methods to combat annual grasses and restore native plant communities). Prescribed fire in known winter range shall only be considered after the NEPA analysis for the burn plan has addressed the four bullets outlined above. Any prescribed fire in winter habitat would need to be

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designed to strategically reduce wildfire risk around and/or in the winter range and designed to protect winter range habitat quality.
(ADH) Monitor and control invasive vegetation post treatment.
(ADH) Require use of native plant seeds for vegetation treatments based on availability, adaptation (site potential), probability for success (Richards et al. 1998), and the vegetation management objectives for the area covered by the treatment. Where probability of success or native seed availability is low, use species that meet soil stability and hydrologic function objectives as well as vegetation and GRSG habitat objectives (Pyke 2011).
(PHMA) Design post fuels management to ensure long-term persistence of seeded or pre-burn native plants. This may require temporary or long-term changes in livestock grazing, wild horse management, travel management, and other uses, to achieve and maintain the desired condition of ESR projects to benefit GRSG (Eiswerth and Shonkwiler 2006).
(ADH) Design vegetation treatments in GRSG habitats to strategically facilitate firefighter safety, reduce wildfire threats, and extreme fire behavior. This may involve spatially arranging new vegetation treatments with past treatments, vegetation with fire-resistant serial stages, natural barriers, and roads in order to constrain fire spread and growth. This may require vegetation treatments to be implemented in a more linear versus block design (Launchbaugh et al. 2007).
(PHMA) During fuels management project design, consider the utility of using livestock to strategically reduce fine fuels (Diamond at al. 2009), and implement grazing management that will accomplish this objective (Davies et al. 2011; Launchbaugh et al 2007). Consult with ecologists to minimize impacts to native perennial grasses consistent with the objectives and conservation measures of the grazing section.
Fire Operations
Objective: Manage fire to maintain and enhance large blocks of contiguous sagebrush.
(PHMA) Prioritize suppression immediately after firefighter and public safety. Consider GRSG habitat requirements commensurate with all resource values at risk managed by the BLM and Forest Service. See **Appendix O,** Greater Sage-Grouse Wildfire and Invasive Species Habitat Assessment.
(GHMA) Prioritize suppression immediately after firefighter and public safety. Consider GRSG habitat requirements commensurate with all resource values at risk managed by the BLM and Forest Service. See **Appendix O,** Greater Sage-Grouse Wildfire and Invasive Species Habitat Assessment.
(PHMA/GHMA) Temporary closures would be considered in accordance with 43 CFR subparts 8364, 8351, 6302 and 8341.
Emergency Stabilization and Rehabilitation (ESR)
Objective: Use ESR to address post-wildfire threats to GRSG habitat.
(ADH) Require use of native plant seeds that are beneficial for GRSG for vegetation treatments based on availability, adaptation (site potential), probability for success (Richards et al. 1998), and the vegetation management objectives for the area covered by the treatment. Where attempts to use native seeds have failed, or native seed availability is low, use species that meet soil stability and hydrologic function objectives, as well as vegetation and GRSG habitat objectives (Pyke 2011).
(ADH) Design post-fire ESR and Burn Area Emergency Rehabilitation management to ensure long-term persistence of seeded or pre-burn native plants. This may require temporary or long-term changes in livestock grazing, wild horse management, travel management, and other uses to achieve and maintain the desired condition of ESR and Burn Area Emergency Rehabilitation projects to benefit GRSG (Eiswerth and Shonkwiler 2006).

Table 2.2
Description of BLM Proposed Land Use Plan Amendment[1]

(ADH) Rest burned areas from grazing for two full growing seasons unless vegetation recovery dictates otherwise (Wyoming Game and Fish Department 2011).
Habitat Restoration
Objective: (1) Use habitat restoration as a tool to create and/or maintain landscapes that benefit GRSG; (2) Use Integrated Vegetation Management to control, suppress, and eradicate, where possible, noxious and invasive species per BLM Handbook H-1740-2; and (3) In PHMA, the desired condition is to maintain a minimum of 70 percent of lands capable of producing sagebrush with 10 to 30 percent sagebrush canopy cover. The attributes necessary to sustain these habitats are described in Interpreting Indicators of Rangeland Health (BLM Technical Reference 1734-6).
(ADH) When planning restoration treatments in GRSG habitat, identify seasonal habitat availability, and prioritize treatments in areas that are thought to be limiting GRSG distribution and/or abundance, in accordance with the Prioritization section of the narrative for Alternative D.

The habitat objectives for GRSG (**Table 2.3**) are a list of indicators and values that describe GRSG seasonal habitat conditions. The values for the indicators were derived using a synthesis of current local and regional GRSG habitat research and data and reflect variability of ecological sites. The habitat cover indicators are consistent with existing indicators used by the BLM.

When determining if a site is meeting habitat objectives, the measurements from that particular site would be assessed based on the range of values for the indicators in **Table 2.3**. **Table 2.3** is one component of GRSG multi-scale habitat assessment (see **Appendix F**, Greater Sage-Grouse Monitoring Framework). The results of the habitat assessment would be used during the land health evaluation to ascertain if the land health standard applicable to GRSG habitat (e.g., special status species habitat standard) is being met.

When authorizing activities in GRSG habitat, the BLM would consider if habitat objectives are being achieved. If the habitat objectives are not being achieved, and the site has the potential for achieving these objectives, the BLM would determine the causal factor(s) and make the necessary management adjustments to address the causal factor(s), following current BLM regulations and policy.

Table 2.3
Seasonal Habitat Desired Conditions for Greater Sage-Grouse

ATTRIBUTE	INDICATORS	DESIRED CONDTION
BREEDING AND NESTING [1,2,3] (Seasonal Use Period March 1-June 15) Apply 4 miles from active leks [4]		
Lek Security	Proximity of trees [5]	Trees or other tall structures are none to uncommon within 1.86 miles of leks [6,7]
	Proximity of sagebrush to leks [6]	Adjacent protective sagebrush cover within 328 feet of lek [6]
Cover	Seasonal habitat extent [7] (percent of seasonal habitat meeting desired conditions)	>80% of the breeding and nesting habitat
	Sagebrush canopy[16] cover [6,7,8]	15 to 25%

Table 2.2
Description of BLM Proposed Land Use Plan Amendment[1]

	Sagebrush height [7] Arid sites [6,7,9] Mesic sites [6,7,10]	 12 to 32 inches 16 to 32 inches
	Predominant sagebrush shape [6]	>50% in spreading [11]
	Perennial grass canopy[16] cover [6,7] Arid sites[7,9] Mesic sites [7,10]	 ≥10% ≥15%
	Perennial grass height [6,7,8]	Provide overhead and lateral concealment from predators [7, 15]
	Perennial forb canopy[16] cover [6,7,8] Arid sites [9] Mesic sites [10]	 ≥5% [6,7] ≥10% [6,7]
BROOD-REARING/SUMMER[1] (Seasonal Use Period June 16-October 31)		
Cover	Seasonal habitat extent [7] (percent of seasonal habitat meeting desired conditions)	>40% of the brood-rearing/summer habitat
	Sagebrush canopy[16] cover [6,7,8]	10 to 25%
	Sagebrush height [7,8]	16 to 32 inches
	Perennial grass canopy[16] cover and forbs [7,8]	>15%
	Riparian areas/mesic meadows	Proper Functioning Condition [12]
	Upland and riparian perennial forb availability [6,7]	Preferred forbs are common with several preferred species present [13]
WINTER[1] (Seasonal Use Period November 1-February 28)		
Cover and Food	Seasonal habitat extent [6,7,8] (percent of seasonal habitat meeting desired conditions)	>80% of the winter habitat
	Sagebrush canopy[16] cover above snow [6,7,8]	>10%
	Sagebrush height above snow [6,7,8]	>10 inches [14]

[1]Seasonal dates can be adjusted; that is, start and end dates may be shifted either earlier or later, but the amount of days cannot be shortened or lengthened by the local unit
[2] Doherty 2008
[3] Holloran and Anderson 2005
[4] Buffer distance may be changed only if 3 out of 5 years of telemetry studies indicate the 4 miles is not appropriate
[5] Baruch-Mordo et al. 2013
[6] Stiver et al. In Press
[7] Connelly et al. 2000a
[8] Connelly et al. 2003
[9] 10–12 inch precipitation zone; *Artemisia tridentata wyomingensis* is a common big sagebrush sub-species for this type site (Stiver et al. In Press)
[10] ≥12 inch precipitation zone; *Artemisia tridentata vaseyana* is a common big sagebrush sub-species for this type site (Stiver et

Table 2.2
Description of BLM Proposed Land Use Plan Amendment[1]

al. In Press)
[11] Sagebrush plants with a spreading shape provide more protective cover than sagebrush plants that are more tree or columnar shaped (Stiver et al. In Press)
[12] Existing land management plan desired conditions for riparian areas/wet meadows (spring seeps) may be used in place of properly functioning conditions, if appropriate for meeting GRSG habitat requirements
[13] Preferred forbs are listed in Habitat Assessment Tool/Framework Table III-2 (Stiver et al. In Press). Overall total forb cover may be greater than that of preferred forb cover because not all forb species are listed as preferred in Table III-2.
[14] The height of sagebrush remaining above the snow depends upon snow depth in a particular year. Intent is to manage for tall, healthy sagebrush stands.
[15]Projects will be designed to provide overhead and lateral concealment of nests on a site-specific basis
[16] "Canopy" applies only to National Forest System lands, not BLM-administered lands

*See **Appendix H,** Guidelines for Implementation, for implementation recommendations for **Table 2.3**.

(PHMA) Include GRSG habitat parameters as defined by Connelly et al. (2000b), Hagen et al. (2007), or, if available, state GRSG conservation plans and appropriate local information in habitat restoration objectives. Make meeting these objectives within GRSG PHMA areas a high restoration priority.

(ADH) Require use of native plant seeds that are beneficial for GRSG for vegetation treatments based on availability, adaptation (site potential), probability for success (Richards et al. 1998), and the vegetation management objectives for the area covered by the treatment. Where probability of success or native seed availability is low, use species that meet soil stability and hydrologic function objectives as well as vegetation and GRSG habitat objectives (Pyke 2011).

(PHMA) Design post restoration management to ensure long-term persistence of seeded or pre-burn native plants. This may require temporary or long-term changes in livestock grazing, wild horse management, travel management, and other uses, to achieve and maintain the desired condition of ESR projects to benefit GRSG (Eiswerth and Shonkwiler 2006).

(ADH) Manage for a habitat objective that is primarily sagebrush with a mosaic of seral stages and sagebrush in all age classes. On a site-by-site basis, do not allow treatments that would adversely affect GRSG populations.

Remove conifers encroaching into sagebrush habitats. Prioritize treatments closest to occupied GRSG habitats and near occupied leks, and where juniper encroachment is phase 1 or phase 2. Use of site-specific analysis and principles like those included in the Fire and Invasives Assessment Team report (Chambers et. al., 2014) and other ongoing modeling efforts to address conifer encroachment will help refine the location for specific priority areas to be treated. See **Appendix H**, Guidelines for Implementation.

(ADH) Make reestablishment of sagebrush and desirable understory plant cover (relative to ecological site potential) the highest priority for restoration efforts. Consider GRSG habitat requirements in conjunction with all resource values managed by the BLM/Forest Service, and give preference to GRSG habitat unless site-specific circumstances warrant an exemption.

(ADH) Authorize local sagebrush seed collection to support local restoration efforts.

[1] - (PHMA) = Priority Habitat Management Area, (GHMA) = General Habitat Management Area, (LCHMA) = Linkage/Connectivity Habitat Management Area, (ADH) = All Designated Habitat

2.6.3 Forest Service Proposed Land Use Plan Amendment

On April 9, 2012, the US Department of Agriculture adopted final planning regulations for the National Forest System at 36 CFR part 219. The regulations, known collectively as the 2012 Planning Rule, provide broad programmatic direction in developing and carrying out land management planning and set out requirements for plan components (36 CFR 219.7(e)) and other content in land management plans. Forest Service Handbook 1909.12 provides procedural guidance for implementing land management planning direction for the 2012 Planning Rule. Every Forest Service plan must include the following components[2]:

- *Desired condition*: A description of specific social, economic, and/or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be directed. Desired conditions must be described in terms that are specific enough to allow progress toward their achievement to be determined, but do not include completion dates (36 CFR 219.7(e)(1)(i)); Forest Service Handbook 1909.12, Chapter 20).
- *Guideline*: A constraint on project and activity decision making that allows for departure from its terms, so long as the purpose of the guideline is met. Guidelines are established to help achieve or maintain a desired condition or conditions, avoid or mitigate undesirable effects, or meet applicable legal requirements (36 CFR 219.7(e)(1)(iv); Forest Service Handbook 1909.12, Chapter 20).
- *Objective*: A concise, measurable, and time-specific statement of a desired rate of progress toward a desired condition or conditions. Objectives should be based on reasonably foreseeable budgets (36 CFR 219.9(e)(1)(ii)) Forest Service Handbook 1909.12, Chapter 20).
- *Standard*: A mandatory constraint on project and activity decision making, established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements (36 CFR 219.7(e)(1) (iii)) Forest Service Handbook 1909.12, Chapter 20).

The direction in the following standards and guidelines will be applied consistent with applicable valid existing rights, laws, and regulations.

Table 2.4 describes the management actions and allowable uses that comprise the Forest Service Proposed LUPA.

[2] Plan component definitions are based on generally accepted meanings under the 1982 rule and the Forest Service Plan Wording Style Guide 2009, http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5260265.pdf.

Table 2.4
Description of Forest Service Proposed LUPA[1]

General Greater Sage-Grouse
GRSG-GEN-DC-001-Desired Condition – The landscape for GRSG encompasses large contiguous areas of native vegetation, approximately 6 to 62 square miles in area, to provide for multiple aspects of species life requirements. Within these landscapes, a variety of sagebrush community compositions exist without invasive species, which have variations in subspecies composition, co-dominant vegetation, shrub cover, herbaceous cover, and stand structure, to meet seasonal requirements for food, cover, and nesting for GRSG.
GRSG-GEN-DC-002-Desired Condition – Anthropogenic disturbance is focused in nonhabitat areas outside of PHMA and GHMA[3]. Disturbance in GHMA is limited, and there is little to no disturbance in PHMA, except for valid existing rights and existing authorized uses.
GRSG-GEN-DC-003-Desired Condition – In GRSG management areas, including all seasonal habitats, 70 percent of lands capable of producing sagebrush have 10 to 30 percent sagebrush canopy cover and less than 10 percent conifer canopy cover. In addition, within breeding and nesting habitat, sufficient herbaceous vegetation structure and height provides overhead and lateral concealment for nesting and early brood rearing life stages. Within brood rearing habitat, wet meadows and riparian areas sustain a rich diversity of perennial forb species relative to site potential. Within winter habitat, sufficient sagebrush height and density provides food and cover for GRSG during this seasonal period. Specific desired conditions for GRSG based on seasonal habitat requirements are in **Table 2.3**.
GRSG-GEN-ST-004-Standard – In PHMA, do not issue new discretionary written authorizations unless all existing discrete anthropogenic disturbances cover less than 3 percent of the total GRSG habitat within the biologically significant unit and the proposed project analysis area, regardless of ownership, and the new use will not cause exceedance of the 3 percent cap (**Appendix E**, Methodology for Calculating Disturbance Caps).
GRSG-GEN-ST-005-Standard – In PHMA and GHMA, only allow new authorized land uses if the residual impacts to GRSG or its habitats are fully offset by compensatory mitigation projects that provide a net conservation gain to the species, which will be achieved by avoiding, minimizing, and compensating for impacts by applying beneficial mitigation actions. Any compensatory mitigation will be durable, timely, and in addition to what would have resulted without the compensatory mitigation as addressed in the Greater Sage-Grouse Mitigation Strategy (**Appendix G**).
GRSG-GEN-ST-006- Standard – During lekking (March 1 to April 30) restrict surface disturbing and disruptive activities, including noise at 10dB above ambient (not to exceed 20-24 dB) measured at the perimeter of an occupied lek, to lekking birds from 6 pm to 9 am within a buffer distance[4] of 3.1 miles.
GRSG-GEN-GL-007-Guideline – During breeding and nesting (March 1 to June 15), surface disturbing and disruptive activities to nesting birds should be avoided.
GRSG-GEN-GL-008-Guideline – When breeding and nesting habitat overlaps with other seasonal habitats, habitat should be managed for breeding and nesting desired conditions in **Table 2.3**.

[3] PHMA and GHMA may contain nonhabitat, but management direction would not apply to those areas of nonhabitat.
[4] During lekking (March 1 to April 30), surface-disturbing and disruptive activities, including noise at 10 decibels above ambient (not to exceed 20 to 24 decibels) measured at the perimeter of an occupied lek, should be restricted to lekking birds from 6:00 pm to 9:00 am within a buffer distance of 3.1 miles.

Table 2.4
Description of Forest Service Proposed LUPA[1]

GRSG-GEN-GL-009-Guideline – Development of tall structures within 2.0 miles from the perimeter of occupied leks, as determined by local conditions (e.g., vegetation or topography), with the potential to disrupt breeding or nesting by creating new perching/nesting opportunities for avian predators or by decreasing the use of an area, should be restricted within nesting habitat.
Adaptive Management
GRSG-AM-ST-010-Standard – If a hard trigger is identified, immediate action is necessary to stop a severe deviation from GRSG conservation objectives. Upon reaching a hard trigger, an appropriate component of a more restrictive alternative analyzed in the EIS will be implemented. The hard trigger response will be an entire restrictive alternative, or one or more appropriate components of a more restrictive alternative, such as the immediate cessation of authorizing land use authorizations. The Forest Service will review available and pertinent data in coordination with GRSG biologists from multiple agencies (**Section 2.7.1**, Adaptive Management Plan).
GRSG-AM-ST-011-Standard – If a soft trigger is identified, apply more conservative or restrictive implementation measures (e.g., extending seasonal restrictions for seasonal surface disturbing activities, modifying seasons of use for livestock grazing, and applying additional restrictions on discretionary activities) for the specific causal factor in the decline of populations and/or habitats, considering local knowledge and conditions.
Lands and Realty
Special Use Authorizations (nonrecreation)
GRSG-LR-SUA-O-012-Objective – In brood reading and nesting habitats, retrofit existing tall structures (e.g., power poles, cellular towers) with perch deterrents or other anti-perching devices within 2 years of signing the Record of Decision.
GRSG-LR-SUA-ST-013-Standard – In PHMA and GHMA, restrict issuance of new lands special use authorizations that authorize infrastructure, such as high-voltage transmission lines, major pipelines, hydropower, distribution lines, and cellular towers. Exceptions must be limited and based on rationale (e.g., monitoring, modeling, or best available science) that explicitly demonstrates that adverse impacts to GRSG will be avoided by the exception. Existing authorized uses will continue to be recognized.
GRSG-LR-SUA-ST-014-Standard – In PHMA and GHMA, do not authorize temporary lands special uses (i.e., facilities or activities) that result in loss of habitat or would have long-term (i.e., greater than 5 years) negative impact on GRSG or its habitats.
GRSG-LR-SUA-ST-015-Standard – In PHMA and GHMA, require protective stipulations (e.g., noise, tall structure, guy wire removal, perch deterrent installation) when issuing new authorizations or during renewal, amendment, or reissuance of existing authorizations that authorize infrastructure (e.g., high-voltage transmission lines, major pipelines, roads, distribution lines, and cellular towers).
GRSG-LR-SUA-ST-016-Standard – In PHMA and GHMA, locate upgrades to existing transmission lines within the existing designated corridors or ROWs unless an alternate route would benefit GRSG or its habitats.
GRSG-LR-SUA-ST-017-Standard – In PHMA and GHMA, when a lands special use authorization is revoked or terminated and no future use is contemplated, require the authorization holder to remove overhead lines and other surface infrastructure in compliance with 36 CFR 251.60(i).
GRSG-LR-SUA-ST-018-Standard – In PHMA and GHMA, if the potential long-term (i.e., greater than 5 years) impacts of mitigation (e.g., relocating or burying transmission lines and pipelines) to GRSG or its habitats are greater than the potential impacts from infrastructure associated with a new lands

Table 2.4
Description of Forest Service Proposed LUPA[1]

SUA, do not pursue the mitigation. If mitigation is not feasible or would result in short-term (i.e., less than 5 years) or long-term impacts, incorporate additional terms and conditions in the special use authorization for protection of GRSG or its habitats.
GRSG-LR-SUA-ST-019-Standard – In PHMA and GHMA, co-locate new infrastructure (e.g., high-voltage transmission lines, major pipelines, roads, distribution lines, and cellular towers) with existing infrastructure to limit disturbance to the smallest footprint, or where it best limits impacts to GRSG or its habitats. When co-location of new infrastructure cannot be accomplished, locate it adjacent to existing infrastructure, roads, or already disturbed areas. New communication tower sites may be authorized for public safety.
GRSG-LR-SUA-GL-020-Guideline – In PHMA, outside of existing designated corridors and ROWs, new transmission lines and pipelines should be buried to limit disturbance to the smallest footprint unless explicit rationale is provided that the biological impacts to GRSG are being avoided. If new transmission lines and pipelines are not buried, locate them adjacent to existing transmission lines and pipelines. New communication tower sites may be authorized for public safety.
Land Ownership Adjustments
GRSG-LR-LOA-ST-021-Standard – In PHMA, do not approve landownership adjustments unless the action results in a net conservation gain to GRSG or it will not directly or indirectly adversely impact GRSG conservation.
GRSG-LR-LOA-GL-022-Guideline – In PHMA and GHMA with minority federal ownership, consider landownership adjustments to achieve a landownership pattern (e.g., consolidation, reducing fragmentation) that supports improved GRSG population trends and habitats.
Land Withdrawal
Land Ownership Adjustments
GRSG-LR-LW-GL-023-Guideline – In PHMA, use land withdrawals as a tool, where appropriate, to prevent activities that will be detrimental to GRSG or its habitats.
Wind and Solar
GRSG-WS-ST-024-Standard – In PHMA, do not authorize new solar and wind utility-scale and/or commercial energy development except for on-site power generation associated with existing industrial infrastructure (e.g., mine site).
GRSG-WS-GL-025-Guideline – In GHMA, new solar and wind energy utility-scale and/or commercial development should be restricted. If development cannot be restricted due to existing authorized use, adjacent developments, or split estate issues, then ensure that stipulations are incorporated into the authorization to protect GRSG and its habitats.
Greater Sage-Grouse Habitat
GRSG-GRSGH-ST-026-Standard – Design habitat restoration projects to move towards desired conditions (**Table 2.3**).
GRSG-GRSGH-GL-027-Guideline – Sagebrush removal in GRSG breeding and nesting and wintering habitats should be avoided unless necessary to support attainment of desired habitat conditions (**Table 2.3**).
GRSG-GRSGH-GL-028-Guideline – When removing conifers that are encroaching into GRSG habitat, avoid persistent woodlands (i.e., old growth relative to the site or more than 100 years old).
GRSG-GRSGH-GL-029-Guideline – In PHMA and GHMA, actions and authorizations should include design features to limit the spread and effect of undesirable non-native plant species.

Table 2.4
Description of Forest Service Proposed LUPA[1]

GRSG-GRSGH-GL-030-Guideline – To facilitate safe and effective fire management actions, in PHMA and GHMA, fuels treatments in high-risk areas (i.e., areas likely to experience wildfire at an intensity level that may result in movement away from the GRSG desired conditions in **Table 2.3**) should be designed to reduce the spread and/or intensity of wildfire or the susceptibility of GRSG values to move away from desired conditions (**Table 2.3**).
GRSG-GRSGH-GL-031-Guideline – In PHMA and GHMA, native plant species should be used, when possible, to restore, enhance, or maintain desired conditions (**Table 2.3**).
GRSG-GRSGH-GL-032-Guideline – In PHMA, vegetation treatment projects should only be conducted if they restore, enhance, or maintain desired conditions (**Table 2.3**).
Livestock Grazing
GRSG-LG-DC-033-Desired Condition – In PHMA and GHMA, livestock grazing is managed to ensure for adequate nesting cover and do not conflict with the attainment of other vegetation attributes (**Table 2.3**).
GRSG-LG-ST-034-Standard – In PHMA, do not approve construction of water developments unless beneficial to GRSG habitat.
GRSG-LG-GL-035-Guideline – Grazing guidelines should be applied in each of the seasonal habitats in **Table 2.5**. If values in **Table 2.5** guidelines cannot be achieved based upon a site-specific analysis using Ecological Site Descriptions, long-term ecological site capability analysis, or other similar analysis, adjust grazing management to move towards desired habitat conditions in **Table 2.3**, consistent with the ecological site capability. Do not use drought and degraded habitat condition to adjust values. Grazing guidelines in **Table 2.5** would not apply to isolated parcels of National Forest System lands that have less than 200 acres of GRSG habitat.

Table 2.5
Grazing Guidelines for GRSG Seasonal Habitat

Seasonal Habitat	Grazing Guidelines
Breeding and nesting [1] within 4 miles of occupied leks	Perennial grass height: [2] When grazing occurs during breeding and nesting season (March 1 to June 15), manage for upland perennial grass height of 7 inches [3,4,5] When grazing occurs post breeding and nesting season (June 16 to October 30), manage for 4 inches [4,5,6] of perennial grass height
Brood-rearing and summer [1]	Retain an average stubble height of 4 inches for herbaceous riparian/mesic meadow vegetation [7,8]
Winter [1]	≤35% utilization of sagebrush

[1] For descriptions of seasonal habitat and seasonal periods of GRSG, see **Table 2.3**.
[2] Grass heights only apply in breeding and nesting habitat with greater than 10 percent sagebrush cover to support nesting
[3] Holloran et al. 2005
[4] Average droop height, assuming current vegetation composition has the capability to achieve these heights. Heights will be measured at the end of the nesting period (Connelly et al. 2000a).
[5] Hagen et al. 2007
[6] Stubble height to be measured at the end of the growing season
[7] "In riparian brood-rearing habitat, GRSG prefer the lower vegetation (5 to 15 centimeters [2 to 6 inches] versus 30 to 50 centimeters [12 to 20 inches]; Oakleaf 1971, Neel 1980, Klebenow 1982, Evans 1986) and succulent forb growth stimulated by moderate livestock grazing (Neel 1980, Evans 1986); moderate use equates to a 10-centimeter (4-inch) residual stubble height for most grasses and sedges and 5 centimeters (2 inches) for Kentucky bluegrass (Mosley et al. 1997, Clary and Leininger 2000)" (Crawford et al. 2004)
[8] Stubble height to be measured in the meadow areas used by GRSG for brood-rearing (not on the hydric greenline)

Table 2.4
Description of Forest Service Proposed LUPA[1]

GRSG-LG-GL-036-Guideline – In PHMA, consider closure of grazing allotments, pastures, or portions of pastures, or managing the allotment as a forage reserve as opportunities arise under applicable regulations, where removal of livestock grazing would enhance the ability to achieve desired habitat conditions (**Table 2.3**).
GRSG-LG-GL-037-Guideline – Bedding sheep and locating camps within 1.2 miles from the perimeter of a lek during lekking (March 1 to April 30) should be restricted.
GRSG-LG-GL-038-Guideline – During breeding and nesting season (March 1 to June 15), trailing livestock through breeding and nesting habitat should be minimized. Specific routes should be identified, existing trails should be used, and stopovers on active leks should be avoided.
GRSG-LG-GL-039-Guideline – Fences should not be constructed or reconstructed within 1.2 miles from the perimeter of occupied leks, unless the collision risk can be mitigated through design features or markings (e.g., mark, laydown fences, or other design features).
GRSG-LG-GL-040-Guideline – New permanent livestock facilities (e.g., windmills, water tanks, corrals) should not be constructed within 1.2 miles from the perimeter of occupied leks.
Fire Management
GRSG-FM-DC-041-Desired Condition – In PHMA and GHMA, the extent and spread of wildfire resulting in loss of sagebrush is minimized, considering firefighter and public safety and other high priority values
GRSG-FM-ST-042-Standard – In PHMA and GHMA, do not use prescribed fire, except for pile burning, in 12-inch or less precipitation zones unless necessary to facilitate site preparation for restoration of GRSG habitat consistent with desired conditions in **Table 2.3**.
GRSG-FM-ST-043-Standard – In PHMA and GHMA, if it is necessary to use prescribed fire to facilitate site preparation for restoration of GRSG habitat consistent with desired conditions in **Table 2.3**, the associated NEPA analysis must identify how the project would move towards GRSG desired conditions, why alternative techniques were not selected, and how potential threats to GRSG habitat would be minimized.
GRSG-FM-GL-044-Guideline – In wintering or breeding and nesting habitat, sagebrush removal or manipulation, including prescribed fire, should be restricted unless the removal strategically reduces the potential impacts from wildfire.
GRSG-FM-GL-045-Guideline – In PHMA and GHMA, when reseeding in fuel breaks, fire resistant native plant species should be used if available, or consider using fire resistance non-native species to meet resource objectives, if analysis demonstrated that nonnative plants will not damage GRSG habitat in the long term.
GRSG-FM-GL-046-Guideline – In PHMA and GHMA, fuel treatments should be designed to restore, enhance, or maintain GRSG habitat.
GRSG-FM-GL-047-Guideline – Locating temporary wildfire suppression facilities (e.g., incident command posts, spike camps, helibases, mobile retardant plants) in PHMA and GHMA should be avoided.
GRSG-FM-GL-048-Guideline – In PHMA and GHMA, cross-country vehicle travel during fire operations should be restricted, whenever safe and practical to do so as determined by fireline leadership and incident commanders.
GRSG-FM-GL-049-Guideline – In PHMA and GHMA, use fire management tactics and strategies that seek to minimize loss of existing sagebrush habitat. The safest and most practical means to do so will be

Table 2.4
Description of Forest Service Proposed LUPA[1]

determined by fireline leadership and incident commanders.
GRSG-FM-GL-050-Guideline – In PHMA and GHMA, prescribed fire prescriptions should minimize undesirable effects on vegetation and/or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of hydrophobicity).
GRSG-FM-GL-051-Guideline – In PHMA and GHMA, roads and natural fuel breaks should be incorporated into fuel break design to improve effectiveness and minimize loss of existing sagebrush habitat.
GRSG-FM-GL-052-Guideline – In PHMA and GHMA, all fire-associated vehicles and equipment should be inspected and cleaned using standardized protocols and procedures and approved vehicle/equipment decontamination systems before entering and exiting the area to minimize the introduction of invasive annual grasses and other invasive plant species and noxious weeds.
GRSG-FM-GL-053-Guideline – Unit-specific GRSG fire management toolboxes containing maps, lists, contact information for qualified resource advisors, local guidance, and relevant information should be developed and used.
GRSG-FM-GL-054-Guideline – Localized maps of PHMA and GHMA should be provided to dispatch officers and extended attack incident commanders to use when prioritizing wildfire suppression resources and designing suppression tactics.
GRSG-FM-GL-055-Guideline – In or near PHMA and GHMA, a GRSG resource advisor should be assigned to all extended attack fires.
GRSG-FM-GL-056-Guideline – On critical fire weather days, protection of GRSG habitat should receive high consideration, along with other high values, when positioning resources.
GRSG-FM-GL-057-Guideline – Line officers should be involved in setting pre-season wildfire response priorities and, during period of multiple fires, prioritizing protection of PHMA and GHMA.
GRSG-FM-GL-058-Guideline – In PHMA and GHMA, consider using fire retardant and mechanized equipment only if it is likely to result in minimizing burned acreage.
GRSG-FM-GL-059-Guideline – In PHMA and GHMA, to minimize sagebrush loss, mop-up should be conducted where the burned areas adjoin unburned islands, doglegs, or other habitat features, as safety and available resources allows.
Recreation
GRSG-R-DC-060-Desired Condition – In PHMA, recreation activities are balanced with the ability of the land to support them, while meeting GRSG seasonal habitat desired conditions (**Table 2.3**) and creating minimal user conflicts.
GRSG-R-ST-061-Standard – In PHMA and GHMA, do not authorize temporary recreation uses (i.e., facilities or activities) that result in loss of habitat or would have long-term (i.e., greater than 5 years) negative impacts on GRSG or its habitats.
GRSG-R-GL-062-Guideline – In PHMA and GHMA, terms and conditions that protect and/or restore GRSG habitat within the permit area should be included in new recreation special use authorizations. During renewal, amendment, or reauthorization, terms and conditions in existing permits and operating plans should be modified to protect and/or restore GRSG habitat.
GRSG-R-GL-063-Guideline – In PHMA, new recreational facilities or expansion of existing recreational facilities (e.g., roads, trails, campgrounds), including special use authorizations for facilities and activities, should not be approved unless the development results in a net conservation gain to GRSG and/or its habitats or the development is required for visitor safety.

Table 2.4
Description of Forest Service Proposed LUPA[1]

Roads/Transportation
GRSG-RT-DC-064-Desired Condition – In PHMA and GHMA, within the travel management system, GRSG experience minimal disturbance during breeding and nesting (March 1 to June 15) and wintering (November 1 to February 28) periods.
GRSG-RT-ST-065-Standard – In PHMA and GHMA, do not conduct or allow new road or trail construction (does not apply to realignments for resource protection) except when necessary for administrative access, public safety, or to access valid existing rights. If necessary to construct new roads and trails for one of these purposes, construct them to the minimum standard, length, and number and avoid, minimize, and compensate for impacts.
GRSG-RT-ST-066-Standard – Do not conduct or allow road and trail maintenance activities within 2 miles from the perimeter of active leks during lekking (March 1 to April 30) from 6 pm to 9 am.
GRSG-RT-ST-067-Standard – In PHMA, prohibit public access on temporary energy development roads, unless consistent with all other terms and conditions included in the forest plan.
GRSG-RT-GL-068-Guideline – In PHMA, new roads and road realignments should be designed and administered to reduce collisions with GRSG.
GRSG-RT-GL-069-Guideline – In PHMA, road construction within riparian areas and mesic meadows should be restricted. If not possible to restrict construction within riparian areas and mesic meadows, roads should be designed and constructed at right angles to ephemeral drainages and stream crossings, unless topography prevents doing so.
GRSG-RT-GL-070-Guideline – In PHMA and GHMA, when decommissioning roads and unauthorized routes, restoration activity should be designed to move habitat towards desired conditions (**Table 2.3**).
GRSG-RT-GL-071-Guideline – In PHMA and GHMA, dust abatement terms and conditions should be included in road use permits when dust has the potential to impact GRSG.
GRSG-RT-GL-072-Guideline – In PHMA and GHMA, road and road-way maintenance activities should be designed and implemented to reduce the risk of vehicle or human-caused wildfires and the spread of invasive plants. Such activities include but are not limited to the removal or mowing of vegetation a car-width off the edge of roads; use of weed-free earth-moving equipment, gravel, fill, or other materials; and blading or pulling roadsides and ditches that are infested with noxious weeds only if required for public safety or protection of the roadway.
Minerals
Fluid Minerals – Unleased
GRSG-M-FMUL-ST-073-Standard – In PHMA, any new oil and gas leases must include an NSO stipulation. There will be no waivers or modifications. An exception could be granted by the authorized officer with unanimous concurrence from a team of agency GRSG experts from the Fish and Wildlife Service, Forest Service, and State wildlife agency if: • There would be no direct, indirect, or cumulative effects to GRSG or its habitats or • Granting the exception provides an alternative to a similar action occurring on a nearby parcel and • The exception provides a clear net conservation gain to GRSG. See **Appendix D**, Stipulations and Conditions of Approval Applicable to Mineral Leasing and Land Use Authorizations.

Table 2.4
Description of Forest Service Proposed LUPA[1]

GRSG-M-FMUL-ST-074-Standard – In GHMA, any new leases must include appropriate controlled surface use and timing limitation stipulations to protect GRSG and its habitat.
Fluid Minerals – Leased
GRSG-M-FML-ST-075-Standard – In PHMA, when approving the Surface Use Plan of Operation portion of the Application for Permit to Drill on existing leases that are not yet developed, require that leaseholders avoid and minimize surface disturbing and disruptive activities consistent with the rights granted in the lease.
GRSG-M-FML-ST-076-Standard – In PHMA, when facilities are no longer needed or leases are relinquished, require reclamation plans to include terms and conditions to restore habitat to desired conditions as described in **Table 2.3**.
GRSG-M-FML-ST-077-Standard – In GHMA, authorize new transmission line corridors, transmission line right-of-ways, transmission line construction, or transmission line-facility construction associated with fluid mineral leases with stipulations necessary to protect GRSG and its habitats, consistent with the terms and conditions of the permit.
GRSG-M-FML-ST-078-Standard – Locate compressor stations on portions of a lease that are nonhabitat and are not used by GRSG, and if there would be no direct, indirect, or cumulative effects on GRSG or its habitat. If this is not possible, work with the operator to use mufflers, sound insulation, or other features to reduce noise, consistent with GRSG-GEN-ST-006-Standard.
GRSG-M-FML-ST-079-Standard – In PHMA and GHMA, when authorizing development of fluid mineral resources, work with the operator to minimize impacts to GRSG and its habitat, such as locating facilities in nonhabitat areas first and then in the least suitable habitat.
GRSG-M-FML-GL-080-Guideline – In PHMA and GHMA, operators should be encouraged to reduce disturbance to GRSG habitat. At the time of approval of the Surface Use Plan of Operation portion of the Application for Permit to Drill, terms and conditions should be included to reduce disturbance to GRSG habitat, where appropriate and feasible and consistent with the rights granted to the lessee.
GRSG-M-FML-GL-081-Guideline – On existing federal leases in PHMA, when surface occupancy cannot be restricted due to valid existing rights or development requirements, disturbance and surface occupancy should be limited to areas least harmful to GRSG based on vegetation, topography, or other habitat features.
GRSG-M-FML-GL-082-Guideline – In PHMA and GHMA, where the federal government owns the surface and the mineral estate is in non-federal ownership coordinate with the mineral estate owner/lessee to apply appropriate stipulations, conditions of approval, conservation measures and required design features to the appropriate surface management instruments to the maximum extent permissible under existing authorities.
Fluid Minerals – Leased
GRSG-M-FMO-ST-083-Standard – In PHMA, do not authorize employee camps.
GRSG-M-FMO-ST-084-Standard – In PHMA, when feasible, do not locate tanks or other structures that may be used as raptor perches. If this is not feasible, use perch deterrents.
GRSG-M-FMO-GL-085-Guideline – In PHMA, closed-loop systems should be used for drilling operations with no reserve pits, where feasible.
GRSG-M-FMO-GL-086-Guideline – In PHMA and GHMA, during drilling operations, soil compaction should be minimized and soil structure should be maintained using the best available

Table 2.4
Description of Forest Service Proposed LUPA[1]

techniques to improve vegetation reestablishment.

GRSG-M-FMO-GL-087-Guideline – In PHMA and GHMA, dams, impoundments and ponds for mineral development should be constructed to reduce potential for West Nile virus. Examples of methods to accomplish this include:

- Increase the depth of ponds to accommodate a greater volume of water than is discharged.
- Build steep shorelines (greater than 2 feet) to reduce shallow water and aquatic vegetation around the perimeter of impoundments to reduce breeding habitat for mosquitoes.
- Maintain the water level below that of rooted aquatic and upland vegetation. Avoid flooding terrestrial vegetation in flat terrain or low-lying areas.
- Construct dams or impoundments that restrict down-slope seepage or overflow by digging ponds in flat areas rather than damming natural draws for effluent water storage or lining constructed ponds in areas where seepage is anticipated.
- Line the channel where discharge water flows into the pond with crushed rock or use a horizontal pipe to discharge inflow directly into existing open water.
- Line the overflow spillway with crushed rock and construct the spillway with steep sides.
- Fence pond sites to restrict access by livestock and other wild ungulates.
- Remove or reinject produced water.
- Treat waters with larvicides to reduce mosquito production where water occurs on the surface.

GRSG-M-FMO-GL-088-Guideline – In PHMA and GHMA, to keep habitat disturbance at a minimum, a phased development approach should be applied to fluid mineral operations, wherever possible, consistent with the rights granted under the lease. Disturbed areas should be reclaimed as soon as they are no longer needed for mineral operations.

Coal Mines – Unleased

GRSG-M-CMUL-ST-089-Standard – In PHMA, do not authorize surface disturbances (e.g., appurtenant facilities) for new underground coalmines.

Coal Mines – Leased

GRSG-M-CML-ST-090-Standard – In PHMA, do not authorize new appurtenant surface facilities for existing underground mines unless no technical feasible alternative exists. If new appurtenant surface facilities associated with existing mine leases cannot be located outside of PHMA, co-locate them with any existing disturbed areas, if possible. If co-location is not possible, then construct new facilities to minimize disturbed areas while meeting mine safety standards and requirements, as identified by MSHA mine-plan approval process, and locate the facilities in an area least harmful to GRSG habitats based on vegetation, topography, or other habitat features.

GRSG-M-CML-GL-091-Guideline – In PHMA and GHMA, when coal leases are subject to readjustment, additional requirements should be included in the readjusted lease to conserve, enhance, and restore GRSG and its habitat for long-term viability.

Locatable Minerals

GRSG-M-LM-ST-092-Standard – In PHMA, only approve Plans of Operation if they include mitigation to protect GRSG and its habitats, consistent with the rights of the mining claimant as granted by the General Mining Act of 1872, as amended.

GRSG-M-LM-GL-093-Guideline – In PHMA and GHMA to keep habitat disturbance at a minimum, a phased development approach should be applied to operations consistent with the rights granted under

Table 2.4
Description of Forest Service Proposed LUPA[1]

the General Mining Act of 1872, as amended. Disturbed areas should be reclaimed as soon as they are no longer needed for mineral operations.
GRSG-M-LM-GL-094-Guideline – In PHMA and GHMA, abandoned mine sites should be closed or mitigated to reduce predation of GRSG by eliminating tall structures that could provide nesting opportunities and perching sites for predators.
Nonenergy Leasable Minerals
GRSG-M-NEL-GL-095-Guideline – In PHMA and GHMA, at the time of issuance of prospecting permits, exploration licenses and leases, or readjustment of leases, the Forest Service should provide recommendations to the Bureau of Land Management for the protection of GRSG and its habitats.
GRSG-M-NEL-GL-096-Guideline – In PHMA and GHMA, the Forest Service should recommend to the Bureau of Land Management that expansion or readjustment of existing leases avoid, minimize, or mitigate the effects to GRSG and its habitat.
Mineral Materials
GRSG-M-MM-ST-097-Standard – In PHMA, do not authorize new mineral material disposal or development.
GRSG-M-MM-ST-098-Standard – In PHMA, free-use mineral material collection permits may be issued and expansion of existing active pits may be allowed, except from March 1 to April 30 between 6pm and 9am within 2 miles from the perimeter of occupied leks, within the biologically significant unit and proposed project area if doing so does not exceed the disturbance cap..
GRSG-M-MM-ST-099-Standard - In PHMA and GHMA, any permit for existing mineral material operations must include appropriate requirements for operation and reclamation of the site to restore, enhance, or maintain desired habitat conditions (**Table 2.3**).

2.7 ADAPTIVE MANAGEMENT, MONITORING, AND MITIGATION

The following adaptive management plan, monitoring, and regional mitigation apply to the action alternatives, Alternatives B, C, D, and the BLM and Forest Service Proposed LUPAs.

2.7.1 Adaptive Management Plan

Adaptive management is a decision process that promotes flexible resource management decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes both advances scientific understanding and helps with adjusting resource management directions as part of an iterative learning process. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity. It is not a 'trial and error' process, but rather emphasizes learning while doing. Adaptive management does not represent an end in itself, but rather a means to more effective decisions and enhanced benefits.

In relation to the BLM/Forest Service's National Greater Sage-grouse Planning Strategy, adaptive management would help identify if GRSG conservation measures presented in this EIS contain the needed level of certainty for

effectiveness. Principles of adaptive management are incorporated into the conservation measures in the LUPA to ameliorate threats to a species, thereby increasing the likelihood that the conservation measure and LUPA would be effective in reducing threats to that species. The following provides the BLM/Forest Service's adaptive management strategy for the Northwest Colorado Greater Sage-Grouse LUPA. In making amendments to this LUP, the BLM and Forest Service will coordinate with USFWS as the BLM and Forest Service continue to meet their objective of conserving, enhancing, and restoring GRSG habitat by reducing, minimizing, or eliminating threats to that habitat.

Adaptive Management and Monitoring

This EIS contains a monitoring framework (**Section 2.6.2**, Monitoring of the Greater Sage-Grouse Planning Strategy) that includes an effectiveness monitoring component. The agencies intend to use the data collected from the effectiveness monitoring to identify any changes in habitat conditions related to the goals and objectives of the LUPA and other range-wide conservation strategies (US Department of the Interior 2004; Stiver et al. 2006; USFWS 2013). The information collected through the monitoring framework (**Section 2.6.2**) would be used by the BLM/Forest Service to determine when adaptive management hard and soft triggers (discussed below) are met.

Adjustments to PHMA or GHMA boundaries should be made if BLM biologists, in coordination with state of Colorado biologists, determine site-specific conditions warrant such changes to more accurately depict existing or potential GRSG habitat. The appropriate planning process (i.e., plan maintenance or plan amendment) would be used, as determined on a case-by-case basis considering site-specific issues.

Adaptive Management Triggers

Soft Triggers

Soft triggers represent an intermediate threshold indicating that management changes are needed at the project/implementation level to address habitat and population losses. If a soft trigger is identified, the BLM/Forest Service would apply more conservative or restrictive implementation conservation measures to mitigate for the specific causal factor in the decline of populations and/or habitats, with consideration of local knowledge and conditions. For example, monitoring data within an already federally authorized project area within a given GRSG population area indicates that there has been a slight decrease in GRSG numbers in this area. Data also suggest the decline may be attributed to GRSG collisions with monitoring tower guy-wires from this federally authorized project. The BLM then receives an application for a new tower within the same GRSG population area. The response would be to require the new authorization's tower guy-wires to be flagged. Monitoring data then show the decline is curtailed. The adaptive management soft trigger response is to require future applications to flag for guy-wires. These types of adjustments would be

made to preclude tripping a "hard" trigger (which signals more severe habitat loss or population declines). While there should be no expectation of hitting a hard trigger, if unforeseen circumstances occur that trip either a habitat or population hard trigger, more restrictive management would be required.

Hard Triggers

Hard triggers represent a threshold indicating that immediate action is necessary to stop a severe deviation from GRSG conservation objectives as set forth in the BLM and Forest Service LUPAs. The hard trigger and the proposed management response to this trigger are presented below.

Northwest Colorado Adaptive Management Plan

The Northwest Colorado Adaptive Management Plan includes an overarching adaptive management strategy consistent with national policy that includes soft and hard triggers for specific populations and an approach for developing responses. These triggers are not specific to any particular project, but identify habitat and population thresholds. The BLM and Forest Service, in cooperation with USFWS and the State of Colorado, have identified appropriate triggers. Triggers would be based on the two key metrics that would be monitored: habitat loss and/or population declines.

Soft Triggers

Soft triggers represent an intermediate threshold indicating that management changes are needed at the LUPA implementation level to address habitat or population losses. If a soft trigger is tripped, the BLM/Forest Service would change management to a more conservative or restrictive implementation conservation measure to mitigate for the specific causal factor in the decline of populations and/or habitats, with consideration of local knowledge and conditions. These adjustments should be made to preclude tripping a "hard" trigger (which signals more severe habitat loss or population declines).

During implementation of this LUPA, population trends would be monitored by the Northwest Colorado Sage-Grouse Statewide Implementation Team, which would be made up of existing local population GRSG working groups (e.g., Northwest Colorado, Parachute-Piceance-Roan, Middle Park, and North Park), BLM/Forest Service biologists, and CPW biologists. This group would meet annually and would evaluate the health of each population and make recommendations to the BLM/Forest Service on any changes to fine site management. This statewide implementation team would also evaluate the effects to GRSG habitat and populations due to BLM/Forest Service permitted activities throughout the previous year(s) and make recommendations for changes in management or locations that should be avoided, for example. This group would also evaluate the effectiveness of mitigation and make recommendations on alternative mitigation strategies and locations, such as the Colorado Habitat Exchange. This team would also evaluate important locations each year, such as lek sites.

Restrictive management prescriptions would help ensure a greater degree of certainty of effectiveness in ameliorating a targeted threatso that there is less of a need to prescribe a detailed adaptive management decision strategy within the Proposed LUPA to demonstrate certainty of effectiveness. The Northwest Colorado LUPA includes conditions under which activities could be permitted in GRSG habitat and criteria for granting exceptions, modifications, or waivers for lease stipulations. Soft triggers for restrictive management actions would include evaluation of the effectiveness of the minimization, mitigation, and location of permitted activities in the context of the PAC.

Disturbance Cap Trigger

The disturbance cap trigger represents a threshold indicating that more restrictive action is necessary to prevent further degradation of GRSG habitat.

In Northwest Colorado, the disturbance cap trigger would be defined as habitat loss and/or degradation measured as the 3 percent disturbance cap in PHMA calculated by biologically significant unit (Colorado populations) and proposed project analysis area (Colorado MZ).

If the 3 percent anthropogenic disturbance cap is exceeded on lands (regardless of land ownership) within PHMA in any given biologically significant unit, then no further discrete anthropogenic disturbances (subject to applicable laws and regulations, such as the General Mining Law of 1872 and valid existing rights) would be permitted by BLM within PHMA in any given biologically significant unit until the disturbance has been reduced to less than the cap.

If the 3 percent disturbance cap is exceeded on all lands (regardless of land ownership) within a proposed project analysis area in a PHMA, then no further anthropogenic disturbance would be permitted by BLM until disturbance in the proposed project analysis area has been reduced to maintain the area under the cap (subject to applicable laws and regulations, such as the General Mining Law of 1872 and valid existing rights).

Habitat disturbance would be monitored by the BLM/Forest Service and if the disturbance cap thresholds are exceeded in any PAC or Colorado MZ, more restrictive management would be implemented. The BLM/Forest Service would not grant modifications, exceptions, or waivers for existing lease stipulations if the intermediate trigger has been met. In addition, the BLM would defer new leasing in the Colorado MZ/PAC until the habitat is reclaimed and back under the disturbance cap.

Hard Trigger

In the event that soft triggers and disturbance caps prove to be ineffective, the hard trigger represents a threshold indicating that immediate action is necessary to stop a severe deviation from GRSG conservation objectives. The hard trigger is intentionally set at or below the normal range of variation to provide a threshold of last resort should either chronic degradation or a catastrophic

event occur. The hard trigger is not intended to be an on-again/off-again toggle that would be exceeded periodically throughout the life of the LUPA.Colorado GRSG occur in six distinct populations. Two of these populations (Northwest Colorado and North Park) account for about 88 percent of the males in Colorado. Northwest Colorado includes Colorado MZs 1 through 10. North Park includes Colorado MZ 11. The remaining four populations are smaller by an order of magnitude, and, even in the aggregate, do not provide the significant numbers of GRSG necessary to contribute meaningfully to the hard trigger, and, in some cases, lack the long-term population trend information necessary to support trigger implementation. All six populations are important to GRSG conservation in Colorado; however, only the Northwest Colorado and North Park populations are large enough to reliably indicate the level of severe decline intended by this hard trigger. While the hard triggers focus on the two largest populations, all six populations should be rigorously managed via the soft triggers. If soft triggers work as intended, a hard trigger should never be breached.

Development of the Hard Trigger

The hard trigger is based on two metrics: GRSG lek (high male) counts and habitat loss.

Lek Counts. The lek count threshold is determined from the 25 percent quartile of the high male count in each of the Northwest Colorado and North Park populations over the period of years for which consistent lek counts are available: 17 years from 1998 to 2014 for Northwest Colorado and 41 years from 1974 to 2014 for North Park. The 25 percent quartiles were determined using the annual high male counts rather than the 3-year running average to ensure that normal variation in lek counts is above the threshold. The hard trigger for Northwest Colorado is 1,575 counted males, and for North Park is 670 counted males.

Habitat Loss. The habitat loss threshold is determined by 30 percent cumulative loss of PHMA, measured independently in Northwest Colorado and North Park. For the purpose of the hard trigger, habitat loss will be measured from the date of the ROD on this LUPA. Hard trigger habitat loss includes both anthropogenic (i.e., the disturbance cap) and non-anthropogenic forms of habitat loss (e.g., wildfire). The 30 percent habitat loss calculation is limited to loss of PHMA in each of Northwest Colorado and North Park populations; GHMA and any habitat loss in the other four populations are not included in the hard trigger. Restored or recovered habitat is not considered in this threshold, although it is tracked and summarized by the BLM's data management system.

Breaching the Hard Trigger

In order for the hard trigger to be breached, both the lek count (1,575 males in Northwest Colorado and 670 males in North Park) and habitat loss thresholds must be breached in both the Northwest Colorado and North Park populations

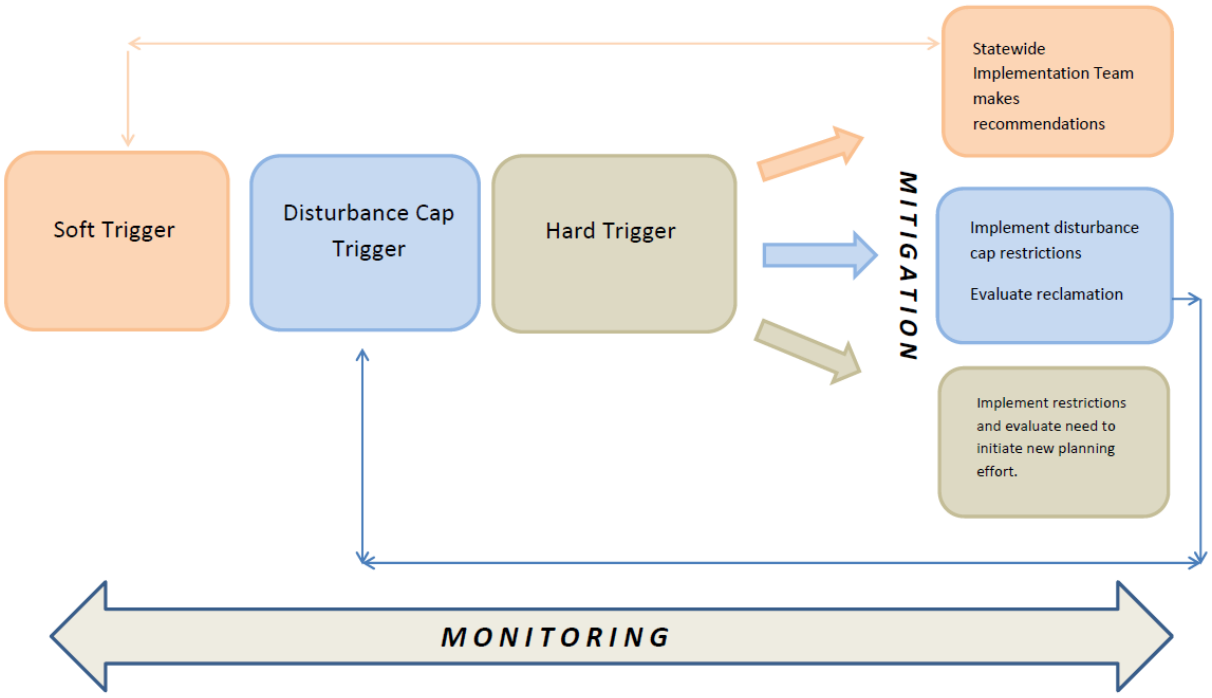
simultaneously. In any other set of circumstances (e.g., when a threshold is violated in a single population), the management response will be as described in the *Soft Trigger* section, above.

Lek Counts. The lek count threshold is compared to the 3-year running average of the high male count in Northwest Colorado and North Park, measured independently. The 3-year running average value is used because it is considered to be more indicative of the population trend than annual high male counts. The 3-year running average in Northwest Colorado and North Park must fall below the threshold concurrently for this portion of the hard trigger to be breached. The CPW will conduct lek counts and provide this information annually to the statewide implementation team as described in the *Soft Trigger* section, above.

Habitat Loss. The habitat loss threshold is measured by 30 percent cumulative loss of PHMA, beginning when the ROD on this LUPA is signed. The loss will be measured independently in Northwest Colorado and North Park. The BLM will track anthropogenic and non-anthropogenic habitat loss. Summary information will be reviewed by the statewide implementation team as described in the *Soft Trigger* section, above.

Hard Trigger Response

Upon determination that a hard trigger has been tripped, the BLM and/or Forest Service will immediately defer issuance of discretionary authorizations for new actions for a period of 90 days. In addition, within 14 days of a determination that a hard trigger has been tripped, the Northwest Colorado Greater Sage-Grouse Statewide Implementation Team will convene to develop an interim response strategy and initiate an assessment to determine the causal factor or factors (hereafter the "causal factor assessment").



2.7.2 Monitoring of the Greater Sage-Grouse Planning Strategy

The BLM's planning regulations, specifically 43 CFR 1610.4-9, require that land use plans establish intervals and standards for monitoring based on the sensitivity of the resource decisions. LUP monitoring is the process of tracking the implementation of LUP decisions (implementation monitoring) and collecting data/information necessary to evaluate the effectiveness of LUP decisions (effectiveness monitoring). For GRSG, these types of monitoring are also described in the criteria found in the Policy for Evaluation of Conservation Efforts When Making Listing Decisions (50 CFR Vol. 68, No. 60). One of the Policy for Evaluation of Conservation Efforts When Making Listing Decisions criteria evaluates whether provisions for monitoring and reporting progress on implementation (based on compliance with the implementation schedule) and effectiveness (based on evaluation of quantifiable parameters) of the conservation effort are provided.

A guiding principle in the BLM National Sage-grouse Conservation Strategy (US Department of the Interior 2004) is that "the Bureau is committed to sage-grouse and sagebrush conservation and would continue to adjust and adapt our National Sage-grouse Strategy as new information, science, and monitoring results evaluate effectiveness over time." In keeping with the WAFWA Sage-grouse Comprehensive Conservation Strategy (Stiver et al. 2006) and the Greater Sage-grouse Conservation Objectives: Final Report (USFWS 2013), the BLM and Forest Service would monitor implementation and effectiveness of conservation measures in GRSG habitats.

On March 5, 2010, USFWS' 12-Month Findings for Petitions to List the Greater Sage-Grouse (*Centrocercus urophasianus*) as Threatened or Endangered were posted as a Federal Register notice (75 *Federal Register* 13910-14014, March 23, 2010). This notice stated:

"…the information collected by BLM could not be used to make broad generalizations about the status of rangelands and management actions. There was a lack of consistency across the range in how questions were interpreted and answered for the data call, which limited our ability to use the results to understand habitat conditions for sage-grouse on BLM lands."

Standardization of monitoring methods and implementation of a defensible monitoring approach (within and across jurisdictions) will resolve this situation. The BLM, Forest Service, and other conservation partners use the resulting information to guide implementation of conservation activities.

Monitoring strategies for GRSG habitat and populations must be collaborative, as habitat occurs across jurisdictional boundaries (52 percent on BLM-administered lands, 31 percent on private lands, 8 percent on National Forest System lands, 5 percent on state lands, 4 percent on tribal and other federal lands) (75 *Federal Register* 13910, March 23, 2010), and state fish and wildlife agencies have primary responsibility for population level wildlife management,

including population monitoring. Therefore, population efforts will continue to be conducted in partnership with state fish and wildlife agencies. The BLM and Forest Service have finalized a monitoring framework, which can be found in **Appendix F**, Greater Sage-Grouse Monitoring Framework. This framework describes the process that the BLM and Forest Service will use to monitor implementation and effectiveness of RMP/LUP decisions. The monitoring framework includes methods, data standards, and intervals of monitoring at broad and mid scales; consistent indicators to measure and metric descriptions for each of the scales; analysis and reporting methods; and the incorporation of monitoring results into adaptive management. The need for fine-scale and site-specific habitat monitoring may vary by area depending on existing conditions, habitat variability, threats, and land health. Indicators at the fine and site scales will be consistent with the Habitat Assessment Framework; however, the values for the indicators could be adjusted for regional conditions.

More specifically, the framework discusses how the BLM and Forest Service will monitor and track implementation and effectiveness of planning decisions (e.g., tracking of waivers, modifications, and site-level actions). The two agencies will monitor the effectiveness of RMP/LUP decisions in meeting management and conservation objectives. Effectiveness monitoring will include monitoring disturbance in habitats, as well as landscape habitat attributes. To monitor habitats, the BLM and Forest Service will measure and track attributes of occupied habitat, PHMA, and GHMA at the broad scale, and attributes of habitat availability, patch size, LCHMA, edge effect, and anthropogenic disturbances at the mid-scale. Disturbance monitoring will measure and track changes in the amount of sagebrush in the landscape and changes in the anthropogenic footprint, including change energy development density. The framework also includes methodology for analysis and reporting for field offices, states, ranger districts, BLM districts, National Forests, and Forest regions, including geospatial and tabular data for disturbance mapping (e.g., geospatial footprint of new permitted disturbances) and management actions effectiveness. See **Appendix E** (Methodology for Calculating Disturbance Caps).

The national monitoring framework (**Appendix F**, Greater Sage-Grouse Monitoring Framework) details the methodology that the BLM and Forest Service would use to monitor and track implementation and effectiveness of planning decisions on a broad and mid-scale as discussed above. The monitoring strategy for the Northwest Colorado Proposed LUPA would track disturbance at the fine scale, specifically those decisions and management actions proposed by the Northwest Colorado Proposed LUPA/Final EIS. The disturbance inventory would be used to inform the adaptive management plan. The Northwest Colorado Proposed LUPA includes a 3 percent cap on anthropogenic disturbance in PHMA. Anthropogenic disturbance refers to physical removal of habitat including, but not limited to: paved highways, graded gravel roads, transmission lines, substations, wind turbines, oil and gas wells, pipelines, and mines. See **Appendix E** (Methodology for Calculating

Disturbance Caps) for more details regarding disturbance caps and **Appendix H** (Guidelines for Implementation) for details specific to Northwest Colorado implementation.

2.7.3 Regional Mitigation

The intent of the Mitigation Framework is to achieve a net conservation gain to the GRSG. To do so, in undertaking BLM/Forest Service management actions, and, consistent with valid existing rights and applicable law, in authorizing third party actions that result in habitat loss and degradation, the BLM will require and ensure mitigation that provides a net conservation gain to the species including accounting for any uncertainty associated with the effectiveness of such mitigation. This will be achieved by avoiding, minimizing, and compensating for impacts by applying beneficial mitigation actions. Actions that result in habitat loss and degradation include those identified as threats that contribute to GRSG disturbance as identified by USFWS in its 2010 listing decision (75 *Federal Register* 13910) and shown in Table 2 in the Greater Sage-Grouse Monitoring Framework (**Appendix F**) This is also consistent with BLM Manual 6840 – Special Status Species Management, Section .02B, which states "to initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of the need for listing of these species under the ESA."

Mitigation Standards

In GRSG habitat, 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, the BLM will require and ensure mitigation that provides a net conservation gain to the species, including accounting for any uncertainty associated with the effectiveness of such mitigation. This will be achieved by avoiding, minimizing, and compensating for impacts by applying beneficial mitigation actions. Mitigation will follow the regulations from the White House Council on Environmental Quality (CEQ) (40 CFR 1508.20; e.g., avoid, minimize, and compensate), hereafter referred to as the mitigation hierarchy. If impacts from BLM/Forest Service management actions and authorized third-party actions that result in habitat loss and degradation remain after applying avoidance and minimization measures (i.e., residual impacts), then compensatory mitigation projects will be used to provide a net conservation gain to the species. Any compensatory mitigation will be durable, timely, and in addition to that which would have resulted without the compensatory mitigation (see the concepts of durability, timeliness, and additionality as described further in the Glossary).

Greater Sage-Grouse Conservation Team

The BLM/Forest Service will establish a WAFWA MZ Greater Sage-Grouse Conservation Team (hereafter, Team) to help guide the conservation of GRSG, within 90 days of the issuance of the Record of Decision on this EIS. This Team will develop a WAFWA MZ Regional Mitigation Strategy (hereafter, Regional

Mitigation Strategy). The Team will also compile and report on monitoring data (including data on habitat condition, population trends, and mitigation effectiveness) from states across the WAFWA MZ (see **Section 2.6.2,** Monitoring of the Greater Sage-Grouse Planning Strategy). Subsequently, the Team will use these data to either modify the appropriate Regional Mitigation Strategy or recommend adaptive management actions (see **Section 2.6.1,** Adaptive Management Plan).

The BLM/Forest Service will invite governmental and tribal partners to participate in this Team, including the State Wildlife Agency and USFWS, in compliance with the exemptions provided for committees defined in the Federal Advisory Committee Act and the regulations that implement that Act. The BLM/Forest Service will strive for a collaborative and unified approach between federal agencies (e.g., USFWS, BLM, and Forest Service), tribal governments, state and local government(s), and other stakeholders for GRSG conservation. The Team will provide advice and will not make any decisions that impact federal lands. The BLM/Forest Service will remain responsible for making decisions that affect federal lands.

Developing a Regional Mitigation Strategy

The Team will develop a Regional Mitigation Strategy to inform the mitigation components of NEPA analyses for BLM/Forest Service management actions and third-party actions that result in habitat loss and degradation. The Regional Mitigation Strategy will be developed within one year of the issuance of the Record of Decision on this EIS. The BLM's Regional Mitigation Manual MS-1794 will serve as a framework for developing the Regional Mitigation Strategy. The Regional Mitigation Strategy will be applicable to the states, BLM Field Offices, and Forests within the WAFWA MZ's boundaries.

Regional mitigation is a landscape-scale approach to mitigating impacts to resources. This involves anticipating future mitigation needs and strategically identifying mitigation sites and measures that can provide a net conservation gain to the species. The Regional Mitigation Strategy developed by the Team will elaborate on the components identified above (i.e., avoidance, minimization, and compensation; additionality, timeliness, and durability) and further explained in **Appendix G,** Greater Sage-Grouse Mitigation Strategy.

In the time period before the Regional Mitigation Strategy is developed, the BLM will consider regional conditions, trends, and sites to the greatest extent possible when applying the mitigation hierarchy and will ensure that mitigation is consistent with the standards set forth in the first paragraph of this section.

Incorporating the Regional Mitigation Strategy into Land Use Authorization Analyses

The BLM/Forest Service will include the avoidance, minimization, and compensatory recommendations from the Regional Mitigation Strategy in one or more of the NEPA analysis' alternatives for BLM/Forest Service management

actions and third-party actions that result in habitat loss and degradation and the appropriate mitigation actions will be carried forward into the decision.

Implementing a Compensatory Mitigation Program

Consistent with the principles identified above, the BLM/Forest Service need to ensure that compensatory mitigation is strategically implemented to provide a net conservation gain to the species, as identified in the Regional Mitigation Strategy. In order to align with existing compensatory mitigation efforts, this compensatory mitigation program will be implemented at a state level (as opposed to a WAFWA MZ, a Field Office, or a Forest), in collaboration with BLM and Forest Service's partners (e.g., federal, tribal, and state agencies).

To ensure transparent and effective management of the compensatory mitigation funds, the BLM/Forest Service, within one year of the issuance of the Record of Decision on this EIS, will enter into a contract or agreement with a third party to help manage the state-level compensatory mitigation funds. The selection of the third-party compensatory mitigation administrator will conform to all relevant laws, regulations, and policies. The BLM/Forest Service will remain responsible for making decisions that affect federal lands.

2.8 DRAFT LUPA/EIS ALTERNATIVES

The following are alternatives to the Proposed Plan and were presented and analyzed in the Draft LUPA/EIS. Some alternatives have been refined based on public comment. A complete description of each alternative is presented in **Table 2.7** (Alternative A) and **Table 2.8** (Alternatives B, C, and D, and BLM and Forest Service Proposed LUPAs). **Table 2.6** summarizes these alternatives. **Section 2.7** discusses the selection of the Proposed LUPA.

Based on substantive comments from other governmental agencies and the public on the Draft LUPA/EIS, the BLM and Forest Service prepared a Final EIS, which includes identification of a Proposed LUPA. The Preferred Alternative (Alternative D) in the Draft LUPA/EIS was revised as the result of evaluating comments received on the Draft LUPA/EIS, and is now identified as the Proposed LUPA. The Final EIS also incorporates the other alternatives (Alternatives A, B, C, and D) analyzed in the Draft LUPA/EIS, with editorial changes, technical changes, and factual corrections made as appropriate. The BLM and Forest Service also improved the analysis of alternatives (Chapter 4) based on external and internal comments.

2.8.1 Alternative A (No Action)

Alternative A meets the CEQ requirement that a no action alternative be considered. This alternative continues current management direction and prevailing conditions derived from the existing field office and forest planning documents. Goals and objectives for resources and resource uses are based on the most recent RMP/LUP decisions, along with associated amendments, activity and implementation level plans, and other management decision documents.

Laws, regulations, and BLM policies that supersede RMP/LUP decisions would apply.

Goals and objectives for BLM-administered lands and mineral estate would not change. Appropriate and allowable uses and restrictions pertaining to activities such as mineral leasing and development, recreation, construction of utility corridors, and livestock grazing would also remain the same. The BLM would not modify existing or establish additional criteria to guide the identification of site-specific use levels for implementation activities.

2.8.2 Management Common to Action Alternatives

Allowable uses and management actions from the existing RMPs and LUP that remain valid and do not require revision have been carried forward to all of the proposed alternatives. Other decisions are common only to the action alternatives (B, C, and D and the Proposed LUPA).

Although each alternative emphasizes a slightly different mix of resources and resource uses, all five alternatives contain the following goals:

- Conserve, enhance and restore the sagebrush ecosystem upon which GRSG populations depend in an effort to maintain or increase their abundance and distribution, in cooperation with other conservation partners.
- Comply with state and federal laws, regulations, policies, and standards, including FLPMA multiple use mandates and National Forest Management Act mandates.
- Implement actions originating from laws, regulations, and policies and conform to day-to-day management, monitoring, and administrative functions not specifically addressed (see **Section 2.6.1,** Adaptive Management Plan, **Section 2.6.2**, Monitoring of the Greater Sage-Grouse Planning Strategy, and **Section 2.6.3**, Regional Mitigation).
- Preserve valid existing rights, which include any leases, claims, or other use authorizations established before a new or modified authorization, change in land designation, or new or modified regulation is approved. Existing fluid mineral leases are managed through COAs.
- Collaborating with adjacent landowners, federal and state agencies, local governments, tribes, communities, other agencies, and other individuals and organizations, as needed, to monitor and implement decisions to achieve desired resource conditions.
- Providing for firefighter and public safety protection from wildfire.

In addition to the shared elements above, allowable uses, and management actions common to all five alternatives (as indicated by a single cell across the table row) are listed in **Table 2.7** and **Table 2.8**, in **Section 2.8**, Summary Comparison of Alternatives.

The appendices provide supplemental information not included in **Table 2.7** and **Table 2.8**. For example, **Appendix A** (Figures) contains related maps, and **Appendix D** (Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations) describes in detail stipulations included in the Proposed LUPA for oil and gas leasing and other surface-disturbing activities.

Where more restrictive land use allocations or decisions are made in existing RMPs, those more restrictive land use allocations or decisions would remain in effect and would not be amended by this LUPA.

2.8.3 Alternative B

GRSG conservation measures in *A Report on National Greater Sage-Grouse Conservation Measures* (NTT 2011) were used to form BLM management direction under Alternative B. Management actions by the BLM in concert with other state and federal agencies, and private land owners play a critical role in the future trends of GRSG populations. To ensure BLM management actions are effective and based on the best available science, the National Policy Team created a NTT in August 2011. The BLM's objective for chartering this planning strategy effort was to develop new or revised regulatory mechanisms, through RMPs, to conserve and restore GRSG and its habitat on BLM-administered lands on a range-wide basis over the long term. Conservation measures included in Alternative B focus primarily on GRSG PHMA and include a 3 percent disturbance cap in PHMA. PHMA have the highest conservation value to maintaining or increasing GRSG populations.

2.8.4 Alternative C

During scoping for the Northwest Colorado GRSG LUPA/EIS, individuals and conservation groups submitted management direction recommendations for protection and conservation of GRSG and its habitat. The recommendations, in conjunction with resource allocation opportunities and internal sub-regional BLM input, were reviewed in order to develop BLM management direction for GRSG under Alternative C. Conservation measures in Alternative C are mostly focused on ADH (PHMA, GHMA, and LCHMA). These areas have been identified by CPW in coordination with respective BLM offices. Conservation measures included in Alternative C would include a 3 percent cap on disturbance in ADH.

2.8.5 Alternative D

Alternative D is the Northwest Colorado Sub-region's adjustments alternative, which emphasizes balancing resources and resource use among competing human interests, land uses, and the conservation of natural and cultural resource values, while sustaining and enhancing ecological integrity across the

landscape, including plant, wildlife, and fish habitat. This alternative incorporates adjustments to the NTT report (NTT 2011) to provide a balanced level of protection, restoration, enhancement, and use of resources and services to meet ongoing programs and land uses. Anthropogenic surface disturbance would be managed not to exceed 5 percent in ecological sites that support sagebrush within PHMA (**Figure 2-1** in **Appendix A**, Figures). Under Alternative D, the WRFO Reclamation Plan (Appendix G in the Draft LUPA, Surface Reclamation Plan) would be followed for reclamation of lands to go back into rotation under the disturbance caps.

2.9 Summary Comparison of Proposed Plan Amendment and Draft Alternatives

This section summarizes and compares Alternatives A through D and the BLM and Forest Service Proposed LUPAs considered in the Final EIS. Combined with the appendices and maps, **Table 2.6** provides the differences among the alternatives relative to what they establish and where they occur. The table compares the differences with the most potential to affect resources among the alternatives.

Table 2.6
Comparative Summary of Allocation Decisions of the Proposed Land Use Plan Amendment and Draft Alternatives (Acres)

Resource or Resource Use	Alt A	Alt B	Alt C	Alt D	BLM Proposed LUPA	Forest Service Proposed LUPA
Resources						
GRSG Habitat Areas (BLM/Forest Service surface and federal mineral estate, including coal)		***Figure 1-4***	***Figure 1-4***	***Figure 1-4***	***Figure 1-4***	***Figure 1-4***
Priority Habitat Management Areas (PHMA)	0	1,571,900	1,571,900	1,571,900	1,571,900	5,000
General Habitat Management Areas (GHMA)	0	1,119,800	1,119,800	1,119,800	1,119,800	15,000
Linkage/Connectivity Habitat Management Area (LCHMA)	0	181,900	181,900	181,900	181,900	0
Resource Uses						
Livestock Grazing	***Figure 2-2***	***Figure 2-2***	***Figure 2-3***	***Figure 2-2***	***Figure 2-2***	***Figure 2-2***
Acres closed to all classes of livestock grazing (acres) (including outlying areas)	0	0	1,751,600	0	0	0
Comprehensive Travel and Transportation Management						
Open to cross-country OHV travel	202,600	202,600	202,600	202,600	202,600	0
Closed to OHV travel	52,600	52,600	52,600	52,600	52,600	0

Table 2.6
Comparative Summary of Allocation Decisions of the Proposed Land Use Plan Amendment and Draft Alternatives (Acres)

Resource or Resource Use	Alt A	Alt B	Alt C	Alt D	BLM Proposed LUPA	Forest Service Proposed LUPA
Lands and Realty	***Figure 2-4***	***Figure 2-5***	***Figure 2-6***	***Figure 2-7***	***Figure 2-9***	***Figure 2-9***
ROW exclusion areas	24,200	909,900	1,719,900	0	24,200	0
ROW avoidance areas	127,600	0	0	930,500	1,571,000	20,000
ROW avoidance areas for large transmission lines (greater than 230 kilovolts)				***Figure 2-8***	***Figure 2-8***	
	0	0	0	68,000	68,000	0
ROW exclusion areas for large transmission lines (greater than 230 kilovolts)	0	0	0	881,000	881,000	0
Recommend for withdrawal (federal minerals in PHMA)	0	1,576,900	1,576,900	0	0	0
Coal						
Unsuitable for surface mining and operations	1,670,800	1,571,900	1,571,900	criteria applied to 1,571,900 acres	criteria applied to 1,571,900 acres	criteria applied to 5,000 acres
Fluid Mineral Leasing[1]	***Figure 2-10***	***Figure 2-11***	***Figure 2-12***	***Figure 2-10***	***Figure 2-13***	***Figure 2-13***
Closed to fluid mineral leasing	100,200	1,347,400	2,473,000	100,200	224,200	0
Open to leasing subject to No Surface Occupancy (NSO)—BLM surface/federal minerals	***Figure 2-14***	***Figure 2-14***	***Figure 2-14***	***Figure 2-15***	***Figure 2-16***	***Figure 2-16***
	350,300	350,300	350,300	1,347,400	1,185,400	5,000
Locatable Minerals, Mineral Materials, and Nonenergy Solid Leasable Minerals						
Closed to mineral materials sales	***Figure 2-17***	***Figure 2-18***	***Figure 2-18***	***Figure 2-17***	***Figure 2-18***	***Figure 2-18***
	104,200	926,800	926,800	200	1,571,900	5,000
Closed to nonenergy mineral leasing	***Figure 2-19***	***Figure 2-20***	***Figure 2-20***	***Figure 2-19***	***Figure 2-20***	***Figure 2-20***
	11,200	926,800	926,800	11,200	1,571,900	5,000
Special Designations						
Areas of Critical Environmental Concern	***Figure 2-21***	***Figure 2-21***	***Figure 2-22***	***Figure 2-21***	***Figure 2-21***	***Figure 2-21***
16 Existing BLM ACECs	33,200	33,200	33,200	33,200	33,200	33,200
GRSG Habitat ACEC/Zoological Area (all PHMA)	0	0	912,700	0	0	0

Source: BLM 2013a

[1] Decisions for leasable fluid minerals also apply to oil shale and uranium.

2.10 DETAILED DESCRIPTION OF ALTERNATIVES

2.10.1 How to Read Table 2-7 and 2-8

Table 2.7 and **Table 2.8** depict the range of alternatives. The following describes how **Table 2.7** and **Table 2.8** are written and formatted to show the LUP decisions proposed for each alternative.

In accordance with Appendix C of the BLM's *Land Use Planning Handbook* (H-1601-1), LUP and LUPA decisions are broad-scale decisions that guide future land management actions and subsequent site-specific implementation decisions (BLM 2005). LUP decisions fall into two categories, which establish the base structure for desired outcomes (goals and objectives), and allowable uses and actions to achieve outcomes.

- Goals are broad statements of desired outcomes that usually are not quantifiable.
- Objectives identify specific desired outcomes for resources. They may be quantifiable and measurable and may have established timeframes for achievement, as appropriate.
- Allowable uses identify uses, or allocations, that are allowable, restricted, or prohibited on BLM-administered lands and mineral estate.
- Actions identify measures or criteria to achieve desired objectives, including actions to maintain, restore, or improve land health.

Stipulations (NSO and CSU, which fall under the allowable uses category) are also applied to surface-disturbing activities to achieve desired outcomes (i.e., objectives).

In general, only those resources and resource uses that have been identified as planning issues have notable differences between the alternatives.

Actions that are applicable to all alternatives are shown in one cell across a row. These particular objectives and actions would be implemented regardless of which alternative is ultimately selected.

Actions that are applicable to more than one but not all alternatives are indicated by either combining cells for the same alternatives, or by denoting those objectives or actions as the "same as Alternative A," for example.

In some cells, "No Similar Action" is used to indicate that there is no similar goal, objective or action to the other alternatives, or that the similar goal, objective or action is reflected in another management action in the alternative.

Table 2.7
Description of Alternative A

(PHMA) = Priority Habitat Management Areas, (GHMA) = General Habitat Management Areas, (LCHMA) = Linkage/Connectivity Habitat Management Areas, (ADH) = All Designated Habitat

NTT No.	Program Area	Alternative A (No Action / Current Management)
		Objective: No similar objective.
Travel and Transportation		**Objective: No similar objective.**
1	Travel	**Colorado River Valley RMP:** Designate OHV area travel as follows: • Open: 294,300 acres • Limited to existing routes: 38,000 acres • Limited to existing routes May 1 to November 30: 4,300 acres • Limited to designated routes: 123,000 acres • Closed: 44,000 acres **Grand Junction RMP:** Assign off-road vehicle designations to all public land as follows: • Open (Intensive): 12,500 acres • Open to cross-country travel: 445,400 acres • Closed: 35,300 acres • Limited to designated roads: 225,500 acres (includes 5,500 acres with seasonal limitations) • Limited to existing roads and trails: 342,700 acres (includes 108,000 acres with seasonal limitations) **Kremmling RMP:** Designate OHV-area travel as follows: • Open: 307,300 acres • Limited to Existing Routes: 7,300 acres • Limited to Designated Routes: 54,500 acres • Closed: 8,700 acres **Little Snake RMP:** Travel Management Areas have been designated as open, limited, or closed to vehicle use. • Open: 19,710 acres • Limited to Existing Routes: 992,780 acres • Limited to Designated Routes: 199,790 acres • Closed: 124,620 acres

Table 2.7
Description of Alternative A

(PHMA) = Priority Habitat Management Areas, (GHMA) = General Habitat Management Areas, (LCHMA) = Linkage/Connectivity Habitat Management Areas, (ADH) = All Designated Habitat

NTT No.	Program Area	Alternative A (No Action / Current Management)
		Roan Plateau RMP: The Roan Plateau Area TMA delineation allows *muscle-powered* (i.e., foot, ski, horse, stock) travel cross-country year-round. Mechanized (i.e., wheeled conveyance) travel in the Roan Plateau Area TMA is limited to designated routes year-round as signed or identified on maps. **White River RMP:** No areas will be designated as open to OHV use at this time. Winter snowmobile use will remain open, except within the Moosehead road closure area, Oak Ridge State Wildlife Area, and the six WSAs. Until a Travel Management Plan is completed, motorized vehicles will be limited to existing roads, ways, and trails on most of the public lands in the Resource Area from October 1 to April 30 each year (see Map 2-22 [of the White River RMP]). Motorized vehicle travel will be limited to existing roads, ways, and trails all year in identified fragile soil areas, the black footed ferret reintroduction areas, the Texas-Missouri-Evacuation Creek cultural resource area, and in areas with potential habitat for threatened and endangered or sensitive plant species. Motorized vehicle use will be limited to designated roads and, trails in: ACECs, in order to protect sensitive resources (see Maps 2-23A through 2-23F [of the White River RMP]); the Indian Valley/Deep Channel area, to comply with a court ruling (see Map 2-24 [of the White River RMP]); and the Canyon Pintado National Historic District, in order to protect fragile cultural resources (see Map 2-25 [of the White River RMP]). The Cow Creek/Timber Gulch/Hay Gulch areas (7,390 acres) will be closed to motorized vehicle use from August 15 through November 30 each year in order to establish nonmotorized quality hunting areas. All six WSAs are designated as closed until time that congress either designates them as wilderness or releases them for multiple uses. (p2-44). **Routt National Forest:** (ADH) The 2007 Motor Vehicle Use Map limits motorized travel to designated roads and motorized trails. Additional Forest Plan Standards include:

Table 2.7
Description of Alternative A

(PHMA) = Priority Habitat Management Areas, (GHMA) = General Habitat Management Areas, (LCHMA) = Linkage/Connectivity Habitat Management Areas, (ADH) = All Designated Habitat

NTT No.	Program Area	Alternative A (No Action / Current Management)
		• Limit roads and other disturbed sites to the minimum feasible number, width, and total length consistent with the purpose of specific operations, local topography, and climate (Forestwide Soils Standard, p. 1-6). • Prohibit motorized use with wheeled vehicles on lands outside designated travel ways unless a forest order indicates that such use is specifically allowed (Forestwide Infrastructure – Travelways Standard 4). Prohibit motorized access from private land where access for the general public is not available, except by special permit (Forestwide Infrastructure – Travelways Standard 6, p. 1-23).
2	Travel	**Colorado River Valley RMP:** Allowable Use: STIPULATION GS-TL-3: *GRSG Winter and Nesting Habitat.* Prohibit surface occupancy and surface-disturbing activities during certain timeframes in GRSG crucial winter habitat and nesting habitat (includes GRSG). GRSG nesting habitat is described as sagebrush stands with sagebrush plants between 30 and 100 centimeters (approximately 12 and 40 inches) in height and a mean canopy cover between 15 and 40 percent within a 2-mile radius of an active lek. Winter habitat: December 16 to March 15. Nesting habitat: March 1 to June 30. **Grand Junction RMP:** Manage 35,300 acres as *closed* to OHV use: • Palisade municipal watershed • Whitewater Hill Sensitive Plant Study Site • Pyramid Rock ACEC **Kremmling RMP:** Designate OHV-area travel as follows: • Open: 307,300 acres • Limited to Existing Routes: 7,300 acres • Limited to Designated Routes: 54,500 acres • Closed: 8,700 acres.

Table 2.7
Description of Alternative A

(PHMA) = Priority Habitat Management Areas, (GHMA) = General Habitat Management Areas, (LCHMA) = Linkage/Connectivity Habitat Management Areas, (ADH) = All Designated Habitat

NTT No.	Program Area	Alternative A (No Action / Current Management)
		Implement the following seasonal travel closures: Prohibit motorized travel from April 1 to June 1: • Grouse Mountain Road No. 2758. Prohibit motorized travel from April 15 to June 1: • Dice Hill Road No. 2750; • Black Mountain Access Road No. 2757; • Smith Mesa Road No. 2759; • Kinney Creek Road No. 2755; • Strawberry Road No. 2751; • Hurd Peak Road No. 2765; • Buffalo Peak Access Road No. 2507 and No. 2508; • Independence Mountain Access Roads No. 2503 and No. 2504; • Bull Mountain Road No. 2505; and • Owl Mountain Road No. 2502 and No. 2506. Prohibit motorized travel from Labor Day to June 1: • Smith Mesa Lower Mainline Road No. 2762; • McQueary Creek Road No. 2756; and, • Kinney Creek Spur Roads. Prohibit motorized travel from June 1 to August 1: • Hebron Slough: Closed to all motorized vehicles (in order to protect nesting waterfowl). Prohibit motorized travel from June 1 to Labor Day: • Radium Hot Springs Access Road.

Table 2.7
Description of Alternative A

(PHMA) = Priority Habitat Management Areas, (GHMA) = General Habitat Management Areas, (LCHMA) = Linkage/Connectivity Habitat Management Areas, (ADH) = All Designated Habitat

NTT No.	Program Area	Alternative A (No Action / Current Management)
		Prohibit motorized travel from August 1 to July 1: • Hebron Slough: motorized vehicles Limited to Designated Roads and Trails. (Exception: Snowmobiles operating on snow.) Prohibit motorized travel from October 1 to June 1: • Three Mile Creek Road No. 2510 (Exception: Snowmobiles operating on snow). Prohibit motorized travel from December 1 to April 1: • Inspiration Point Flats Road and Jeep Trail; and • Pumphouse Recreation Site Access Road. Prohibit motorized travel year-long: • Sheriff Creek Road No. 2764; • Parson's Draw Road No. 2513; • Mitchell Placer Road No. 2511; and • Owl Mountain Spur Roads. Other: • Spruce Creek Road No. 2767 – Prohibit motorized travel from Labor Day to June 1. • Spruce Creek Spur Roads No. 2770 and 2771 – Prohibit motorized travel from Labor Day to June 1. • Wolford Mountain Single Track – Prohibit motorized travel from September 15 to June 1 • Wolford Mountain Travel Management Area – Prohibit motorized travel from December 16 to April 14. **Little Snake RMP:** To prevent disturbing up to 75 percent of nesting birds, between March 1 and June 30, GRSG nesting and early brood-rearing habitat (Map 5 [of the Little Snake RMP]) will be stipulated as CSU for oil and gas operations and avoidance areas for other surface-disturbing activities within a 4-mile radius of the perimeter of a lek. All surface-disturbing activities will avoid only nesting and early brood-rearing habitat within the 4-mile radius of the lek during this time period.

Table 2.7
Description of Alternative A

(PHMA) = Priority Habitat Management Areas, (GHMA) = General Habitat Management Areas, (LCHMA) = Linkage/Connectivity Habitat Management Areas, (ADH) = All Designated Habitat

NTT No.	Program Area	Alternative A (No Action / Current Management)
		Roan Plateau RMP: Prevent the need for listing of proposed, candidate, and sensitive species under the ESA and improve the condition of special status species and its habitats to a point where their special status recognition is no longer warranted. Promote recovery of special status species plants that may become listed. **White River RMP:** Vehicular access by the public on important wildlife habitats and/or during sensitive functional use periods (e.g., big game severe winter range, critical summer use areas, raptor nesting areas, and GRSG reproductive habitats) would be subject to restrictions as directed by the Area Manager. Use of restricted road segments by authorized personnel (e.g., BLM personnel, law enforcement, and permitted land users) may be allowed for administrative and operational purposes. Methods used to restrict vehicular access may include: installing lockable gates, barricades or other forms of deterrents, signing, or reclaiming and abandoning roads or trails no longer necessary for management, or other methods prescribed by the Area Manager. (COA pB-16). **Routt National Forest:** (ADH) Manage motorized use by seasonal use restriction if 'use causes unacceptable wildlife conflict or habitat degradation' (Forestwide Infrastructure – Travelways Guideline 3b, p. 1-23). California Park Road, National Forest Service Road 150, is seasonally closed for wildlife May 1 to July 1, and areas of designated elk winter range, including those that have PHMA or GHMA, are seasonally closed to motor vehicles from December 15 to April 15.
3	Travel	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP:** Travel Management route designation is being completed as a part of the RMP revision. **Little Snake RMP:** Colorado State BLM policy requires that all areas in limited Travel Management areas have completed Transportation Plans within 5 years of the completion of the ROD. **Roan Plateau RMP:** Generate and maintain a travel management plan to minimize disturbance and redundant routes. **White River RMP:** A comprehensive Travel Management Plan will be initiated upon approval.

Table 2.7
Description of Alternative A

(PHMA) = Priority Habitat Management Areas, (GHMA) = General Habitat Management Areas, (LCHMA) = Linkage/Connectivity Habitat Management Areas, (ADH) = All Designated Habitat

NTT No.	Program Area	Alternative A (No Action / Current Management)
		Routt National Forest: Activity level plans are already completed in ADH.
4	Travel	**Colorado River Valley RMP:** Grant administrative use authorizations on a case-by-case basis with approval from the BLM Authorized Officer. For all authorizations that allow off-route motorized/mechanized travel, specify the following: what type of use is allowed and for what purpose, times, dates or seasons of access; and where motorized/mechanized vehicle travel off designated routes is allowed. Administrative routes are limited to authorized users (typically motorized access). These are existing routes that lead to developments that have an administrative purpose, where the BLM or a permitted user must have access for regular maintenance or operation. **Grand Junction RMP:** No similar action. **Kremmling RMP:** Prohibit motorized/mechanized travel off designated routes in Limited and Closed areas, with the following exceptions and supplementary stipulations: • BLM authorization for administrative use (such as accessing private land; accessing minerals/energy sites; administering grazing allotments; or conducting maintenance or installation of range improvements, habitat treatments, trail construction, communication sites, and reservoirs). • BLM authorization to exercise valid existing rights. **Little Snake RMP:** Areas have been designated as open, limited, or closed to vehicle use. **Roan Plateau RMP:** Additional routes authorized as part of permitted activities would generally be for administrative access only in order to reduce impacts to wildlife and habitat fragmentation, but may be open to limited use by recreationists, or for other resource management purposes. **White River RMP:** No similar action. **Routt National Forest:** No similar action.

Table 2.7
Description of Alternative A

(PHMA) = Priority Habitat Management Areas, (GHMA) = General Habitat Management Areas, (LCHMA) = Linkage/Connectivity Habitat Management Areas, (ADH) = All Designated Habitat

NTT No.	Program Area	Alternative A (No Action / Current Management)
5	Travel	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, White River RMP:** No similar action. **Routt National Forest:** Allow motorized use on new or designated travel ways unless a documented decision shows that: a) Motorized use conflicts with the purpose for which the travel ways were constructed; b) Motorized use is incompatible with the ROS class; c) Travel ways are located in areas closed to motorized use and are not designated routes; d) Motorized use creates user conflicts that result in unsafe conditions unrelated to weather; e) Physical characteristics of travel ways preclude any form of motorized use; f) Travel ways do not serve an existing or identified future public need; g) Financing is not available for maintenance necessary to protect resources (Forestwide Infrastructure – Travelways Standard 2, p. 1-23). Consider developing new trail systems that expand the range of recreation opportunities, provide for user safety, and disperse existing use into different areas (Infrastructure Guideline, p. 1-23). Obliterate, revegetate, and slope to drain those system travel ways which are no longer needed to achieve management objectives or where resource damage cannot be mitigated (Forestwide Infrastructure – Travelways Guideline 1, p.1-23).
6	Travel	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Roan Plateau RMP:** No similar action. **Little Snake RMP:** Develop an access/transportation plan that: • Enables access where needed • Limits points of access to reduce the number of redundant roads and trails • Reroutes, rehabilitates, or eliminates existing roads and trails that are causing damage to cultural or natural resources • Reroutes roads and trails that are landlocked by private parcels • Restricts access to meet resource objectives (e.g., seasonal road closures and gating)

Table 2.7
Description of Alternative A

(PHMA) = Priority Habitat Management Areas, (GHMA) = General Habitat Management Areas, (LCHMA) = Linkage/Connectivity Habitat Management Areas, (ADH) = All Designated Habitat

NTT No.	Program Area	Alternative A (No Action / Current Management)
		• Concentrates stream and riparian crossings • Reduces habitat fragmentation • Considers new construction and reconstruction of roads and trails. Actively pursue access to specific parcels to improve access to public lands for land management purposes. **White River RMP:** As proposals for construction of new roads or trails are received, NEPA documentation will analyze impacts and determine appropriate designations and the potential for replacement of other existing roads. Criteria will be developed as part of the travel management planning process to aid in the determination for changing a particular area's road and trail designations, or adding/ closing roads and trails. Base road design criteria and standards on road management objectives such as traffic requirements of the proposed activity and the overall transportation plan, economic analysis, safety requirements, resource objectives, and minimizing damage to the environment. **Routt National Forest:** (ADH) The 2007 Motor Vehicle Use Map limits motorized travel to designated roads and motorized trails. Additional Forest Plan Standards include: Negotiate surface management for private oil and gas minerals with the owner and operator to be as close as possible to the standards used for federal minerals; Prohibiting such development is not an alternative (Forestwide Mineral and Energy – Reserved and Outstanding Rights Standard 1, p.1-6). Do not retain facilities acquired from land donation, exchange, or purchase unless they serve a definite future purpose and funding is available for their maintenance (Forestwide Infrastructure – Facilities Standard 1, p.1-22). Prohibit motorized use with wheeled vehicles on lands outside designated travel ways unless a forest order indicates that such use is specifically allowed (Forestwide Infrastructure – Travelways Standard 4, p. 1-23).Prohibit motorized access from private land where access for the general public is not available, except by special permit (Forestwide Infrastructure – Travelways Standard 4, p.1-23).

Table 2.7
Description of Alternative A

(PHMA) = Priority Habitat Management Areas, (GHMA) = General Habitat Management Areas, (LCHMA) = Linkage/Connectivity Habitat Management Areas, (ADH) = All Designated Habitat

NTT No.	Program Area	Alternative A (No Action / Current Management)
		Manage motorized use by seasonal use restriction if: b. Use causes unacceptable wildlife conflict or habitat degradation (Forestwide Infrastructure – Travelways Guideline 3b, p.1-23). Retain existing access rights, where needed, to meet Forest Plan goals and objectives (Forestwide Real Estate-Rights-of-way Standard 1, p.1-25).
7	Travel	**Colorado River Valley RMP, Grand Junction RMP, Roan Plateau:** No similar action. **Kremmling RMP:** Re-seed or plant disturbed areas with desirable vegetation when the native plant community cannot recover and occupy the site sufficiently. **Little Snake RMP:** Use early and effective reclamation techniques to allow GRSG habitat to be reestablished. **White River RMP:** Adapted forms of succulent forbs should be included in seed mixes applied to surface disturbances on GRSG brood ranges. Seed mixes will be subject to reseeding conditions established for each GRA and identified in Appendix B (of the White River RMP). Comparable or superior varieties of sagebrush should be established within occupied GRSG ranges in those instances where sagebrush conversion or removal has exceeded 500 acres. The extent and level of reestablishment effort will not exceed 20 percent of converted acreage at mature canopy densities of ≤15 percent. **Routt National Forest:** (ADH) Reclaim roads and other disturbed sites when use ends, as needed, to prevent resource damage (Forestwide Soils Standard 4, p.1-6). Obliterate, revegetate, and slope to drain those system travel ways which are no longer needed to achieve management objectives or where resource damage cannot be mitigated (Infrastructure Guideline, p.1-23). Vegetative restoration projects may be needed where human activities have altered natural ecosystems, and there is no reasonable expectation of natural revegetation; Use native species in restoration efforts; Where nonnative species must be used, select plants based on the likelihood that they will not persist beyond the rehabilitation period

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		(Forestwide Wilderness Guideline 6, p.1-22). (ADH) Use genetically local (at the subsection level), native plant species for revegetation efforts where technically and economically feasible; Use weed-free seed mixtures; While native perennials are becoming established, nonnative annuals or sterile perennial species may be used to prevent soil erosion (Forestwide Biological Diversity Standard 3, p.1-8).
8	Travel	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Roan Plateau RMP:** No similar action. **Little Snake RMP:** Use early and effective reclamation techniques to allow GRSG habitat to be reestablished. **White River RMP:** Adapted forms of succulent forbs should be included in seed mixes applied to surface disturbances on GRSG brood ranges. Seed mixes will be subject to reseeding conditions established for each GRA and identified in Appendix B (of the White River RMP). Comparable or superior varieties of sagebrush should be established within occupied GRSG ranges in those instances where sagebrush conversion or removal has exceeded 500 acres. The extent and level of reestablishment effort will not exceed 20 percent of converted acreage at mature canopy densities of ≤15 percent. **Routt National Forest:** (ADH) Use genetically local (at the subsection level), native plant species for revegetation efforts where technically and economically feasible; Use weed-free seed mixtures; While native perennials are becoming established, nonnative annuals or sterile perennial species may be used to prevent soil erosion (Forestwide Biological Diversity Standard 3, p.1-8).
Recreation		**Objective: No similar objective.**
9	Recreation	**Colorado River Valley RMP, Grand Junction RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **Kremmling RMP:** Issue SRPs as a discretionary action.

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		Little Snake RMP: (1) SRPs will be considered on a case-by-case basis; (2) Commercial outfitter camps will be considered on a case-by-case basis; (3) Commercial use permits that provide… and protect resources will be authorized. **White River RMP:** SRPs will be issued to qualified commercial guides and outfitters based on need and demand for services. Use limits or allocations will be made based on services provided, prior use history, responsiveness, and proven responsibility of applicants. Allocations may also be used to resolve conflicts, protect resources, or reduce impacts to resources, clients and other public land users.
Lands and Realty Management		**Objective: No similar objective.**
10	Lands/ Realty	**Colorado River Valley RMP:** Allowable Use: STIPULATION GS-NSO-12: *Threatened or Endangered Species.* Prohibit surface occupancy and surface-disturbing activities on habitat areas for those species listed by the federal or state government as endangered or threatened and for federal proposed or candidate species. Habitat areas include occupied habitat and habitat necessary for the maintenance or recovery of the species. **Grand Junction RMP:** Designate approximately 234,900 acres as unsuitable for public utilities. Deny proposals in these zones on the basis that utility project impacts could not be mitigated to prevent undue damage to the resources of concern. Areas of Resource Concern designated as unsuitable include: <u>ACECs:</u> A portion of Badger Wash (685 acres); A portion of The Palisade (1,920 acres); A portion of Pyramid Rock (470 acres); A portion of Rough Canyon (2,560 acres); and Unaweep Seep (80 acres). <u>Soils:</u> Douglas/Baxter Soil Slumps and Plateau Creek Slump.

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		Water Resources Management: Badger Wash Study Area (685 acres); Grand Junction municipal watershed; and Indian Wash Dam. Wildlife: Rough Canyon Threatened and Endangered Species: Bald eagle concentrations areas; Pyramid Rock; and Unaweep Seep. Visual Resource Management (VRM): Juanita Arch; The Goblins; Dolores River Canyon; Gunnison River Corridor; Mt. Garfield Cliffs; Bangs Canyon Area; Sinbad Valley; Granite Creek; Unaweep Canyon Area; Hunter/Garvey Canyons Areas; and Vega Reservoir Viewshed. Cultural Resource Management: Indian Creek; Rough Canyon (1,000 acres); Site 5ME1358; and Ladder Springs. Recreation Resource Management: A portion of Rough Canyon ACEC (2,560 acres); and The Palisade ONA. Developed Recreation Sites: Island Acres; Vega Reservoir; and Highline Reservoir. Wilderness Management: Sewemup Mesa WSA Encourage use of existing corridors or upgrading of existing facilities in sensitive and suitable zones **Kremmling RMP:** No similar action.

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		Little Snake RMP: ROW exclusion areas are limited to existing WSAs, Limestone Ridge area, Irish Canyon ACEC, and parts of Vermillion Basin area. Identify and establish major utility and transportation corridors within the planning area. "Designated" corridors limited to Section 368 corridors from 2009 Westwide Energy Corridor EIS. **Roan Plateau RMP:** STIPULATION GS-NSO-ROAN-24, *Threatened, Endangered, or Candidate Species Habitat* – In order to protect occupied habitat and immediately adjacent potential habitat crucial for the maintenance or recovery of species listed under the ESA or by the State of Colorado as threatened or endangered (including proposed or candidate species under the ESA), no ground-disturbing activities will be authorized within occupied habitat or immediately adjacent potential habitat necessary for maintenance or recovery of the species. Allow utility corridors within 50 feet of BLM designated and administrative travel routes except where such placement would negatively impact other important resource values. In such areas, utilities would be placed within the existing roadway or realigned to avoid important resource values. STIPULATION GS-CSU-ROAN-13: *Parachute Creek High Value Watershed* – Total unreclaimed surface will be limited to 350 acres (1 percent of planning area). Limit surface disturbance to the minimum area necessary by avoiding development of roads, pipelines, and well pads on steep slopes; minimize the potential for surface disturbance through careful planning; grouping facilities to the extent possible; and sharing ROWs such as burying pipelines along roadways. **White River RMP:** Land use authorizations will be denied in exclusion areas, with the exception of short-term land use permits involving no development, and projects that are consistent with management objectives for the area. **Routt National Forest:** Retain existing access rights, where needed, to meet Forest Plan goals and objectives (Forestwide Real Estate and Rights-of-Way Standard 1, p.1-25).

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		Conserve existing and designated inventoried ROWs needed for implementation of the Forest Plan (Forestwide Utility Corridors Standard 1, p.1-25). Authorize proposals to utilize designated utility corridors without alternative route analysis, subject to site-specific environmental analysis (Forestwide Utility Corridors Standard 2, p.1-25) Do not authorize conflicting uses or activities within transportation and utility corridors (Forestwide Utility Corridors Standard 3, p.1-25). Bury electrical utility lines of 33 kilovolts or less, and telephone lines, unless…(Forestwide Utility Corridors Standard 4, p.1-25). Consolidate occupancy of transportation or utility corridors and sites wherever possible and compatible (Forestwide Utility Corridors Guideline 1, p.1-26). Utilize current utility corridors fully. Provide corridors in the future in areas that meet the needs of society while protecting the integrity of the environment (Forestwide Utility Corridors Guideline 4, p.1-26). ROWs: Consolidate occupancy of transportation or utility corridors and sites wherever possible and compatible (Utility Corridors Guideline, p. 1-26). Utilize current utility corridors fully; Provide corridors in the future in areas which meet the needs of society while protecting the integrity of the environment (Utility Corridors Guideline, p. 1-26).
		Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP: No similar action. **White River RMP:** New construction or modification of above ground electric transmission facilities will be required to incorporate the most current raptor protection guidelines. Where appropriate, conductor separation methods will be employed rather than features that discourage perching.

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		Routt National Forest: Conserve existing and designated inventoried ROWs needed for implementation of the Forest Plan (Forestwide Utility Corridors Standard 1, page 1-25). Authorize proposals to utilize designated utility corridors without alternative route analysis, subject to site-specific environmental analysis (Forestwide Utility Corridors Standard 2, page 1-25) Do not authorize conflicting uses or activities within transportation and utility corridors (Forestwide Utility Corridors Standard 3, page 1-25). Bury electrical utility lines of 33 kilovolts or less, and telephone lines, unless…(Forestwide Utility Corridors Standard 4, page 1-25).
		Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Roan Plateau RMP: No similar action. **Little Snake RMP:** Use early and effective reclamation techniques to allow GRSG habitat to be reestablished. **White River RMP:** All disturbed sites shall be promptly reclaimed to the satisfaction of the Area Manager. Reclamation should be implemented concurrent with construction and site operations to the fullest extent possible. Final reclamation actions shall be initiated within 6 months of the termination of operations unless otherwise approved in writing by the Authorized Officer. The goal for rehabilitation of any disturbed area shall be the permanent restoration of original site conditions and productive capability. **Routt National Forest:** Do not retain facilities acquired from land donation, exchange, or purchase unless they serve a definite future purpose and funding is available for their maintenance (Forestwide Infrastructure – Facilities Standard 1, p.1-22).
11	Lands/ Realty	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau:** No similar action.

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		White River RMP: New construction or modification of above ground electric transmission facilities will be required to incorporate the most current raptor protection guidelines. Where appropriate, conductor separation methods will be employed rather than features that discourage perching. **Routt National Forest:** Conserve existing and designated inventoried ROWs needed for implementation of the Forest Plan (Forestwide Utility Corridors Standard 1, page 1-25). Authorize proposals to utilize designated utility corridors without alternative route analysis, subject to site-specific environmental analysis (Forestwide Utility Corridors Standard 2, page 1-25). Do not authorize conflicting uses or activities within transportation and utility corridors (Forestwide Utility Corridors Standard 3, page 1-25). Bury electrical utility lines of 33 kilovolts or less, and telephone lines, unless…(Forestwide Utility Corridors Standard 4, page 1-25).
12	Lands/ Realty	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Roan Plateau RMP:** No similar action. **Little Snake RMP:** Use early and effective reclamation techniques to allow GRSG habitat to be reestablished. **White River RMP:** All disturbed sites shall be promptly reclaimed to the satisfaction of the Area Manager. Reclamation should be implemented concurrent with construction and site operations to the fullest extent possible. Final reclamation actions shall be initiated within 6 months of the termination of operations unless otherwise approved in writing by the Authorized Officer. The goal for rehabilitation of any disturbed area shall be the permanent restoration of original site conditions and productive capability.

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		Routt National Forest: Do not retain facilities acquired from land donation, exchange, or purchase unless they serve a definite future purpose and funding is available for their maintenance (Forestwide Infrastructure – Facilities Standard 1, p.1-22).
13	Lands/ Realty	**Colorado River Valley RMP:** Allowable Use STIPULATION GS-NSO-12: *Threatened or Endangered Species.* Prohibit surface occupancy and surface-disturbing activities on habitat areas for those species listed by the federal or state government as endangered or threatened and for federal proposed or candidate species. Habitat areas include occupied habitat and habitat necessary for the maintenance or recovery of the species. **Grand Junction RMP:** Designate 441,400 acres as sensitive to public utility development. Design utility routes and projects in these zones to protect resources of concern from undue degradation (note: corresponding stipulations [i.e., NSO, CSU, TL] are found in Appendix B [of the Grand Junction RMP]): <u>ACECs:</u> A portion of Badger Wash (1,230 acres); and a portion of The Palisade (17,258 acres). <u>Soils:</u> Steep slopes <u>Water Resources Management:</u> Palisade municipal watershed; Jerry Creek Reservoirs; and Perennial streams. <u>Wildlife:</u> Deer and elk winter range; Bighorn sheep winter range; and Elk calving areas. <u>Threatened and Endangered Species:</u> Badger Wash uplands; Colorado cutthroat trout; *Cryptantha eleta* site; Peregrine falcon habitat; Sensitive plant species; and Colorado hookless cactus (formerly known as Uinta Basin hookless cactus).

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		Little Book Cliffs Wild Horse Range (LBCWHR): Horse Range; LBCWHR winter range; and LBCWHR foaling area. VRM: Bang's Canyon area (25,920 acres); Face of the Book Cliffs; Grand Mesa slopes; Granite Creek (12,760 acres); Gunnison River Corridor (9,040 acres); Highway corridors; Hunter/Garvey Canyons area (11,400 acres); South Shale Ridge; Sinbad Valley (7,490 acres); and Unaweep Canyon area (6,400 acres). Cultural Resource Management: Transect 7 Recreation Resource Management: Little Park Road; Pine Mountain roadside; and the Palisade ONA. **Kremmling RMP:** No similar action. **Little Snake RMP:** NSO applied to 0.6-mile radius of a lek. Exceptions established in Appendix B (of the Little Snake RMP). To prevent disturbing up to 75 percent of nesting birds, between March 1 and June 30, GRSG nesting and early brood-rearing habitat (Map 5 [of the Little Snake RMP]) will be stipulated as CSU for oil and gas operations and avoidance areas for other surface-disturbing activities within a 4-mile radius of the perimeter of a lek. All surface-disturbing activities will avoid only nesting and early brood-rearing habitat within the 4-mile radius of the lek during this time period. **Roan Plateau RMP:** No similar action. **White River RMP:** Development will be allowed in avoidance areas under these same conditions [subject to the use of COAs (see Appendix B [of the White River RMP]), all applicable surface use stipulations listed in Appendix A [of the White River RMP], and any site-specific stipulations identified through the NEPA process] where no feasible alternative can be identified.

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		GRSG leks would be classified as avoidance areas for the permitting of land use authorizations. **Routt National Forest:** There is no direction in the Forest Plan related to this item.
14	Lands/ Realty	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP:** No similar action. **White River RMP:** New construction or modification of above ground electric transmission facilities will be required to incorporate the most current raptor protection guidelines. Where appropriate, conductor separation methods will be employed rather than features that discourage perching. **Routt National Forest:** Conserve existing and designated inventoried ROWs needed for implementation of the Forest Plan (Forestwide Utility Corridors Standard 1, page 1-25). Authorize proposals to utilize designated utility corridors without alternative route analysis, subject to site-specific environmental analysis (Forestwide Utility Corridors Standard 2, page 1-25). Do not authorize conflicting uses or activities within transportation and utility corridors (Forestwide Utility Corridors Standard 3, page 1-25). Bury electrical utility lines of 33 kilovolts or less, and telephone lines, unless…(Forestwide Utility Corridors Standard 4, page 1-25).
15	Lands/ Realty	**Colorado River Valley RMP:** No similar action. **Grand Junction RMP:** Consider land exchanges in retention areas on a case-by-case basis in order to meet resource objectives if the exchange is in the public interest and would: 1) improve management efficiency; or 2) result in the acquisition of private property with high resource values. **Kremmling RMP:** Standard stipulation #1, Appendix E-13 (of the Kremmling RMP). **Little Snake RMP:** Additional retention areas can be identified during the life of the RMP for the public good.

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		Disposal allowed on lands within any zone suitable for public purposes and of special importance to local communities, State and/or federal agencies. **Roan Plateau RMP:** Retain lands atop the plateau. **White River RMP:** Category III lands [are] not suitable for disposal of any kind. Category III lands include WSAs and ACECs. Approximately 11,325 acres of public land meet the category I sale criteria under Section 203 of FLPMA. Category I lands are suitable for disposal by any means, including, but not limited to, sale, exchange, or jurisdictional transfer. These lands are listed by legal description in Table 2-15A through 2-15D, Appendix D (of the White River RMP). Approximately 1,282,195 acres of public lands not specifically identified for disposal or retention are designated Category II lands. Category I lands. Proposals for the disposal of Category 1 lands will be considered on a case by case basis. While these parcels may be sold, exchange will be the preferred method of disposal in most cases. Concerns of adjacent owners, current users, and local governments will be considered prior to disposal. An environmental assessment or other appropriate NEPA documentation will be prepared for all such proposals. **Routt National Forest:** In land adjustment activities, give priority to acquiring lands that contain habitat identified by USFWS as necessary for recovery of federally listed threatened and endangered species (Real Estate-Land Adjustments Standard, p. 1-24). In land adjustment activities including land exchange, purchase, disposal, and donation, consider the following: a) Evaluate and balance the overall combination of all resource values and factors including wildlife habitat, fisheries habitat, riparian areas, wetlands, cultural resources, recreation opportunities, scenic value, watershed protection, timber resources, rangelands, public access, better federal land management, and other factors. In all land adjustment activities, consider the important impacts to issues and resources identified during site-specific scoping. b) Consider the effect of land adjustments on sensitive species habitat. Avoid land adjustments which could

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		result in a trend toward federal listing or loss of population viability for any sensitive species. Ownership of sensitive species habitat can be conveyed if conveyance would not result in a trend toward federal listing or adversely impact the population viability of the species or if effects could be mitigated. c) Acquire lands that contain resource values identified during scoping as important in contributing toward national forest system resource management goals and objectives as stated in the Forest Plan. Examples include: wetlands, riparian areas, essential wildlife habitat, threatened or endangered species habitat, sensitive species habitat, significant cultural resources, timber lands, rangelands, or other areas (Real Estate-Land Adjustments Standard, p. 1-24).
16	Lands/ Realty	**Colorado River Valley RMP:** No similar action. **Grand Junction RMP:** Consider acquisition of lands that meet the following criteria: • Private land within areas recommended as suitable for designation as wilderness; • Private land needed for management of Wild and Scenic Rivers; • Potential national or historic trails; • Potential natural or RNAs; • Potential areas for cultural or natural history designation; • Potential ACECs; • Private land within designated wild horse preserves; • Private land with potential for other congressional designations; • Threatened or endangered species habitat areas; • Riparian habitat areas; • Valuable recreation areas; • Wetland areas as defined in Executive Order 11990, dated May 24, 1977; and • Floodplain areas (100-year) as defined in Executive Order 11988, dated May 24, 1977. **Kremmling RMP:** Apply the following criteria when considering land tenure adjustments: • Retain all public lands or interests in land (such as easements) that enhance multiple-use and sustained-yield management; and

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		• Acquire lands or interests in land that complement important resource values and further management objectives. **Little Snake RMP:** Central Zone: Acquisition of lands in the area should be actively sought to protect wildlife habitat, especially GRSG. Central, East and West Zones: Acquisition areas can be identified for the public's interest. **Roan Plateau RMP:** Retain lands on top of the plateau, and acquire in-holdings atop the plateau. Acquisition of inholdings, and other lands with important resource values, would be encouraged or allowed. **White River RMP:** Acquisition of non-BLM lands may be pursued through exchange, purchase or donation, where the acquisition will serve to enhance the BLM's objectives and special emphasis programs. For purchase or donation, acquisitions will generally be limited to inholdings within designated areas. **Routt National Forest:** In land adjustment activities including land exchange, purchase, disposal, and donation, consider the following: c) Acquire lands that contain resource values identified during scoping as important in contributing toward national forest system resource management goals and objectives as stated in the Forest Plan. Examples include: wetlands, riparian areas, essential wildlife habitat, threatened or endangered species habitat, sensitive species habitat, significant cultural resources, timber lands, rangelands, or other areas (Real Estate-Land Adjustments Standard, p. 1-24).
17	Lands/ Realty	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **White River RMP:** BLM lands not withdrawn or segregated from mineral entry under the General Mining Law of 1872 are open to mining claim location that are unavailable for location.

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		Several withdrawals and reserves exist that limit the availability of lands for entry. Of the approximate 1,648,770 acres that could be available for location, 997,450 acres are currently withdrawn or unavailable to some extent. In the current RMP, the coal withdrawal of 1910 closes 366,570 acres to nonmetalliferous minerals only, as does 5,480 acres of Federal Water Reserves, and the oil shale withdrawal closes 625,400 acres to all mining claim location. If the three WSAs that were recommended to be carried forward are designated as wilderness, the Wilderness Act will withdraw those areas from location. This will add 41,250 acres to the lands that are unavailable for location.
18	Lands/ Realty	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **White River RMP:** Recommendations will be made for the revocation of all BLM public land withdrawals which are no longer needed. Recommendations will be made to continue (as is or modify) withdrawals which are still needed for the purposes for which the original withdrawal was made.
Range Management		**Objective: No similar objective.**
19	Range	**Colorado River Valley RMP:** Make adjustments to grazing management (e.g., AUMs, periods of use, allotments, class of livestock, and distribution) based on monitoring. **Grand Junction RMP:** Manage vegetation to meet BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado while taking in to account site potential as determined by ecological site inventories, Range/Ecological Site Descriptions, Soils, completed Land Health Assessments, and site-specific management objectives. Implement changes in livestock use through allotment management plans, grazing use agreements, and terms and conditions on grazing permits for priority allotments based on the current prioritization process and/or land health issues Revise or implement allotment management plans/grazing use agreements to resolve conflicts between grazing and management of soils, riparian, and water resources.

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		Kremmling RMP: Standard Operating Procedure (Required by Colorado Public Land Health Standard #4). **Little Snake RMP:** Identify and initiate restoration and rehabilitation of sagebrush habitat while maintaining a mosaic of canopy cover and seral stages. Special status, threatened and endangered species, and other plants and animals officially designated by the BLM and its habitats are maintained and enhanced by sustaining healthy, native plant and animal communities Guidelines for Livestock Grazing Management A-3, #7, "Natural occurrences...should be combined with livestock management practices to move toward the sustainability of biological diversity across the landscape, including the maintenance, restoration, or enhancement of habitat to promote and assist recovery and conservation of threatened, endangered, or other special status species by helping provide natural vegetation patterns, a mosaic of successional stages, and vegetation corridors thus minimizing habitat fragmentation." **Roan Plateau RMP:** Ensure that Land Health Standards are being met through Land Health assessments, and application of the GSFO (CRVFO) Monitoring Plan. Use a combination of administrative solutions (season of use revisions, livestock exclusion, and stocking level adjustments) and rangeland projects (e.g., fences and ponds) to direct livestock use to meet resource objectives and Land Health Standards. **White River RMP:** Standard Operating Procedure (Required by Colorado Public Land Health Standard #4). **Routt National Forest:** Manage forage for livestock and wildlife based on specific habitat area objectives identified during allotment management plan revision (Management Area Prescription for 5.11, 5.12, 5.13, p. 2-40, p. 2-43, 2-45). Design livestock grazing prescriptions to include achievement of wildlife goals for deer and elk winter range (Management Area Prescription 5.41, p. 2-48).
20	Range	**Colorado River Valley RMP:** Make adjustments to grazing management (e.g., AUMs, periods of use, allotments, class of livestock, and distribution) based on monitoring.

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		Grand Junction RMP: Manage vegetation to meet BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado while taking in to account site potential as determined by ecological site inventories, Range/Ecological Site Descriptions, Soils, completed Land Health Assessments, and site-specific management objectives. Implement changes in livestock use through allotment management plans, grazing use agreements, and terms and conditions on grazing permits for priority allotments based on the current prioritization process and/or land health issues Revise or implement allotment management plans/grazing use agreements to resolve conflicts between grazing and management of soils, riparian, and water resources. **Kremmling RMP:** No similar action. **Little Snake RMP:** Sustain the integrity of the sagebrush biome to maintain viable populations of GRSG...consistent with local conservation plans. Identify and initiate restoration and rehabilitation of sagebrush habitat while maintaining a mosaic of canopy cover and seral stages. **Roan Plateau RMP:** Ensure that Land Health Standards are being met through Land Health surveys, and application of the GSFO Monitoring Plan. Use a combination of administrative solutions (season of use revisions, livestock exclusion, and stocking level adjustments) and rangeland projects (e.g., fences and ponds) to direct livestock use to meet resource objectives and Land Health Standards. **White River RMP:** Monitor, evaluate, and adjust livestock management practices to meet resource objectives. **Routt National Forest:** Develop site-specific vegetation utilization and residue guidelines during rangeland planning, and document them in allotment management plans. In the absence of updated planning or an approved allotment

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<table>
<tr><th>NTT No.</th><th>Program Area</th><th>Alternative A (No Action / Current Management)</th></tr>
<tr><td></td><td></td><td>management plan, apply the utilization and residue guidelines in Tables 1-2 and 1-3 (Range Guideline, p. 1-9).

Table 1-2. Allowable Use Guidelines
<table>
<tr><td>Type of Management</td><td colspan="2">Existing Rangeland Condition</td></tr>
<tr><td></td><td>Satisfactory*</td><td>Unsatisfactory*</td></tr>
<tr><td>Season-long</td><td>30-40%</td><td>0-30%</td></tr>
<tr><td>Deferred rotation</td><td>40-50%</td><td>35-45%</td></tr>
<tr><td>Rest rotation</td><td>45-55%</td><td>35-45%</td></tr>
</table>

Table 1-3. Riparian Vegetation Residue Allowances
Season of Use and Existing Rangeland Condition
• Spring Use Pasture: Satisfactory=4 Inches, Unsatisfactory=6 inches.
• Summer and Fall Use Pasture: Satisfactory=6 Inches and Unsatisfactory=6 Inches

Manage forage for livestock and wildlife based on specific habitat area objectives identified during allotment management plan revision (Management Area Prescription for 5.11, 5.12, 5.13, p. 2-40, p. 2-43, 2-45). Design livestock grazing prescriptions to include achievement of wildlife goals for deer and elk winter range (Management Area Prescription 5.41, p. 2-48).

Ecological Site Descriptions have not been developed for the Routt National Forest and we are not currently using them in NEPA or Allotment Management Plan revisions. The Routt National Forest completes Rangeland Health Assessments based on the R2 Rangeland Analysis and Management Training Guide (US Department of Agriculture, Rocky Mountain Region 1996) in NEPA and Allotment Management Plan revisions.</td></tr>
<tr><td>21</td><td>Range</td><td>Colorado River Valley RMP, Kremmling RMP, Roan Plateau RMP: No similar action.

Grand Junction RMP: Manage vegetation to meet BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado while taking in to account site potential as determined by ecological site inventories, Range/Ecological Site Descriptions, Soils, completed Land Health Assessments, and site-specific</td></tr>
</table>

Table 2.7
Description of Alternative A

(PHMA) = Priority Habitat Management Areas, (GHMA) = General Habitat Management Areas, (LCHMA) = Linkage/Connectivity Habitat Management Areas, (ADH) = All Designated Habitat

NTT No.	Program Area	Alternative A (No Action / Current Management)
		management objectives. Implement changes in livestock use through allotment management plans, grazing use agreements, and terms and conditions on grazing permits for priority allotments based on the current prioritization process and/or land health issues Revise or implement allotment management plans/grazing use agreements to resolve conflicts between grazing and management of soils, riparian, and water resources. **Little Snake RMP:** Establish desired plant communities, in coordination with stakeholders across the LSFO, in a way that focuses on native communities and intact ecosystems while allowing nonnative species, where appropriate, on a case-by-case basis. **White River RMP:** Specific desired plant communities goals for rangelands with grassland, saltbush, greasewood, and sagebrush plant communities are as follows: 1) Manage present plant composition as desired plant communities on all areas classified as: a) the PNC, high seral and healthy mid-seral; b) sagebrush rangelands with a high to mid-seral plant community providing suitable habitat for deer winter range, GRSG, and antelope. 2) Improve the present plant species composition on unhealthy or at risk rangelands to a healthy plant community within 10 years on all areas with a mid-seral and within 20 years on all areas with a low-seral plant community. **Routt National Forest:** Manage forage for livestock and wildlife based on specific habitat area objectives identified during allotment management plan revision (Management Area Prescription for 5.11, 5.12, 5.13, p. 2-40, p. 2-43, 2-45). Design livestock grazing prescriptions to include achievement of wildlife goals for deer and elk winter range (Management Area Prescription 5.41, p. 2-48).

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		Ecological Site Descriptions have not been developed for the Routt National Forest and we are not currently using them in NEPA or Allotment Management Plan revisions. The Routt National Forest completes Rangeland Health Assessments based on the R2 Rangeland Analysis and Management Training Guide (US Department of Agriculture, Rocky Mountain Region 1996) in NEPA and Allotment Management Plan revisions.
22	Range	**Colorado River Valley RMP:** Make adjustments to grazing management (e.g., AUMs, periods of use, allotments, class of livestock, and distribution) based on monitoring. **Grand Junction RMP:** Manage vegetation to meet BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado while taking in to account site potential as determined by ecological site inventories, Range/Ecological Site Descriptions, Soils, completed Land Health Assessments, and site-specific management objectives. Implement changes in livestock use through allotment management plans, grazing use agreements, and terms and conditions on grazing permits for priority allotments based on the current prioritization process and/or land health issues Revise or implement allotment management plans/grazing use agreements to resolve conflicts between grazing and management of soils, riparian, and water resources. **Kremmling RMP:** Common to all – Interpreting Indicators of Rangeland Health Technical Reference 1734-6. **Little Snake RMP:** Overall habitat goals for the sagebrush biome and GRSG established. **Roan Plateau RMP:** Ensure that Land Health Standards are being met through Land Health surveys, and application of the GSFO (CRVFO) Monitoring Plan. Use a combination of administrative solutions (season of use revisions, livestock exclusion, and stocking level adjustments) and rangeland projects (e.g., fences and ponds) to direct livestock use to meet resource objectives and Land Health Standards.

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		White River RMP: Livestock and big game management techniques will be used to retain ~50 percent herbaceous growth by weight through September 15, on GRSG brood and nest habitats. **Routt National Forest:** Manage forage for livestock and wildlife based on specific habitat area objectives identified during allotment management plan revision (Management Area Prescription for 5.11, 5.12, 5.13, p. 2-40, p. 2-43, 2-45). Design livestock grazing prescriptions to include achievement of wildlife goals for deer and elk winter range (Management Area Prescription 5.41, p. 2-48). Ecological Site Descriptions have not been developed for the Routt National Forest and we are not currently using them in NEPA or Allotment Management Plan revisions. The Routt National Forest completes Rangeland Health Assessments based on the R2 Rangeland Analysis and Management Training Guide (US Department of Agriculture, Rocky Mountain Region 1996) in NEPA and Allotment Management Plan revisions.
23	Range	**Colorado River Valley RMP:** Assess vegetation attributes within grazing allotments to ensure that BLM Colorado Standards for Public Land Health and Guidelines for Livestock Grazing Management are met per established protocols and technical references. **Grand Junction RMP:** Manage vegetation to meet BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado while taking in to account site potential as determined by ecological site inventories, Range/Ecological Site Descriptions, Soils, completed Land Health Assessments, and site-specific management objectives. Implement changes in livestock use through allotment management plans, grazing use agreements, and terms and conditions on grazing permits for priority allotments based on the current prioritization process and/or land health issues Revise or implement allotment management plans/grazing use agreements to resolve conflicts between grazing and management of soils, riparian, and water resources. **Kremmling RMP:** No similar action.

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		Little Snake RMP: • Manage for a diversity of seral stages within plant communities. • Restore natural disturbance regimes, such as fire, and vegetation treatments to accomplish biodiversity objectives. • Establish desired plant communities in coordination with stakeholders across the LSFO. • Restore a diversity of seral stages within sagebrush communities. • Maintain large patches of high-quality sagebrush habitats, consistent with the natural range of variability for sagebrush communities in northwest Colorado. **Roan Plateau RMP:** Ensure that Land Health Standards are being met through Land Health surveys, and application of the GSFO Monitoring Plan. Use a combination of administrative solutions (season of use revisions, livestock exclusion, and stocking level adjustments) and rangeland projects (e.g., fences and ponds) to direct livestock use to meet resource objectives and Land Health Standards. **White River RMP:** Acceptable desired plant communities will be managed in an ecological status of high-seral or healthy mid-seral for all rangeland plant communities. An exception may be provided for wildlife habitat -areas where specific cover types are needed. The required cover type in those wildlife habitat areas will be the desired plant communities. The ecological status of a desired plant community in specified wildlife habitat areas could be lower than high seral. In which case, the desired plant communities will be managed, at a minimum, to maintain an at-risk rating (Table 2.6 of Appendix D [of the White River RMP]) and have a stable to improving trend in ecological status. **Routt National Forest:** Develop site-specific vegetation utilization and residue guidelines during rangeland planning, and document them in allotment management plans. In the absence of updated planning or an approved allotment management plan, apply the utilization and residue guidelines in Tables 1-2 and 1-3 (Range Guideline, p. 1-9) as described above.
24	Range	**Colorado River Valley RMP:** Assess vegetation attributes within grazing allotments to ensure that BLM Colorado Standards for Public Land Health and Guidelines for Livestock Grazing Management are met per established protocols and technical references.

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		Grand Junction RMP: Manage vegetation to meet BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado while taking in to account site potential as determined by ecological site inventories, Range/Ecological Site Descriptions, Soils, completed Land Health Assessments, and site-specific management objectives. Implement changes in livestock use through allotment management plans, grazing use agreements, and terms and conditions on grazing permits for priority allotments based on the current prioritization process and/or land health issues Revise or implement allotment management plans/grazing use agreements to resolve conflicts between grazing and management of soils, riparian, and water resources. **Kremmling RMP:** No similar action. **Little Snake RMP:** Manage for a diversity of seral stages within plant communities. Restore natural disturbance regimes, such as fire, and vegetation treatments to accomplish biodiversity objectives. Establish desired plant communities in coordination with stakeholders across the LSFO. Restore a diversity of seral stages within sagebrush communities. Maintain large patches of high-quality sagebrush habitats, consistent with the natural range of variability for sagebrush communities in northwest Colorado. **Roan Plateau RMP:** Ensure that Land Health Standards are being met through Land Health surveys, and application of the GSFO Monitoring Plan. Use a combination of administrative solutions (season of use revisions, livestock exclusion, and stocking level adjustments) and rangeland projects (e.g., fences and ponds) to direct livestock use to meet resource objectives and Land Health Standards.

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		White River RMP: Acceptable desired plant communities will be managed in an ecological status of high-seral or healthy mid-seral for all rangeland plant communities. An exception may be provided for wildlife habitat -areas where specific cover types are needed. The required cover type in those wildlife habitat areas will be the desired plant communities. The ecological status of a desired plant community in specified wildlife habitat areas could be lower than high seral. In which case, the desired plant communities will be managed, at a minimum, to maintain an at-risk rating (Table 2.6 of Appendix D [of the White River RMP]) and have a stable to improving trend in ecological status. **Routt National Forest:** Develop site-specific vegetation utilization and residue guidelines during rangeland planning, and document them in allotment management plans. In the absence of updated planning or an approved allotment management plan, apply the utilization and residue guidelines in Tables 1-2 and 1-3 (Range Guideline, p. 1-9) as described above.
25	Range	**Colorado River Valley RMP:** No similar action. **Grand Junction RMP:** Manage vegetation to meet BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado while taking in to account site potential as determined by ecological site inventories, Range/Ecological Site Descriptions, Soils, completed Land Health Assessments, and site-specific management objectives. Implement changes in livestock use through allotment management plans, grazing use agreements, and terms and conditions on grazing permits for priority allotments based on the current prioritization process and/or land health issues Revise or implement allotment management plans/grazing use agreements to resolve conflicts between grazing and management of soils, riparian, and water resources. **Kremmling RMP:** Common to All Alternatives. **Little Snake RMP:** Manage resources, vegetation, and watersheds to sustain a variety of uses, including livestock grazing, and to maintain the long-term health of the rangelands.

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		Managing to meet plant reproductive and physiological needs, minimize conflicts...in areas of increased pressure on forage and riparian zones, and manage plant utilization. Grazing management practices promote plant health by providing for one or more of the following: Periodic rest or deferment from grazing during critical growth periods, adequate recovery and regrowth periods, and opportunity for seed dissemination and seedling establishment Natural occurrences...should be combined with livestock management practices to move towards the sustainability of biological diversity. Grazing management practices address the kind, numbers, and class of livestock, season, duration, distribution, frequency, and intensity of grazing use and livestock health **Roan Plateau RMP:** Ensure that Land Health Standards are being met through Land Health surveys, and application of the GSFO Monitoring Plan. Use a combination of administrative solutions (season of use revisions, livestock exclusion, and stocking level adjustments) and rangeland projects (e.g., fences and ponds) to direct livestock use to meet resource objectives and Land Health Standards. **White River RMP:** The 54 allotments placed in the improve category were identified for development of Allotment Management Plans. The Allotment Management Plans will direct livestock management through decisions, such as: 1) grazing systems; 2) season-of-use; 3) number and kind of livestock; and 4) range developments or vegetative treatments. Monitor, evaluate, and adjust livestock management practices to meet resource objectives. Changes in the 1981 forage allocations will be identified in allotment management plans or integrated activity plans.

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		The average 50 percent above ground annual forage production available for allocation is based upon the following grazing utilization levels on key forage plant species, averaged on a grazing allotment basis: <u>Key Species–Grass</u> • 40 percent averaged utilization for the grazing period from April 1 to June 15 each grazing year. • 40 to 60 percent averaged utilization for the grazing period from June 15 to September 15 each grazing year. • 60 percent averaged utilization for the grazing period from September 15 to March 31 each grazing year <u>Key Species–Browse</u> • 40 percent averaged utilization for the grazing period from April 1 to September 30 each grazing year. • 50 to 60 percent averaged utilization for the grazing period from October 1 to March 31 each grazing year. It is recognized that these utilization levels are used as averages to identify an appropriate allocation mix among grazing/browsing animals. Site-specific occurrences of over utilization may occur and may create resource conflicts that cannot be resolved by changing the forage allocation mix. Specific resource conflicts will be identified and corrective management sought through development of allotment management plans or integrated activity plans. Allotment Management Plans for the remaining 35 allotments in the improve category will be developed as time and funding permit. Current livestock grazing levels and management practices will continue to be authorized on the 36 maintain and 54 custodial category allotments. The improve category allotments will receive highest priority for public funding for needed rangeland improvements and livestock management facilities. The custodial category allotments will receive the lowest priority for public funding of rangeland improvements. **Routt National Forest:** Phase out season-long grazing systems that allow for livestock grazing use in an individual unit during the entire vegetative growth period, except where determined to achieve or maintain the desired plant community (Range Standard, p. 1-9). Remove livestock from the grazing unit or allotment when further utilization on key areas will exceed allowable-use criteria in the Forest Plan or allotment management plan (Range Standard, p. 1-9).

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NTT No.	Program Area	Alternative A (No Action / Current Management)
26	Range	**Colorado River Valley RMP, Grand Junction RMP, Little Snake RMP, Roan Plateau RMP, White River RMP:** No similar action. **Routt National Forest:** No similar action.
27	Range	**Colorado River Valley RMP:** Manage for riparian/wetland values using management actions for improvement or protection. These actions may include, but are not limited to, implementing grazing management actions (e.g., adjusting livestock numbers, distribution, season of use, and duration of use), plantings, recreation restrictions, structures (e.g., fencing), and upland water developments. **Grand Junction RMP:** Manage riparian habitat in compliance with the Land Health Standard 2: Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbances such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment and provides forage habitat and biodiversity. Water quality is improved or maintained. Stable soils store and release water. Protect riparian areas by prohibiting surface disturbances in these areas year round. **Kremmling RMP:** Under all of the proposed alternatives, the water quality of all water bodies on, or influenced by, BLM-managed public lands, including ground water (where applicable), would be managed in a manner designed to achieve, or exceed, the water quality standards established by the State of Colorado. Water quality standards for surface water and ground water include the designated beneficial uses, numeric criteria, and anti-degradation requirements set forth under State law as required by Section 303(c) of the Clean Water Act. **Little Snake RMP:** Riparian systems… function properly. Riparian vegetation captures sediment and provides forage, habitat, and biodiversity. Special status...species...and its habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		Roan Plateau RMP: Apply guidelines and BMPs to rest and defer grazing of riparian areas. Achieve a minimum condition rating of proper functioning condition and late-seral stage plant community development in riparian areas and provide high quality fisheries habitat atop the plateau. Establish condition ratings based on Ecological Site Indices (or equivalent assessments of potential natural vegetation based on site and soil characteristics and conditions). Manage to improve riparian related fisheries habitat atop the plateau based on site potential findings. Avoid or mitigate activities that could cause a downward trend in the condition of riparian resources or functioning condition. Initiate activity plans which identify habitat improvement projects to achieve desired conditions. **White River RMP:** Riparian-wetland objectives will be met by locating livestock management facilities (corrals or holding facilities, wells, pipelines, fences) or livestock management practices (salting and supplemental feeding) outside riparian-wetland areas. Existing livestock management facilities or practices that do not meet management objectives will be relocated or removed from all riparian habitats that are nonfunctioning or functioning at risk. **Routt National Forest:** Develop site-specific vegetation utilization and residue guidelines during rangeland planning, and document them in allotment management plans. In the absence of updated planning or an approved allotment management plan, apply the utilization and residue guidelines in Tables 1-2 and 1-3 (Range Guideline, p. 1-9) as described above.
28	Range	**Colorado River Valley RMP:** Manage for riparian/wetland values using management actions for improvement or protection. These actions may include, but are not limited to, implementing grazing management actions (e.g., adjusting livestock numbers, distribution, season of use, and duration of use), plantings, recreation restrictions, structures (e.g., fencing), and upland water developments.

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		Grand Junction RMP: Manage riparian habitat in compliance with the Land Health Standard 2: Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbances such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment and provides forage habitat and biodiversity. Water quality is improved or maintained. Stable soils store and release water. Protect riparian areas by prohibiting surface disturbances in these areas year round. **Kremmling RMP:** Under all of the proposed alternatives, the water quality of all water bodies on, or influenced by, BLM-managed public lands, including ground water (where applicable), would be managed in a manner designed to achieve, or exceed, the water quality standards established by the State of Colorado. Water quality standards for surface water and ground water include the designated beneficial uses, numeric criteria, and anti-degradation requirements set forth under State law as required by Section 303(c) of the Clean Water Act. **Little Snake RMP:** Riparian systems… function properly. Riparian vegetation captures sediment and provides forage, habitat, and biodiversity. Special status...species...and its habitats are maintained or enhanced by sustaining healthy, native plant and animal communities. **Roan Plateau RMP:** Apply guidelines and BMPs to rest and defer grazing of riparian areas. Achieve a minimum condition rating of proper functioning condition and late-seral stage plant community development in riparian areas and provide high quality fisheries habitat atop the plateau. Establish condition ratings based on Ecological Site Indices (or equivalent assessments of potential natural vegetation based on site and soil characteristics and conditions). Manage to improve riparian related fisheries habitat atop the plateau based on site potential findings.

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		Avoid or mitigate activities that could cause a downward trend in the condition of riparian resources or functioning condition. Initiate activity plans which identify habitat improvement projects to achieve desired conditions. **White River RMP:** Riparian-wetland objectives will be met by locating livestock management facilities (corrals or holding facilities, wells, pipelines, fences) or livestock management practices (salting and supplemental feeding) outside riparian-wetland areas. Existing livestock management facilities or practices that do not meet management objectives will be relocated or removed from all riparian habitats that are nonfunctioning or functioning at risk. **Routt National Forest:** Develop site-specific vegetation utilization and residue guidelines during rangeland planning, and document them in allotment management plans. In the absence of updated planning or an approved allotment management plan, apply the utilization and residue guidelines in Tables 1-2 and 1-3 (Range Guideline, p. 1-9) as described above.
29	Range	**Colorado River Valley RMP:** Manage for riparian/wetland values using management actions for improvement or protection. These actions may include, but are not limited to, implementing grazing management actions (e.g., adjusting livestock numbers, distribution, season of use, and duration of use), plantings, recreation restrictions, structures (e.g., fencing), and upland water developments. **Grand Junction RMP:** Manage riparian habitat in compliance with the Land Health Standard 2: Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbances such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment and provides forage habitat and biodiversity. Water quality is improved or maintained. Stable soils store and release water. Protect riparian areas by prohibiting surface disturbances in these areas year round. **Kremmling RMP:** Under all of the proposed alternatives, the water quality of all water bodies on, or influenced by, BLM-managed public lands, including ground water (where applicable), would be managed in a manner designed to achieve, or exceed, the water quality standards established by the State of Colorado. Water quality standards for surface water and ground water include the designated beneficial uses, numeric criteria, and anti-degradation

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		requirements set forth under State law as required by Section 303(c) of the Clean Water Act. **Little Snake RMP:** Riparian systems… function properly. Riparian vegetation captures sediment and provides forage, habitat, and biodiversity. Special status...species...and its habitats are maintained or enhanced by sustaining healthy, native plant and animal communities. **Roan Plateau RMP:** Apply guidelines and BMPs to rest and defer grazing of riparian areas. Achieve a minimum condition rating of proper functioning condition and late-seral stage plant community development in riparian areas and provide high quality fisheries habitat atop the plateau. Establish condition ratings based on Ecological Site Indices (or equivalent assessments of potential natural vegetation based on site and soil characteristics and conditions). Manage to improve riparian related fisheries habitat atop the plateau based on site potential findings. Avoid or mitigate activities that could cause a downward trend in the condition of riparian resources or functioning condition. Initiate activity plans which identify habitat improvement projects to achieve desired conditions. **White River RMP:** Riparian-wetland objectives will be met by locating livestock management facilities (corrals or holding facilities, wells, pipelines, fences) or livestock management practices (salting and supplemental feeding) outside riparian-wetland areas. Existing livestock management facilities or practices that do not meet management objectives will be relocated or removed from all riparian habitats that are nonfunctioning or functioning at risk. **Routt National Forest:** Develop site-specific vegetation utilization and residue guidelines during rangeland planning, and document them in allotment management plans. In the absence of updated planning or an approved allotment

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		management plan, apply the utilization and residue guidelines in Tables 1-2 and 1-3 (Range Guideline, p. 1-9) as described above.
30	Range	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **White River RMP:** Development of springs, seeps, and other project improvements will be designed to maintain or improve the ecological and hydrological values of those sites. Water developments (springs, reservoirs, catchments; wells, pipeline and water troughs) will conform to BLM Manual H-1741-2. Impoundments offering conditions suitable for pond fisheries will have aquatic conditions enhanced, where appropriate, by: 1) controlling excessive aquatic plant growth; 2) establishing desirable shoreline vegetation; 3) restoring reservoir depth; and/or 4) controlling sediment input.
31	Range	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **White River RMP:** Development of springs, seeps, and other project improvements will be designed to maintain or improve the ecological and hydrological values of those sites. Water developments (springs, reservoirs, catchments; wells, pipeline and water troughs) will conform to BLM Manual H-1741-2. Impoundments offering conditions suitable for pond fisheries will have aquatic conditions enhanced, where appropriate, by: 1) controlling excessive aquatic plant growth;

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		2) establishing desirable shoreline vegetation; 3) restoring reservoir depth; and/or 4) controlling sediment input.
32	Range	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, White River RMP, Routt National Forest:** No similar action.
33	Range	**Colorado River Valley RMP, Grand Junction RMP, Roan Plateau RMP:** No similar action. **Kremmling RMP:** Common to all alternatives. **Little Snake RMP:** • Preserve and protect special status species. • Sustain the integrity of the sagebrush biome to maintain viable populations of GRSG. • Identify and initiate restoration and rehabilitation of sagebrush habitat. **White River RMP:** Standard operating procedure. **Routt National Forest:** NEPA analysis procedures are described in Forest Service Manual and Handbook and include the direction proposed in Alternative B.
34	Range	**Grand Junction RMP, Kremmling RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **Colorado River Valley RMP:** Following initial allocation, manipulate 27,800 acres of vegetation on 98 allotments to increase livestock forage by 12,700 AUMs using vegetation manipulation techniques, resulting in total projected allocation of 51,900 AUMs. **Little Snake RMP:** • Grazing will be managed by using standards and guidelines processes. • Appropriate actions for improving allotments that do not meet the Colorado standards and guidelines include: livestock water developments, range improvements, riparian pastures, and enclosures. • Range improvement projects are designed consistent with overall ecological functions and processes with minimum adverse impacts on other resources.

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		White River RMP: Fence reservoirs, where possible to create riparian vegetation and wildlife habitat providing water to livestock through water gaps in the fence or piped to a water trough.
35	Range	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, White River RMP, Routt National Forest:** No similar action.
36	Range	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **Little Snake RMP:** Preserve and protect special status species. Identify and initiate restoration and rehabilitation of sagebrush habitat while maintaining a mosaic of canopy cover and seral stages. Special status, threatened and endangered species, and other plants and animals officially designated by the BLM and its habitats are maintained and enhanced by sustaining healthy, native plant and animal communities. Natural occurrences...should be combined with livestock management practices to move toward the sustainability of biological diversity across the landscape, including the maintenance, restoration, or enhancement of habitat to promote and assist recovery and conservation of threatened, endangered, or other special status species by helping provide natural vegetation patterns, a mosaic of successional stages, and vegetation corridors thus minimizing habitat fragmentation. **White River RMP:** Locate livestock water developments and salting sites away from riparian and wetland areas.
37	Range	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **White River RMP:** Fence design will conform to BLM Manual H 1737-I to accommodate negotiation by big game and minimize fence damage. Modifications to fence design may be authorized on a case-by-case basis by the Area Manager as necessary to satisfy special fencing objectives.

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38	Range	**Grand Junction RMP, Kremmling RMP, Roan Plateau RMP:** No similar action. **Colorado River Valley RMP:** Hold project proponents, including livestock operators, ROWs holders, and other permittees deemed necessary by the Authorized Officer, responsible for monitoring and controlling noxious weeds that result from any new facilities, improvements or other surface disturbances authorized on BLM land (e.g., roads, communication sites, pipelines, stock ponds, and fences). **Little Snake RMP:** Grazing management will occur in a manner that does not encourage the establishment or spread of noxious weeds. Range improvement projects are designed consistent with overall ecological functions and processes with minimum adverse impacts on other resources. Reduce the occurrence of noxious and undesirable plant species. Objectives for achieving this goal include: Ensure all land use actions that could potentially increase the occurrence of noxious weeds are conducted by using PDFs; Apply principles of integrated pest management. **White River RMP:** In accordance with the White River Resource Area Noxious Weed Management Plan, manage noxious weeds with particular emphasis on a coordinated, cooperative approach. Implement practices that prevent or reduce the extent and occurrence of noxious and problem weeds throughout the Resource Area. Three contiguous areas encompassing 497,900 acres will be designated as weed free zones upon approval of this document (see Map 2-8 [of the White River RMP]). Weed management will be emphasized in these areas through cooperation with private land owners and state and county governments. The areas will, be identified on the ground with signs. The following special conditions will be attached to use authorizations approved within these areas: 1) All construction equipment and vehicles will be cleaned prior to entering BLM Weed Free Zones. 2) All hay, straw, unprocessed feed and seed used in BLM Weed Free Zones must be certified free of specified

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		noxious weeds listed in Colorado Weed Seed Free Forage Certification standards. 3) All authorized users of disturbed areas will be required to inventory for noxious weeds in both the spring and fall. **Routt National Forest:** Control nonnative and noxious plants throughout the Forest, with priority given to designated wilderness (Undesirable Species Standard, p. 1-16). Develop a noxious weed and pest management program that addresses awareness, prevention, inventory, planning, treatment, monitoring, reporting, and management objectives. Priorities for implementing a program for undesirable plants include: a. New invaders, b. New areas, c. Spreading or expanding infestations, d. Existing infestations (Undesirable Species Guideline p. 1-16).
39	Range	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP, Roan Plateau RMP, Routt National Forest, White River RMP:** No similar action. **Little Snake RMP:** Provide the opportunity to create reserve conservation allotments… A reserve conservation allotment is a vacant allotment with no attached grazing preference whose purpose is to provide alternative forage for BLM permittees/lessees during the rest requirement while their customary allotment is undergoing rangeland recovery from natural disturbances or restoration projects.
Wild Horse Management		**Objective: No similar objective.**
40	Wild Horses	**Little Snake RMP:** Manage the Sand Wash wild horse herd as an integral part of the public lands ecosystem at an appropriate management level. Periodically reevaluate the existing appropriate management level to ensure herd size remains compatible with other resources. **White River RMP:** Wild horses will be managed to provide a healthy, viable breeding population with a diverse age structure.
41	Wild Horses	**Little Snake RMP:** The guidelines and criteria for adjusting appropriate management level include current monitoring data, rate of herd increase, competing uses. The goal is to manage the Sand Wash herd at an appropriate management level that is compatible with other resources.

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		White River RMP: No similar action.
42	Wild Horses	**Little Snake RMP:** Appendix F (of the Little Snake RMP) includes direction on collecting data and monitoring a variety of resource indicators. By implementing the monitoring direction in Appendix F (of the Little Snake RMP), the BLM will continue to gather important information to ensure the goals and objectives identified in the Approved RMP are met. **White River RMP:** Monitoring studies will be conducted and the long-term appropriate management level for the HMA will be adjusted based on the results of this monitoring.
43	Wild Horses	**Little Snake RMP, White River RMP:** No similar action.
44	Wild Horses	**Little Snake RMP:** Guidelines and criteria for adjusting appropriate management level include current monitoring data, rate of herd increase, competing uses, frequency of gathering cycle, other population management options, and herd genetics. Appendix F (of the Little Snake RMP) includes direction on collecting data and monitoring a variety of resource indicators. By implementing the monitoring direction in Appendix F (of the Little Snake RMP), the BLM will continue to gather important information to ensure the goals and objectives identified in the Approved RMP are met. **White River RMP:** Monitoring studies will be conducted and the long-term appropriate management level for the HMA will be adjusted based on the results of this monitoring.
45	Wild Horses	**Little Snake RMP:** The guidelines and criteria for adjusting appropriate management level include current monitoring data, rate of herd increase, competing uses. The goal is to manage the Sand Wash herd at an appropriate management level that is compatible with other resources. **White River RMP:** No similar action.
Fluid Minerals		**Objective: No similar objective.**
46	Fluid Minerals	**Colorado River RMP:** Allowable Use: **STIPULATION** GS-NSO-12: *Threatened or Endangered Species.* Prohibit surface occupancy and surface-disturbing activities on habitat areas for those species listed by the federal or state government as endangered or threatened and for federal proposed or candidate species. Habitat areas include occupied habitat and habitat necessary for the maintenance or recovery of the species.

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		Grand Junction RMP: No Leasing: *BLM surface/federal minerals.* Manage 96,500 acres of the federal mineral estate underlying BLM surface as closed to fluid mineral leasing and geophysical exploration. (Refer to Appendix B [of the Grand Junction RMP].) • Unaweep Seep ACEC; and • WSAs. **Kremmling RMP:** Current restriction on use prohibits surface occupancy and surface-disturbing activities within a 0.25-mile radius of an active lek. Chapter 2, Pg. 72. **Little Snake RMP:** RMP-36/ 2.13. 242,560 ac are closed to leasing. **Roan Plateau RMP:** No similar action. **White River RMP:** The nondiscretionary lands include the six WSAs and the National Park Service's Harper's Corner Road withdrawal (see Map 2-2 [of the White River RMP]). (p2-5). **Routt National Forest:** No similar action.
		Colorado River RMP, Grand Junction RMP, Kremmling RMP, White River RMP, Routt National Forest: No similar action. **Little Snake RMP:** RMP-39/2.31. "Using oil and gas stipulations as reference point, restrictions will be determined at the permitting stage on a case by case basis". **Roan Plateau RMP:** Allow geophysical exploration within GRSG PHMA areas to obtain information for existing federal fluid mineral leases or areas adjacent to state or fee lands within GRSG PHMA areas. Allow geophysical operations only using helicopter-portable drilling, wheeled or tracked vehicles on existing roads, or other approved methods conducted in accordance with seasonal TLs and other restrictions that may apply.
47	Fluid Minerals	**Colorado River RMP: Lease Notice** LN CO-34: *ESA.* The lease area may now or hereafter contain plants, animals, or its habitats determined to be threatened, endangered, or other special status species. BLM may recommend

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		modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or its habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the ESA as amended, 16 USC 1531 et seq., including completion of any required procedure for conference or consultation. **Grand Junction RMP:** No similar action. **Kremmling RMP:** Standard lease terms and leasing stipulations would be applied to leases. COAs, PDFs, and standard operating procedures (see Appendices D and E [of the Kremmling RMP]), design features, and mitigation measures would be applied to development proposals. (The BLM has the discretion to modify surface operations in order to change or to add specific mitigation measures when supported by scientific analysis.) All mitigation and conservation measures not already required as stipulations will be analyzed in a site-specific environmental analysis document, and be incorporated, as appropriate, into COAs of Permits, Plans of Development, or other use authorizations. Ch. 2, Pg. 130. **Little Snake RMP:** RMP Appendix B (of the Little Snake RMP), p. B-3/B-8. For Existing Leases, PDFs will be required as COAs on drilling applications. **Roan Plateau RMP: Lease Notice** LN CO-34: *ESA.* The lease area may now or hereafter contain plants, animals, or its habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or its habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat

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		until it completes its obligations under applicable requirements of the ESA as amended, 16 USC 1531 et seq., including completion of any required procedure for conference or consultation. **White River RMP:** COAs will be attached, as appropriate, to help mitigate the site-specific impacts of an authorization. These mitigating measures may be supplemented with additional requirements or replaced by alternative measures that will accomplish the same result as well or better than the original. (p1-2). For activities other than oil and gas leasing, applicable stipulations will be attached to use authorizations at the Resource Area as COAs. (pA-1). This plan does not repeal valid existing rights on public lands. A valid existing right is a claim or authorization that takes precedence over the decisions developed in this plan. However, such authorizations will be reviewed and brought into conformance with the plan prior to amendment, renewal, or reissuance of the authorization. All future resource authorizations and actions will conform to, or not conflict with, the decisions developed in the RMP. Subject to the valid existing rights mentioned above, all existing operations and activities authorized under permits, contracts, cooperative agreements or other authorization for use or occupancy will be modified, as necessary, to conform with this plan within a reasonable timeframe. (p1-1). Monitoring will help determine whether actions are consistent with current policy and provide feedback as to whether the original assumptions were correctly applied and impacts correctly predicted. It will also provide data as to the adequacy of the mitigation measures (stipulations and COAs). (p1-2). **Routt National Forest:** (ADH) Recommend consent to lease with appropriate lease terms or stipulations, as set forth in the Forest Oil and Gas Leasing Analysis ROD (1993) and updated by the Forest Plan, Final EIS, and ROD (Mineral and Energy Leasable Minerals Standard, p. 1-4). Recommend against or deny consent to the BLM for issuance of leases, permits, or coal exploration licenses where operational damages to surface resources would not be reclaimed to acceptable conditions (per Forest Plan direction); Operational damages to surface resources include impacts from surface-based access, product transportation, and ancillary facilities necessary to production and related operations (Mineral and Energy Leasable Minerals Standard, p. 1-4). Negotiate surface management for private oil and gas minerals with the owner and operator to be as close as possible to the standards used for federal minerals.

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		Prohibiting such development is not an alternative (Mineral and Energy – Reserved and Outstanding Rights, p. 1-6).
48	Fluid Minerals	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, White River RMP, Routt National Forest:** No similar action.
49	Fluid Minerals	**Colorado River RMP:** Allowable Use: **STIPULATION** GS-NSO-12: *Threatened or Endangered Species.* Prohibit surface occupancy and surface-disturbing activities on habitat areas for those species listed by the federal or state government as endangered or threatened and for federal proposed or candidate species. Habitat areas include occupied habitat and habitat necessary for the maintenance or recovery of the species **Grand Junction RMP:** No similar action. **Kremmling RMP:** TL CO-15: GRSG Winter Habitat – Prohibit surface occupancy and surface-disturbing activities during certain timeframes in GRSG crucial winter habitat and nesting habitat (includes GRSG). [GRSG nesting habitat is described as sagebrush stands with sagebrush plants between 30 centimeters and 100 centimeters (approximately 12 inches and 40 inches) in height, and a mean canopy cover between 15 percent and 40 percent within a 2-mile radius of an active lek.] GRSG crucial winter habitat: December 16 to March 15; and GRSG nesting habitat: March 1 to June 30. (See Appendix C [of the Kremmling RMP].) Chapter 2, Pg. 73. **Little Snake RMP:** RMP-36/ 2.13. 222,910 ac are NSO leasing. NSO would be applied within 0.6 mile of GRSG lek. **Roan Plateau RMP: STIPULATION** GS-NSO-ROAN-24, *Threatened, Endangered, or Candidate Species Habitat* – In order to protect occupied habitat and immediately adjacent potential habitat crucial for the maintenance or recovery of species listed under the ESA or by the State of Colorado as threatened or endangered (including proposed or candidate species under the ESA), no ground-disturbing activities will be authorized within occupied habitat or immediately adjacent potential habitat necessary for maintenance or recovery of the species. **White River RMP:** GRSG Winter Concentration Areas. This area encompasses sagebrush habitats that are occupied by wintering concentrations of GRSG, or represent the only habitats that remain available for use during periods of heavy snowpack. No development activity will be allowed between December 16 and March 15. The

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		Colorado Division of Wildlife (now CPW) has indicated that these features exist on public lands within the White River Resource Area but have not yet delineated specific areas that will be subject to this timing restriction. (pA-21). **Routt National Forest:** (ADH) Recommend consent to lease with appropriate lease terms or stipulations, as set forth in the Forest Oil and Gas Leasing Analysis ROD (Forest Service 1993) and updated by the Forest Plan, Final EIS, and ROD (Mineral and Energy Leasable Minerals Standard, p. 1-4). Recommend against or deny consent to the BLM for issuance of leases, permits, or coal exploration licenses where operational damages to surface resources would not be reclaimed to acceptable conditions (per Forest Plan direction). Operational damages to surface resources include impacts from surface-based access, product transportation, and ancillary facilities necessary to production and related operations (Mineral and Energy Leasable Minerals Standard, p. 1-4). Negotiate surface management for private oil and gas minerals with the owner and operator to be as close as possible to the standards used for federal minerals. Prohibiting such development is not an alternative (Mineral and Energy – Reserved and Outstanding Rights, p. 1-6).
50	Fluid Minerals	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Roan Plateau RMP:** No similar action. **Little Snake RMP:** ROD-RMP, Appendix B (of the Little Snake RMP), 3-11. 1 percent and 5 percent disturbance caps voluntary on existing leases in exchange for relaxed winter range restrictions. CSU would be applied to all new leases with priority sagebrush habitat. CSU 1 percent and 5 percent disturbance caps would be voluntary for existing leases and applied to new leases with priority sagebrush habitat. RMP-36/ 2.13. 222,910 ac are NSO leasing. NSO would be applied within 0.6-mile of GRSG lek. **White River RMP:** Surface occupancy is not allowed within 0.25-mile of identified lek sites (p. A-5). **Routt National Forest:** (ADH) Recommend consent to lease with appropriate lease terms or stipulations, as set forth in the Forest Oil and Gas Leasing Analysis ROD (Forest Service 1993) and updated by the Forest Plan, Final EIS, and ROD (Mineral and Energy Leasable Minerals Standard, p. 1-4). Recommend against or deny consent to the BLM for issuance of leases, permits, or coal exploration licenses where operational damages to surface resources would not be reclaimed to acceptable conditions (per Forest Plan direction). Operational damages to surface resources

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		include impacts from surface-based access, product transportation, and ancillary facilities necessary to production and related operations (Mineral and Energy Leasable Minerals Standard, p. 1-4). Negotiate surface management for private oil and gas minerals with the owner and operator to be as close as possible to the standards used for federal minerals. Prohibiting such development is not an alternative (Mineral and Energy – Reserved and Outstanding Rights, p. 1-6).
51	Fluid Minerals	**Colorado River RMP, Grand Junction RMP, Roan Plateau RMP:** No similar action. **Kremmling RMP:** NSO CO-02: Grouse Leks – Prohibit surface occupancy and surface-disturbing activities within a 0.25-mile radius of an active lek (courtship area). Grouse includes GRSG, Columbian sharp-tailed grouse, and Lesser and Greater prairie chickens. (See Appendix C [of the Kremmling RMP].) Ch. 2, Pg. 72. **Little Snake RMP:** ROD-RMP, Appendix B (of the Little Snake RMP), 3-11. 1 percent and 5 percent disturbance caps voluntary on existing leases in exchange for relaxed winter range restrictions. CSU would be applied to all new leases with priority sagebrush habitat. CSU 1 percent and 5 percent disturbance caps would be voluntary for existing leases and applied to new leases with priority sagebrush habitat. RMP-36/ 2.13. 222,910 ac are NSO leasing. NSO would be applied within 0.6-mile of GRSG lek. **White River RMP:** Vegetation treatment widths should generally not exceed 200 feet. Treatment areas should be interspersed with equal or larger intervals of suitable cover. Cumulative adverse manipulations would not be allowed to exceed 10 percent of suitable nest habitat within 2 miles of a lek. (p2-32). **Routt National Forest:** (ADH) Recommend consent to lease with appropriate lease terms or stipulations, as set forth in the Forest Oil and Gas Leasing Analysis ROD (Forest Service 1993) and updated by the Forest Plan, Final EIS, and ROD (Mineral and Energy Leasable Minerals Standard, p. 1-4). Recommend against or deny consent to the BLM for issuance of leases, permits, or coal exploration licenses where operational damages to surface resources would not be reclaimed to acceptable conditions (per Forest Plan direction). Operational damages to surface resources include impacts from surface-based access, product transportation, and ancillary facilities necessary to production and related operations (Mineral and Energy Leasable Minerals Standard, p. 1-4). Negotiate surface management for private

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		oil and gas minerals with the owner and operator to be as close as possible to the standards used for federal minerals. Prohibiting such development is not an alternative (Mineral and Energy – Reserved and Outstanding Rights, p. 1-6).
52	Fluid Minerals	**Grand Junction RMP, Kremmling RMP, Roan Plateau RMP:** No similar action. **Colorado River RMP:** Allowable Use: **STIPULATION** GS-TL-3: *GRSG Winter and Nesting Habitat.* Prohibit surface occupancy and surface-disturbing activities during certain timeframes in grouse crucial winter habitat and nesting habitat (includes GRSG). Nesting habitat is described as sagebrush stands with sagebrush plants between 30 and 100 centimeters (approximately 12 and 40 inches) in height and a mean canopy cover between 15 and 40 percent within a 2-mile radius of an active lek. Winter habitat: December 16 to March 15. Nesting habitat: March 1 to June 30. **Little Snake RMP:** RMP, Appendix B-13 – TLs (of the Little Snake RMP) will apply to GRSG nesting and brood-rearing habitat (4 miles from lek) and to GRSG crucial winter habitat. **White River RMP:** GRSG Nesting Habitat. This area encompasses suitable GRSG nesting habitat associated with individual leks. This stipulation will not take effect until direct and indirect impacts to suitable nesting cover exceeds 10 percent of the habitat available within 2 miles of identified leks. Further development, after this threshold has been exceeded, will not be allowed from April 15 through July 7. (Development can occur until 10 percent of the habitat associated with a lek is impacted, from then on, additional activity can occur from July 8 through April 14.) (p. A-18). **Routt National Forest:** Timing stipulation for Grouse Breeding Complex March 1 to June 30.
53	Fluid Minerals	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, White River RMP, Routt National Forest:** No similar action.
54	Fluid Minerals	**Colorado River RMP, Kremmling RMP, White River RMP:** No similar action. **Grand Junction RMP:** In areas being actively developed, the operator must submit a Master Development Plan (formerly known as Geographic Area Proposal) that describes a minimum of 2 to 3 years activity for operator-controlled federal leases within a reasonable geographic area (to be determined jointly with BLM). Use the Master

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		Development Plan to plan development of federal leases within the area to account for well locations, roads, and pipelines, and to identify cumulative environmental effects and appropriate mitigation. The extent of the analysis would be dependent on the extent of surface ownership, extent of lease holdings, topography, access, and resource concerns. This requirement for a Master Development Plan may be waived for individual or small groups of exploratory wells, for directional wells drilled on previously developed well pads. **Little Snake RMP:** RMP-24, require development plans. RMP-39/ 2.13. PDFs will be developed. **Roan Plateau RMP:** Prior to exploration and/or lease development within the planning area, the operator must submit a Geographic Area Proposal identifying projected activity (including well locations, pipelines, and facilities) during the next 2 to 5 years and appropriate mitigation. **Routt National Forest:** (ADH) Recommend consent to lease with appropriate lease terms or stipulations, as set forth in the Forest Oil and Gas Leasing Analysis ROD (Forest Service 1993) and updated by the Forest Plan, Final EIS, and ROD (Mineral and Energy Leasable Minerals Standard, p. 1-4). Recommend against or deny consent to the BLM for issuance of leases, permits, or coal exploration licenses where operational damages to surface resources would not be reclaimed to acceptable conditions (per Forest Plan direction). Operational damages to surface resources include impacts from surface-based access, product transportation, and ancillary facilities necessary to production and related operations (Mineral and Energy Leasable Minerals Standard, p. 1-4). Negotiate surface management for private oil and gas minerals with the owner and operator to be as close as possible to the standards used for federal minerals. Prohibiting such development is not an alternative (Mineral and Energy – Reserved and Outstanding Rights, p. 1-6).
55	Fluid Minerals	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, White River RMP:** No similar action. **Little Snake RMP:** ROD-RMP, Appendix B (of the Little Snake RMP), 3-11. 1 percent and 5 percent disturbance caps voluntary on existing leases in exchange for relaxed winter range restrictions. CSU would be applied to all new leases with priority sagebrush habitat. CSU 1 percent and 5 percent disturbance caps would be voluntary for existing leases and applied to new leases with priority sagebrush habitat.

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		RMP-36/ 2.13. 222,910 acres are NSO leasing. NSO would be applied within 0.6-mile of GRSG lek. **Routt National Forest:** No similar action.
56	Fluid Minerals	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, White River RMP:** No similar action. **Routt National Forest:** No similar action**.**
57	Fluid Minerals	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, White River RMP, Routt National Forest:** No similar action.
58	Fluid Minerals	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, White River RMP, Routt National Forest:** No similar action. **Roan Plateau RMP: STIPULATION** GS-CSU-ROAN-13: *Parachute Creek High Value Watershed* – Before on-the-ground lease operations on top of the plateau, all lessees/leases will join a Federal Unitization Agreement approved by the BLM.
59	Fluid Minerals	**Colorado River Valley RMP:** No similar action. **Grand Junction RMP:** Consider acquisition of lands that meet the following criteria: • Private land within areas recommended as suitable for designation as wilderness; • Private land needed for management of Wild and Scenic Rivers; • Potential national or historic trails; • Potential natural or RNAs; • Potential areas for cultural or natural history designation; • Potential ACECs; • Private land within designated wild horse preserves; • Private land with potential for other congressional designations; • Threatened or endangered species habitat areas; • Riparian habitat areas;

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		• Valuable recreation areas; • Wetland areas as defined in Executive Order 11990, dated May 24, 1977; and • Floodplain areas (100-year) as defined in Executive Order 11988, dated May 24, 1977. **Kremmling RMP:** Apply the following criteria when considering land tenure adjustments: • Retain all public lands or interests in land (such as easements) that enhance multiple-use and sustained-yield management; • Acquire lands or interests in land that complement important resource values and further management objectives. **Little Snake RMP:** Central Zone: Acquisition of lands in the area should be actively sought to protect wildlife habitat, especially GRSG. Central, East and West Zones: Acquisition areas can be identified for the public's interest. **Roan Plateau RMP:** Retain lands on top of the plateau, and acquire in-holdings atop the plateau. Acquisition of inholdings, and other lands with important resource values, would be encouraged or allowed. **White River RMP:** Acquisition of non-BLM lands may be pursued through exchange, purchase or donation, where the acquisition will serve to enhance the BLM's objectives and special emphasis programs. For purchase or donation, acquisitions will generally be limited to inholdings within designated areas. **Routt National Forest:** In land adjustment activities including land exchange, purchase, disposal, and donation, consider the following: c) Acquire lands that contain resource values identified during scoping as important in contributing toward national forest system resource management goals and objectives as stated in the Forest Plan. Examples include: wetlands, riparian areas, essential wildlife habitat, threatened or endangered species habitat, sensitive species habitat, significant cultural resources, timber lands, rangelands, or other areas (Real Estate-Land

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		Adjustments Standard, p. 1-24).
60	Fluid Minerals	**Regulatory Requirement** 43 CFR 3104.2, 3104.3, and 3104.5.
61	Fluid Minerals	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, White River RMP:** The range of alternatives is articulated in the specific PDF sections. **Routt National Forest:** PDFs are not included in Current Management. All PDF listed in **Appendix I**, Required Design Features, Preferred Design Features, and Suggested Design Features, are required for all action alternatives.
Solid Minerals		**Objective: No similar objective.**
62	Solid Minerals—Coal	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, White River RMP, Routt National Forest:** No similar action. **Roan Plateau RMP:** All environmental protection requirements of the various resources described in the RMP and contained in the various stipulations would apply to coal.
63	Solid Minerals—Coal	**Grand Junction RMP, Kremmling RMP:** No similar action. **Colorado River RMP:** Action: Manage approximately 28,500 acres of the federal mineral estate in CRVFO as open to consideration for coal leasing. **Little Snake RMP:** RMP, Appendix G-5 (of the Little Snake RMP) federal lands, which the surface management agency and the State jointly agree are fish and wildlife habitat for resident species of high interest to the State, and which are essential for maintaining these priority wildlife species, would be considered unsuitable. Examples of such lands that serve a critical function for the species involved include: • Active dancing and strutting grounds for GRSG, sharp-tailed grouse, and prairie chicken • Winter ranges most critical for deer, antelope, and elk • Migration corridors for elk.

Table 2.7
Description of Alternative A

(PHMA) = Priority Habitat Management Areas, (GHMA) = General Habitat Management Areas, (LCHMA) = Linkage/Connectivity Habitat Management Areas, (ADH) = All Designated Habitat

NTT No.	Program Area	Alternative A (No Action / Current Management)
		Lands found acceptable in this RMP will be available for further consideration for leasing and/or exchange. However, all lands determined to be suitable, unsuitable, or unacceptable for further consideration for leasing and/or exchange may be reviewed and suitability determinations may be modified on the basis of new data discovered during activity planning efforts. Unsuitability criteria will apply only to surface coal mining but not to underground mining. The lands with coal resource development potential in the Little Snake coal planning area are located in the Yampa and Danforth Hills coal fields. The coal planning includes federal coal within the following townships: Sixth Principal Meridian; Township 3 North, Range 85 West; Township 3 North, Range 86 West; Township 3 North, Range 90 West – Range 95 West; Township 4 North, Range 86 West – Range 95 West; Township 5 North, Range 85 West – Range 93 West; Township 6 North, Range 86 West – Range 93 West; Township 7 North, Range 87 West – Range 94 West; Township 8 North, Range 86 West – Range 94 West; and Township 9 North, Range 86 West. The coal planning area contains approximately 675,550 acres of federal coal lands or BLM surface estate. Unsuitability criteria have been applied to these lands to determine the areas unsuitable for surface mining. Results are shown in Appendix G (of the Little Snake RMP). After applying unsuitability criteria and exceptions, approximately 623,860 acres were deemed acceptable for further consideration for leasing for either surface or underground development (Map 16 [of the Little Snake RMP]). NSO stipulations for coal development will be used to protect raptor nest and roost sites and concentration areas, migratory bird habitats, floodplains, alluvial valley floors, and federally designated critical habitats for threatened or endangered plant and animal species. NSO stipulations will apply to Juniper Mountain Special Recreation Management Area (SRMA) and to Zone 1 of the Little Yampa SRMA; these areas will be acceptable for further consideration only for underground coal mining (NSO stipulation). Specific areas that have NSO stipulations for coal leasing are listed below (47,910 acres – acres are limited to the areas with coal potential, located in the southeastern portion of the LSFO): • Raptor nest and roost sites and concentration areas (these stipulations are contained in the Coal Suitability Review in Appendix G [of the Little Snake RMP]) • Migratory bird habitats (these stipulations are contained in the Coal Suitability Review (Appendix G [of the Little Snake RMP])

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		• Floodplains (these stipulations are contained in the Coal Suitability Review in Appendix G [of the Little Snake RMP]) • Alluvial Valley Floors (these stipulations are contained in the Coal Suitability Review in Appendix G [of the Little Snake RMP]) • Federally designated critical habitats for threatened or endangered plant and animal species (these stipulations are contained in the Coal Suitability Review in Appendix G [of the Little Snake RMP]) • Little Yampa Canyon SRMA, Zone 1 • Juniper Mountain SRMA • The Cedar Mountain SRMA and WSR Yampa River segments1, 2, and 3 will not be available for coal leasing (3,780 acres). **Roan Plateau RMP:** Make the area available for coal leasing. All environmental protection requirements of the various resources described in the RMP and contained in the various stipulations would apply to coal. **STIPULATION** GS-NSO-ROAN-24, *Threatened, Endangered, or Candidate Species Habitat* – In order to protect occupied habitat and immediately adjacent potential habitat crucial for the maintenance or recovery of species listed under the ESA or by the State of Colorado as threatened or endangered (including proposed or candidate species under the ESA), no ground-disturbing activities will be authorized within occupied habitat or immediately adjacent potential habitat necessary for maintenance or recovery of the species. **White River RMP:** The management of coal resources developed in the 1981 Coal Amendment to the White River Resource Area LUP is carried forward into this RMP. The Coal unsuitability criteria found at 43 CFR 3461 were not reapplied at the time this RMP was developed. (p 2-7). The unsuitability criteria will be reapplied at the time an application is received. (p 2-8).

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		Routt National Forest: Recommend against or deny consent to the BLM for issuance of leases, permits, or coal exploration licenses where operational damages to surface resources would not be reclaimed to acceptable conditions (per Forest Plan direction). Operational damages to surface resources include impacts from surface-based access, product transportation, and ancillary facilities necessary to production and related operations (Mineral and Energy – Leasable Minerals Standard p. 1-4).
64	Solid Minerals--Coal	**Colorado River RMP: STIPULATION** GS-CSU-1: *Underground Coal Mines.* Apply CSU restrictions to oil and gas operations within the area of federally leased coal lands. Relocate oil and gas operations outside the area to be mined or located to accommodate room and pillar mining operations. **Grand Junction RMP:** No PHMA Acceptable for Coal Leasing. **Kremmling RMP:** No similar action. **Little Snake RMP:** RMP, Map 16; Coal Leasing and Development Restrictions. Underground mining exemption criteria for new leases: • RMP-40; Unsuitability criteria will apply only to surface coal mining but not to underground mining • RMP, Map 16 (of the Little Snake RMP); Coal Leasing and Development Restrictions • RMP, Appendix G-5 (of the Little Snake RMP) Criterion 12 State Resident Fish and Wildlife Federal lands, which the surface management agency and the State jointly agree are fish and wildlife habitat for resident species of high interest to the State, and which are essential for maintaining these priority wildlife species, would be considered unsuitable. Examples of such lands that serve a critical function for the species involved include: • Active dancing and strutting grounds for GRSG, sharp-tailed grouse, and prairie chicken • Winter ranges most critical for deer, antelope, and elk • Migration corridors for elk. A lease may be issued if, after consultation with the State, the surface management agency determines that all or certain stipulated methods of coal mining will not have a significant long-term impact on the species being protected.

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		A large portion of the coal planning area is critical habitat for mule deer, elk, antelope, GRSG, and sharp-tailed grouse. Colorado Division of Wildlife (now CPW) provided maps showing these severe winter ranges, concentration areas, migration routes, and production areas, which are essential to the continued maintenance of these populations. Two townships, T. 8 N., R. 90 and 91 W., are particularly important to mule deer and elk. The Colorado Division of Wildlife (now CPW) has recommended that no more than 10 percent of these townships be leased at one time. Currently, 6,420 acres (or 14 percent) have been leased by the Colorado State Land Board; therefore, no additions for federal leasing should occur, and the remaining 37,960 acres of federal coal lands should be unsuitable. All remaining adverse impacts on critical habitats for mule deer, elk, antelope, GRSG, and sharp-tailed grouse can be mitigated by requiring that the "Wildlife Habitat Replacement Stipulations" be attached to any future leases. Lands found acceptable in this RMP will be available for further consideration for leasing and/or exchange; however, all lands determined suitable, unsuitable, or unacceptable for further consideration for leasing and/or exchange may be reviewed, and suitability determinations may be modified based on new data during activity planning efforts. Unsuitability criteria apply only to surface coal mining—not underground mining. RMP G-1 **Roan Plateau RMP:** No similar action. **White River RMP:** Coal leases are issued through the competitive leasing process. Leasing ' subject to the requirements of 43 CFR 3425 – Leasing on Application. Leasing on application involves the submittal of an application, preparation of an environmental analysis document, a public hearing on the application and consultation with the Governor's Office. The unsuitability criteria will be reapplied at the time an application is received. (p2-8) The acreage identified as unsuitable for further coal leasing based on wildlife issues will be modified with updated wildlife information as coal lease applications are received. Reapplication of the coal unsuitability criteria will be completed in coordination with the Colorado Division of Wildlife. (p2-27)

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		Underground mining exemption criteria for new leases: No similar action. **Routt National Forest:** No similar action.
65	Locatable Minerals	**Colorado River RMP, Grand Junction RMP, Kremmling RMP:** No similar action. **Little Snake RMP:** All public lands are open to mineral entry and development under the General Mining Law of 1872 except the following areas, which will be recommended for withdrawal from mineral location: • Fly Creek SRMA • Serviceberry SRMA • Little Yampa Canyon SRMA • Existing WSAs • All ACECs • Emerald Mountain SRMA (has been withdrawn) • Vermillion Basin **Roan Plateau RMP:** Allow mineral exploration and development activities. All lands would be available for mining claim location. **White River RMP:** BLM lands not withdrawn or segregated from mineral entry under the General Mining Law of 1872 are open to mining claim location. (p2-8). Several withdrawals and reserves exist that limit the availability of lands for entry. Of the approximate 1,648,770 acres that could be available for location, 997,450 acres are currently withdrawn or unavailable to some extent. In the current RMP, the coal withdrawal of 1910, closed 366,570 acres to nonmetalliferous minerals only, as does 5,480 acres of Federal Water Reserves, and the oil shale withdrawal closed 625,400 acres to all mining claim location. If the three WSAs that were recommended to be carried forward are designated as wilderness, the Wilderness Act will withdraw those areas from location. This will add 41,250 acres to the lands that are unavailable for location. (p. 2-9).

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		Routt National Forest: Mineral and Energy – Locatable Minerals (p. 1-5) Standards For other classified lands not withdrawn from operations under the general mining laws (research natural areas, national recreation areas, special interest areas such as scenic and geologic, national historical sites, and scenic and recreation segments of wild and scenic rivers): 1. Check the status of classified lands, with respect to withdrawal, before an operating plan is approved. 2. Provide for reasonable protection of the purposes for which the lands were classified. Reclaim disturbed lands to a condition suitable for the purposes for which the lands were classified. 3. Pursue withdrawals where required.
66	Locatable Minerals	**Regulatory Requirement:** CFR 3809.100 **Routt National Forest:** No similar action.
67	Locatable Minerals	**Grand Junction RMP, Kremmling RMP, Little Snake RMP, Routt National Forest:** No similar action. **Colorado River RMP:** Allowable Use: **STIPULATION** GS-TL-3: *GRSG Winter and Nesting Habitat.* Prohibit surface occupancy and surface-disturbing activities during certain timeframes in grouse crucial winter habitat and nesting habitat (includes GRSG). GRSG nesting habitat is described as sagebrush stands with sagebrush plants between 30 and 100 centimeters (approximately 12 and 40 inches) in height and a mean canopy cover between 15 and 40 percent within a 2-mile radius of an active lek. Winter habitat: December 16 to March 15. Nesting habitat: March 1 to June 30. **Roan Plateau RMP:** Goal: Prevent the need for listing of proposed, candidate, and sensitive species under the ESA and improve the condition of special status species and its habitats to a point where their special status recognition is no longer warranted. Promote recovery of special status species plants that may become listed. Objective: Manage listed, proposed, or candidate threatened or endangered species to comply with the provisions of the ESA and promote their recovery. Manage BLM sensitive and significant plant communities consistent with the Colorado Standards for Public Land Health and with BLM policy on Special Status Species Management (BLM Manual 6840).

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		White River RMP: All surface-disturbing activity associated with a mining claim will be subject to the appropriate stipulations identified in Appendix A (of the White River RMP) and the COAs contained in Appendix B (of the White River RMP). (p2-9).
68	Locatable Minerals	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, White River RMP:** The range of alternatives is articulated in the specific PDF sections. **Routt National Forest:** PDFs are not included in Current Management. All PDF listed in **Appendix I**, Required Design Features, Preferred Design Features, and Suggested Design Features, are required for all action alternatives.
69	Nonenergy Leasable Minerals	**Colorado River RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, White River RMP, Routt National Forest:** No similar action. **Grand Junction RMP:** No PHMA is Open to nonenergy leasable mineral leasing.
70	Nonenergy Leasable Minerals	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, White River RMP:** The range of alternatives is articulated in the specific PDF sections. **Routt National Forest:** PDFs are not included in Current Management. All PDF listed in **Appendix I**, Required Design Features, Preferred Design Features, and Suggested Design Features, are required for all action alternatives.
71	Salable Minerals	**Colorado River RMP, Kremmling RMP, Roan Plateau RMP, White River RMP, Routt National Forest:** No similar action. **Colorado River RMP:** Disposal of salable minerals/mineral materials on BLM lands would be regulated under 43 CFR 3600 and subject to the stipulations for fluid minerals. **Grand Junction RMP:** Allowable Use: Close 274,300 acres to mineral material disposal (Figure 2-58, Appendix A [of the Grand Junction RMP]): • Badger Wash hydrologic research area • Grand Junction municipal watershed • Jerry Creek Reservoirs

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		• Baxter/Douglas soil slump hazard area • Plateau Creek soil slump hazard area • Elk calving area • Unaweep Seep • Pyramid Rock • Little Book Cliffs Wild Horse Range • Cultural sites • Recreation sites and VRM Class II areas • Areas recommended for wilderness designation • Utility corridors. **Little Snake RMP:** RMP-40 "All public lands are open to mineral material development (1,680,820 acres) except the following areas, which will be closed to mineral material sales (257,080 acres): • WSAs • Vermillion Basin • Cedar Mountain SRMA • Irish Canyon ACEC • Dinosaur North area (outside the WSA) • Lookout Mountain area • Limestone Ridge area • Little Yampa Canyon SRMA Zone 1 • Cold Spring Mountain area (outside the WSA) New mineral material sales within fragile soil and water areas will be subject to the performance objectives described under Soil Resources (Section 2.2 [of the Little Snake RMP]).
72	Salable Minerals	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, Routt National Forest:** No similar action.

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		White River RMP: All disturbed sites shall be promptly reclaimed to the satisfaction of the Area Manager. Reclamation should be implemented concurrent with construction and site operations to the fullest extent possible. Final reclamation actions shall be initiated within 6 months of the termination of operations unless otherwise approved in writing by the Authorized Officer. The goal for rehabilitation of any disturbed area shall be the permanent restoration of original site conditions and productive capability. (COAs pB-17).
73	Split Estate Mineral	**Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **Colorado River RMP:** Allowable Use: **STIPULATION** GS-NSO-12: *Threatened or Endangered Species.* Prohibit surface occupancy and surface-disturbing activities on habitat areas for those species listed by the federal or state government as endangered or threatened and for federal proposed or candidate species. Habitat areas include occupied habitat and habitat necessary for the maintenance or recovery of the species. **STIPULATION** GS-TL-3: *GRSG Winter and Nesting Habitat.* Prohibit surface occupancy and surface-disturbing activities during certain timeframes in grouse crucial winter habitat and nesting habitat (includes GRSG). GRSG nesting habitat is described as sagebrush stands with sagebrush plants between 30 and 100 centimeters (approximately 12 and 40 inches) in height and a mean canopy cover between 15 and 40 percent within a 2-mile radius of an active lek. Winter habitat: December 16 to March 15. Nesting habitat: March 1 to June 30. **White River RMP:** Where applicable, these stipulations would be applied to all surface-disturbing activities associated with land use authorizations, permits, and leases issued on BLM administered lands. Private landowner concerns and objectives will be considered before enforcing a stipulation on split estate lands. (pA-1).
74	Split Estate Mineral	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, White River RMP, Routt National Forest:** No similar action.

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Fuels Management		**Objective: No similar objective.**
75	Fuels Management	**Grand Junction RMP, Kremmling RMP, Routt National Forest:** No similar action. **Colorado River RMP:** Use appropriate integrated vegetation treatments (e.g., chemical, mechanical, prescribed fire and natural fire managed for resource benefits, and biological) for the control of invasive/noxious weeds. Use of herbicides would be consistent with current local, state, and BLM policy. **Little Snake RMP:** RMP-15 and 23, Goal B – Sustain the integrity of the sagebrush biome to support viable populations of GRSG and other sagebrush obligate species. **Roan Plateau RMP:** Revegetate with native plant species similar in mix and kind to the appropriate reference plant community. The type of cultural material (seeding or planting) used will depend on the attributes of the site and revegetation goals. As needed, utilize a combination of seeding grasses and forbs, and containerized nursery stock shrub and tree planting. Eradicate or control State of Colorado listed noxious weeds and other undesirable plant species within reclaimed areas and, as necessary, adjacent areas. **White River RMP:** Restore, maintain, or enhance habitat conditions and features conducive to the maintenance or expansion of native GRSG populations. (p2-31) Habitat treatment and management guidelines will be developed during the NEPA planning and analysis of individual project proposals. Guidelines will be integrated within approved project design. GRSG habitat treatment and management objectives will be incorporated into the planning and development of future activity plans. (p2-32) Vegetation manipulations would be irregular in shape, consisting of patches, strips, and fingers that maximize edge effect. (COA, pB-15).

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		Surface occupation and long-term conversion or adverse modification of the following GRSG habitats will be avoided: 1. sagebrush stands with ≤ 50 percent canopy and ≤ 30" in height, and ≤2 miles from a lek; 2. sagebrush stands with ≤ 30 percent canopy and ≤ 30" in height >2 miles from a lek on occupied summer ranges; 3. any sagebrush stand on slopes ≤ 20 percent in defined winter concentration areas; and 4. sagebrush stands on slopes ≤ 20 percent showing evidence of winter use. (p. 2-31). **Routt National Forest:** No similar action.
76	Fuels Management	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Roan Plateau RMP:** No similar action. **Little Snake RMP:** All surface-disturbing activities will avoid nesting and early brood-rearing habitat with the 4-mile radius of a lek between March 1 and June 30. Section 2.6/RMP-24, Appendix B-13 (of the Little Snake RMP). **White River RMP:** COAs will be attached, as appropriate, to help mitigate the site-specific impacts of an authorization. (p1-2) GRSG Nesting Habitat. This area encompasses suitable GRSG nesting habitat associated with individual leks. This stipulation will not take effect until direct and indirect impacts to suitable nesting cover exceeds 10 percent of the habitat available within 2 miles of identified leks. Further development, after this threshold has been exceeded, will not be allowed from April 15 through July 7. (Development can occur until 10 percent of the habitat associated with a lek is impacted, from then on, additional activity can occur from July 8 through April 14.) (pA-18). GRSG Winter Concentration Areas. This area encompasses sagebrush habitats that are occupied by wintering concentrations of GRSG, or represent the only habitats that remain available for use during periods of heavy snowpack. No development activity will be allowed between December 16 and March 15. The Colorado Division of Wildlife (now CPW) has indicated that these features exist on public lands within the White River Resource Area but have not yet delineated specific areas that will be subject to this timing restriction. (pA-21)

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		Routt National Forest: Threatened, Endangered, Sensitive Species, and Wildlife Standards (p. 1-14). 4. In areas where tall dense cover is desired for ground-nesting birds, retain adequate residual cover from previous growing seasons since some species begin nesting in April and May before spring growth. 5. Some bird species prefer to nest in undisturbed cover. In areas where these species are a primary consideration, manage livestock grazing to avoid adverse impacts to nesting habitat. 8. Manage activities to avoid disturbance to sensitive species which would result in a trend toward federal listing or loss of population viability. The protection will vary depending on the species, potential for disturbance, topography, location of important habitat components, and other pertinent factors. Give special attention during breeding, young rearing, and other times which are critical to survival of both flora and fauna. 9. Avoid disturbing threatened, endangered, and proposed species (both flora and fauna) during breeding, young rearing, or at other times critical to survival by closing areas to activities. Exceptions may occur when individuals are adapted to human activity, or the activities are not considered a threat.
77	Fuels Management	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **White River RMP:** GRSG Winter Concentration Areas. This area encompasses sagebrush habitats that are occupied by wintering concentrations of GRSG, or represent the only habitats that remain available for use during periods of heavy snowpack. No development activity will be allowed between December 16 and March 15. The Colorado Division of Wildlife (now CPW) has indicated that these features exist on public lands within the White River Resource Area but have not yet delineated specific areas that will be subject to this timing restriction. (p. A-21).
78	Fuels Management	**Colorado River RMP, Grand Junction RMP, Kremmling RMP:** No similar action. **Little Snake RMP:** All surface-disturbing activities will avoid nesting and early brood-rearing habitat with the 4-mile radius of a lek between March 1 and June 30. Section 2.6/RMP-24, Appendix B-13 (of the Little Snake RMP).

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		White River RMP: COAs will be attached, as appropriate, to help mitigate the site-specific impacts of an authorization. (p1-2) GRSG Nesting Habitat. This area encompasses suitable GRSG nesting habitat associated with individual leks. This stipulation will not take effect until direct and indirect impacts to suitable nesting cover exceeds 10 percent of the habitat available within 2 miles of identified leks. Further development, after this threshold has been exceeded, will not be allowed from April 15 through July 7. (Development can occur until 10 percent of the habitat associated with a lek is impacted, from then on, additional activity can occur from July 8 through April 14.) (pA-18). GRSG Winter Concentration Areas. This area encompasses sagebrush habitats that are occupied by wintering concentrations of GRSG, or represent the only habitats that remain available for use during periods of heavy snowpack. No development activity will be allowed between December 16 and March 15. The Colorado Division of Wildlife (now CPW) has indicated that these features exist on public lands within the White River Resource Area but have not yet delineated specific areas that will be subject to this timing restriction. (pA-21) **Routt National Forest:** Threatened, Endangered, Sensitive Species, and Wildlife Standards (p. 1-14). 4. In areas where tall dense cover is desired for ground-nesting birds, retain adequate residual cover from previous growing seasons since some species begin nesting in April and May before spring growth. 5. Some bird species prefer to nest in undisturbed cover. In areas where these species are a primary consideration, manage livestock grazing to avoid adverse impacts to nesting habitat. 8. Manage activities to avoid disturbance to sensitive species which would result in a trend toward federal listing or loss of population viability. The protection will vary depending on the species, potential for disturbance, topography, location of important habitat components, and other pertinent factors. Give special attention during breeding, young rearing, and other times which are critical to survival of both flora and fauna. 9. Avoid disturbing threatened, endangered, and proposed species (both flora and fauna) during breeding, young rearing, or at other times critical to survival by closing areas to activities. Exceptions may occur when individuals are

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		adapted to human activity, or the activities are not considered a threat.
79	Fuels Management	**Grand Junction RMP, Kremmling RMP:** No similar action. **Colorado River RMP:** Hold project proponents, including livestock operators, ROWs holders, and other permittees deemed necessary by the Authorized Officer, responsible for monitoring and controlling noxious weeds that result from any new facilities, improvements or other surface disturbances authorized on BLM land (e.g., roads, communication sites, pipelines, stock ponds, and fences). **Little Snake RMP:** Monitor, prioritize, and treat noxious weeds. Section 2.4/RMP-16. **Roan Plateau RMP:** For activities creating a surface disturbance larger than 1 acre, require a weed management plan which would emphasize and detail prevention, inventory, detection, eradication, and monitoring efforts, corrective measures, and other weed control actions. • Require weed free seed for reclamation activities. • Require the use of weed free hay and feed for livestock. • Require weed control actions for all disturbances, including hose less than 1 acre in size. • Require prompt reclamation of all disturbed areas with native species. **White River RMP:** In accordance with the White River Resource Area Noxious Weed Management Plan, manage noxious weeds with particular emphasis on a coordinated, cooperative approach. Implement practices that prevent or reduce the extent and occurrence of noxious and problem weeds throughout the Resource Area. (p2-14) Three contiguous areas encompassing 497,900 acres will be designated as weed free zones upon approval of this document (see Map 2-8 [of the White River RMP]). Weed management will be emphasized in these areas through cooperation with private land owners and state and county governments. The areas will, be identified on the ground with signs. The following special conditions will be attached to use authorizations approved within these areas: 1. All construction equipment and vehicles will be cleaned prior to entering BLM Weed Free Zones. 2. All hay, straw, unprocessed feed, and seed used in BLM Weed Free Zones must be certified free of specified noxious weeds listed in Colorado Weed Seed Free Forage Certification standards.

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		3. All authorized users of disturbed areas will be required to inventory for noxious weeds in both the spring and fall. (p2-14). **Routt National Forest:** Undesirable Species (p. 1-16) Standards 1. Control nonnative and noxious plants throughout the Forest, with priority given to designated wilderness. 2. Use only certified noxious weed free hay, seed, straw, or other materials for feed or revegetation projects on the Forest. Guidelines 1. Develop a noxious weed and pest management program that addresses awareness, prevention, inventory, planning, treatment, monitoring, reporting, and management objectives. Priorities for implementing a program for undesirable plants include: a. New invaders. b. New areas. c. Spreading or expanding infestations. d. Existing infestations.
80	Fuels Management	**Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **Colorado River RMP:** Prohibit livestock grazing on all seeded areas for two growing seasons. **White River RMP:** Areas proposed for vegetation manipulation would not be grazed by livestock until understory vegetation becomes well established and is able to support livestock grazing. A minimum of two complete growing seasons of rest from livestock grazing would be required to help ensure desirable vegetation regains vigor. (COA, pB-15).
81	Fuels Management	**Colorado River RMP, Grand Junction RMP, Kremmling RMP:** No similar action. **Little Snake RMP:** Use reclamation seed mixes, consisting of native bunchgrasses, forbs, and subspecies of big

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		sagebrush, that are appropriate for the disturbed site and its potential. Section 2.6/RMP-24 Goal E: Maintain or improve the integrity of streams and their associated riparian values. Section 2.4/RMP-15 (of the Little Snake RMP). **Roan Plateau RMP:** Revegetate with native plant species similar in mix and kind to the appropriate reference plant community. The type of cultural material (seeding or planting) used will depend on the attributes of the site and revegetation goals. As needed, utilize a combination of seeding grasses and forbs, and containerized nursery stock shrub and tree planting. **White River RMP:** Only native plant species will be used for reseeding of disturbed areas within the Blue Mountain/Moosehead geographic reference area (G-1), within WSAs, and within designated ACECs. Native plant species will be encouraged in the remainder of the resource area for reseeding disturbed areas that are not threatened by establishment of exotic or noxious plant species. Naturalized plant species will be allowed for reseeding on "at risk" and "unhealthy" rangelands and grazeable woodlands. (p2-11). **Routt National Forest:** Use genetically local (at the subsection level), native plant species for revegetation efforts where technically and economically feasible. Use weed-free seed mixtures. While native perennials are becoming established, nonnative annuals or sterile perennial species may be used to prevent soil erosion (Biological Diversity Standard p. 1-8).
82	Fuels Management	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **White River RMP:** Areas proposed for vegetation manipulation would not be grazed by livestock until understory vegetation becomes well established and is able to support livestock grazing. A minimum of two complete growing seasons of rest from livestock grazing would be required to help ensure desirable vegetation regains vigor. (COA, pB-15).
83	Fuels Management	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Roan Plateau RMP, White River RMP, Routt National Forest:** No similar action. **Little Snake RMP:** Section 2.8/RMP-27; Goal A: Give first priority to protection of life or property. Identify and

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Description of Alternative A

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		reduce hazardous fuels with an emphasis on urban-interface areas.
84	Fuels Management	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Roan Plateau RMP:** No similar action. **Little Snake RMP:** Work with the Northwest Colorado Sage-Grouse Working Group to identify, maintain, and treat vegetation. Creation of functional blocks of sagebrush as GRSG habitat will be emphasized. Section 2.4/RMP-16. Goal B: Sustain the integrity of the sagebrush biome in order to support viable populations of GRSG. Section 2.4/RMP-15 (of the Little Snake RMP). **White River RMP:** Suitable GRSG habitats (see Map 2-16 [of the White River RMP]) will be enhanced by manipulating suboptimal sagebrush stands, or converting stands with undesirable composition to suitable cover types. (p2-31) **Routt National Forest:** Threatened, Endangered, Sensitive Species, and Wildlife Standards (p. 1-14). 4. In areas where tall dense cover is desired for ground-nesting birds, retain adequate residual cover from previous growing seasons since some species begin nesting in April and May before spring growth. 5. Some bird species prefer to nest in undisturbed cover. In areas where these species are a primary consideration, manage livestock grazing to avoid adverse impacts to nesting habitat.
Fire Operations		**Objective: No similar objective.**
85	Fire Operations	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **White River RMP:** Develop suppression priorities; identify management restrictions, and determining appropriate fire suppression strategies. Utilize prescribed fire, both natural and management ignited, to protect, maintain and enhance ecosystems, economic values, and multiple use resource management programs.

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		No wildfire situation will require the unnecessary exposure of firefighters and equipment to dangerous situations. (p. 2-55).
86	Fire Operations	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **White River RMP:** Develop suppression priorities; identify management restrictions, and determining appropriate fire suppression strategies. Utilize prescribed fire, both natural and management ignited, to protect, maintain and enhance ecosystems, economic values, and multiple use resource management programs. No wildfire situation will require the unnecessary exposure of firefighters and equipment to dangerous situations. (p. 2-55).
Emergency Stabilization and Rehabilitation (ESR)		**Objective: No similar objective.**
87	ESR	**Colorado River RMP, Grand Junction RMP, Kremmling RMP:** No similar action. **Little Snake RMP:** Use reclamation seed mixes, consisting of native bunchgrasses, forbs, and subspecies of big sagebrush, that are appropriate for the disturbed site and its potential. Section 2.6/RMP-24 (of the Little Snake RMP). **Roan Plateau RMP:** Revegetate with native plant species similar in mix and kind to the appropriate reference plant community. The type of cultural material (seeding or planting) used will depend on the attributes of the site and revegetation goals. As needed, utilize a combination of seeding grasses and forbs, and containerized nursery stock shrub and tree planting. **White River RMP:** Adapted forms of succulent forbs should be included in seed mixes applied to surface disturbances on GRSG brood ranges. Seed mixes will be subject to reseeding conditions established for each GRA and identified in Appendix B (of the White River RMP).

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		Comparable or superior varieties of sagebrush should be established within occupied GRSG ranges in those instances where sagebrush conversion or removal has exceeded 500 acres. The extent and level of reestablishment effort will not exceed 20 percent of converted acreage at mature canopy densities of ≤ 15 percent. (p2-32). **Routt National Forest:** Use genetically local (at the subsection level), native plant species for revegetation efforts where technically and economically feasible. Use weed-free seed mixtures. While native perennials are becoming established, nonnative annuals or sterile perennial species may be used to prevent soil erosion (Biological Diversity Standard, p. 1-8).
88	ESR	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **White River RMP:** Areas proposed for vegetation manipulation would not be grazed by livestock until understory vegetation becomes well established and is able to support livestock grazing. A minimum of two complete growing seasons of rest from livestock grazing would be required to help ensure desirable vegetation regains vigor. (COA, pB-15).
89	ESR	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, White River RMP, Routt National Forest:** No similar action.
Habitat Restoration		**Objective: No similar objective.**
90	Habitat Restoration	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **Little Snake RMP:** Goal C: Identify and initiate restoration and rehabilitation of sagebrush habitat while maintaining a mosaic of canopy cover and seral stages. Section 2.4/RMP-15 (of the Little Snake RMP). **White River RMP:** Comparable or superior varieties of sagebrush should be established within occupied GRSG ranges in those instances where sagebrush conversion or removal has exceeded 500 acres. The extent and level of reestablishment effort will not exceed 20 percent of converted acreage at mature canopy densities of ≤ 15 percent. (p2-32).

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NTT No.	Program Area	Alternative A (No Action / Current Management)
91	Habitat Restoration	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, White River RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **Little Snake RMP:** Work with the Northwest Colorado Sage-Grouse Working Group to identify, maintain, and treat vegetation. Creation of functional blocks of sagebrush as GRSG habitat will be emphasized. Section 2.4/RMP-16 (of the Little Snake RMP).
92	Habitat Restoration	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Routt National Forest:** No similar action. **Little Snake RMP:** Use reclamation seed mixes, consisting of native bunchgrasses, forbs, and subspecies of big sagebrush, that are appropriate for the disturbed site and its potential. Section 2.6/RMP-24 (of the Little Snake RMP). **Roan Plateau RMP:** Revegetate with native plant species similar in mix and kind to the appropriate reference plant community. The type of cultural material (seeding or planting) used will depend on the attributes of the site and revegetation goals. As needed, utilize a combination of seeding grasses and forbs, and containerized nursery stock shrub and tree planting. **White River RMP:** Adapted forms of succulent forbs should be included in seed mixes applied to surface disturbances on GRSG brood ranges. Seed mixes will be subject to reseeding conditions established for each GRA and identified in Appendix B (of the White River RMP). Comparable or superior varieties of sagebrush should be established within occupied GRSG ranges in those instances where sagebrush conversion or removal has exceeded 500 acres. The extent and level of reestablishment effort will not exceed 20 percent of converted acreage at mature canopy densities of ≤15 percent. (p2-32).
93	Habitat Restoration	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **White River RMP:** Areas proposed for vegetation manipulation would not be grazed by livestock until understory vegetation becomes well established and is able to support livestock grazing. A minimum of two complete growing seasons of rest from livestock grazing would be required to help ensure desirable vegetation regains vigor. (COA, pB-

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		15).
94	Habitat Restoration	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, White River RMP, Routt National Forest:** No similar action.
95	Habitat Restoration	**Colorado River RMP, Grand Junction RMP, Kremmling RMP, Little Snake RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **White River RMP:** Vegetation treatment widths should generally not exceed 200 feet. Treatment areas should be interspersed with equal or larger intervals of suitable cover. Cumulative adverse manipulations will not be allowed to exceed 10 percent of suitable nest habitat within 2 miles of a lek. (p. 2-32) Vegetation manipulations would be irregular in shape, consisting of patches, strips, and fingers that maximize edge effect. (COA, p. B-15).
96	Habitat Restoration	**Colorado River Valley RMP, Kremmling RMP, Roan Plateau RMP, Routt National Forest:** No similar action. **Grand Junction RMP:** Maintain patch size of low-elevation sage-brush habitat to restore habitat connectivity and function for sage-brush obligate species. **Little Snake RMP:** Same as Alternative A. **White River RMP:** Comparable or superior varieties of sagebrush should be established within occupied GRSG ranges in those instances where sagebrush conversion or removal has exceeded 500 acres. The extent and level of reestablishment effort would not exceed 20 percent of converted acreage at mature canopy densities of <15 percent. (Table 2.6, #21).
97	Habitat Restoration	**Colorado River Valley RMP, Grand Junction RMP, Kremmling RMP:** No similar action. **Little Snake RMP:** Same as Alternative A. **White River RMP:** Comparable or superior varieties of sagebrush should be established within occupied GRSG

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NTT No.	Program Area	Alternative A (No Action / Current Management)
		ranges in those instances where sagebrush conversion or removal has exceeded 500 acres. The extent and level of reestablishment effort would not exceed 20 percent of converted acreage at mature canopy densities of <15 percent. (Table 2.6, #21). **Roan Plateau RMP:** Rehabilitate areas plant communities that are not meeting desired range of conditions due to dominance by annual or weedy species, or invasive juniper. Seed mixes would emphasize forage-producing perennials that support livestock production and other commodity values. **Routt National Forest:** In PHA and within 4 miles of an active lek – Reestablish appropriate sagebrush species/subspecies and important understory plants relative to site potential. Identify priority plant species and collect seed of understory plants and sagebrush subspecies important to GRSG.

Table 2.8
Description of Alternatives B, C, D, and BLM and Forest Service Proposed LUPAs

(PHMA) = Priority Habitat Management Area, (GHMA) = General Habitat Management Area, (LCHMA) = Linkage/Connectivity Habitat Management Area, (ADH) = All Designated Habitat

NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
Objective: Maintain and enhance populations and distribution of GRSG by protecting and improving sagebrush habitats and ecosystems that sustain GRSG populations.						
Travel and Transportation		**Objective: Manage travel and transportation to 1) reduce mortality from vehicle collisions, 2) limit change in GRSG behavior, 3) avoid, minimize, and compensate for habitat fragmentation, 4) limit the spread of noxious weeds, and 5) limit disruptive activity associated with human access.**				
1	Travel	(PHMA) Limit OHV travel to existing roads, primitive roads, and trails at a minimum.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B. <u>Special Zone Provision</u>: Colorado MZ 13 – Manage the Wolford Mountain open OHV area.	Same as Alternative B.
2	Travel	(PHMA) Travel management should evaluate the need for permanent or seasonal road or area closures.	Same as Alternative B.	(ADH) Identify seasonal closure areas for GRSG.	(PHMA) Evaluate and consider permanent or seasonal road or area closures as needed to address a current threat.	Same as Alt. A. (ADH) Manage motorized use by seasonal use restriction if 'use causes unacceptable wildlife conflict or habitat degradation' (Forestwide Infrastructure – Travelways Guideline 3b, p. 1-23).
3	Travel	(PHMA) Complete activity level travel plans within 5 years of the ROD. During activity level planning, where appropriate, designate routes with current administrative/agency purpose or need to administrative access only.	Same as Alternative B.	Same as Alternative B.	(PHMA) Complete activity level travel plans as soon as possible, subject to funding. During activity level planning, where appropriate, designate routes with current administrative/agency purpose or need to administrative access only.	Activity level plans are already completed in ADH.
4	Travel	(PHMA) Limit route construction to realignments of existing designated routes if that realignment has a minimal	(ADH) Limit route construction to realignments of existing designated routes if that realignment has a minimal impact on GRSG habitat,	(PHMA) Until completion of the relevant field office travel management plans, limit route construction to routes that will not	(PHMA) Complete activity level travel plans as soon as possible, subject to funding. Limit route construction to routes that will not adversely	GRSG-RT-ST-001-Standard – In PHMA and GHMA, do not construct or allow new road or trail construction (does not apply to realignments for

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(PHMA) = Priority Habitat Management Area, (GHMA) = General Habitat Management Area, (LCHMA) = Linkage/Connectivity Habitat Management Area, (ADH) = All Designated Habitat

NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
		impact on GRSG habitat, eliminates the need to construct a new road, or is necessary for motorist safety	eliminates the need to construct a new road, or is necessary for motorist safety. Mitigate any impacts with methods that have been demonstrated to be effective to offset the loss of GRSG habitat.	adversely affect GRSG populations due to habitat loss or disruptive activities.	affect GRSG populations due to habitat loss or disruptive activities.	resource protection) except when necessary for administrative access, public safety, or to access valid existing rights. If necessary to construct new roads and trails for one of these purposes, construct them to the minimum standard, length, and number and avoid, minimize, and compensate for impacts. GRSG-RT-GL-001-Guideline – In PHMA, new roads and road realignments should be designed and administered to reduce collisions with GRSG. GRSG-RT-GL-002-Guideline – In PHMA, road construction within riparian areas and mesic meadows should be restricted. If not possible to avoid construction within riparian areas and mesic meadows, roads should be designed and constructed at right angles to ephemeral drainages and stream crossings, unless topography prevents doing so.

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
5	Travel	(PHMA) Use existing roads or realignments as described above to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then build any new road constructed to the absolute minimum standard necessary, and add the surface disturbance to the total disturbance in PHMA. If that disturbance exceeds 3 percent for that area, then evaluate and implement additional, effective mitigation necessary to offset the resulting loss of GRSG habitat.	Same as Alternative B, using a 4-mile buffer from leks to determine road route.	(PHMA) Construct new roads to the appropriate Gold Book standard and add the surface disturbance to the total disturbance in PHMA. If anthropogenic disturbance as defined in **Appendix E**, Methodology for Calculating Disturbance Caps, exceeds 5 percent for that Colorado MZ, then make additional, effective mitigation necessary to offset the resulting loss of GRSG habitat. Disturbance Exception Criteria: Where data-based documentation is available to warrant a conclusion that GRSG populations in the applicable Colorado MZ are healthy and stable at objective levels or increasing, and that the development will not adversely affect GRSG populations due to habitat loss or disruptive activities, the Authorized Officer may authorize disturbance in excess of the 5 percent disturbance cap without requiring additional mitigation. In many cases,	(PHMA) Use existing roads or realignments whenever possible. If it is necessary to build a new road, and the use of existing roads would cause adverse impacts to GRSG, construct new roads to the appropriate minimum Gold Book standard and add the surface disturbance to the total disturbance in PHMA if it meets the criteria in **Appendix H**, Guidelines for Implementation. Construct no new roads if the biologically significant unit (Colorado populations) and proposed project analysis area (Colorado MZ) is over the 3 percent disturbance cap, unless there is an immediate health and safety need, or to support valid existing rights that cannot be avoided. Evaluate and implement additional, effective mitigation necessary to offset the resulting loss of GRSG habitat.	GRSG-RT-ST-001-Standard (see above) GRSG-RT-GL-001-Guideline (see above) GRSG-RT-GL-002-Guideline (see above) GRSG-RT-ST-003-Standard – In PHMA, do not allow public access on temporary energy development roads, unless consistent with all other terms and conditions included in the LUP.

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
				this exception will require project proponents to fund studies necessary to secure the "data-based documentation" requirement.		
6	Travel	(PHMA) Allow no upgrading of existing routes that would change route category (road, primitive road, or trail) or capacity unless the upgrading would have minimal impact on GRSG habitat, is necessary for motorist safety, or eliminates the need to construct a new road.	(ADH) Allow no upgrading of existing routes that would change route category (road, primitive road, or trail) or capacity unless it is necessary for motorist safety, or eliminates the need to construct a new road. Any impacts shall be mitigated with methods that have been demonstrated to be effective to offset the loss of GRSG habitat.	(PHMA) Allow upgrades to existing routes after documenting that the upgrade will not adversely affect GRSG populations due to habitat loss or disruptive activities.	Same as Alternative D.	Same as Alternative A - (ADH) The 2012 Motor Vehicle Use Map limits motorized travel to designated roads and motorized trails. Additional Forest Plan Standards include: Negotiate surface management for private oil and gas minerals with the owner and operator to be as close as possible to the standards used for federal minerals; Prohibiting such development is not an alternative (Forestwide Mineral and Energy – Reserved and Outstanding Rights Standard 1, p.1-6). Prohibit motorized use with wheeled vehicles on lands outside designated travel ways unless a forest order indicates that such use is specifically allowed (Forestwide Infrastructure – Travelways Standard 4, p. 1-23).Prohibit motorized access from private land where

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
						access for the general public is not available, except by special permit (Forestwide Infrastructure – Travelways Standard 4, p.1-23). Retain existing access rights, where needed, to meet Forest Plan goals and objectives (Forestwide Real Estate-Rights-of-way Standard 1, p.1-25).
7	Travel	(PHMA) Conduct restoration of roads, primitive roads and trails not designated in travel management plans. This also includes primitive route/roads that were not designated in WSAs and within lands with wilderness characteristics that have been selected for protection in previous LUPs.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.	GRSG-RT-GL-003-Guideline – In PHMA and GHMA, when decommissioning roads and unauthorized routes, restoration activity should be designed to move habitat towards desired conditions (**Table 2.3**).
8	Travel	(PHMA) When reseeding roads, primitive roads and trails, use appropriate seed mixes and consider the use of transplanted sagebrush.	(ADH) When reseeding closed roads, primitive roads and trails, use appropriate native seed mixes and require the use of transplanted sagebrush.	Same as Alternative B.	Same as Alternative B.	Same as Alternative A. (ADH) Use genetically local (at the subsection level), native plant species for revegetation efforts where technically and economically feasible; use weed-free seed mixtures; while native perennials are becoming established, nonnative annuals

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						or sterile perennial species may be used to prevent soil erosion (Forestwide Biological Diversity Standard 3, p.1-8).
--	Travel	No similar action.	(ADH) Prohibit new road construction within 4 miles of active GRSG leks, and avoid new road construction in occupied GRSG habitat.	No similar action.	No similar action.	GRSG-RT-ST-002-Standard – Do not conduct or allow road and trail maintenance activities within 2 miles from the perimeter of active leks during lekking (March 1 to April 30) from 6 pm to 9 am.
Recreation		**Objective: Manage Recreation to avoid activities that 1) disrupt GRSG, 2) fragment GRSG habitat, or 3) spread noxious weeds.**				
9	Recreation	(PHMA) Only allow BLM SRPs and Forest Service Recreation SUAs in PHMA that have neutral or beneficial effects to PHMA.	Same as Alternative B.	(PHMA) Allow SRPs that will not adversely affect GRSG populations due to habitat loss or disruptive activities.	(PHMA) Do not allow SRPs/SUAs with the potential to adversely affect GRSG or GRSG habitat.	**GRSG-GEN-ST-001-Standard** – In PHMA, do not permit lands or recreation special use authorizations unless all existing discrete anthropogenic disturbances cover less than 3 percent of the total GRSG habitat within the biologically significant unit and the proposed project analysis areas, regardless of ownership (**Appendix E**, Methodology for Calculating Disturbance Caps). GRSG-R-ST-001-Standard – In PHMA and GHMA, do not authorize temporary recreation uses (i.e., facilities or activities) that result in loss of habitat or would have long-term (more than 5

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
						years) negative impacts on GRSG or its habitats. GRSG-R-GL-001-Guideline – In PHMA and GHMA, terms and conditions that protect and/or restore GRSG habitat within the permit area should be included in new recreation special use authorizations. During renewal, amendment, or reauthorization, terms and conditions in existing permits and operating plans should be modified to protect and/or restore GRSG habitat. GRSG-R-GL-002-Guideline – In PHMA, new recreational facilities or expansion of existing recreational facilities (e.g., roads, trails, and campgrounds), including special use authorizations for facilities and activities, should not be approved unless the authorization reduces impacts to GRSG and/or its habitats or the development is required for visitor safety.
--	Recreation	No similar action.	(ADH) Seasonally prohibit camping and other non-OHV recreation within 4 miles of active GRSG leks.	No similar action.	No similar action.	No similar action.

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
Lands and Realty Management		**Objective: Manage the Lands and Realty program to avoid, minimize, and compensate for the loss of habitat and habitat connectivity through the authorizations of ROWs, land tenure adjustments, proposed land withdrawals, agreements with partners, and incentive programs.**				
Rights-of-Way (ROW)						
10	Lands/ Realty	(PHMA) Manage PHMA as exclusion areas for new BLM ROW or Forest Service SUA permits.	(ADH) Occupied GRSG habitat areas shall be exclusion areas for new ROWs permits.	(PHMA) Manage PHMA as avoidance areas for new ROW permits. (PHMA) Manage PHMA as exclusion areas for large transmission lines (greater than 230 kilovolts, per guidance in BLM Instruction Memorandum 2013-118, Revised Implementation Guidance for the Interagency Transmission Memorandum of Understanding (BLM 2013b). Manage 68,000 acres as avoidance areas for large transmission lines (greater than 230 kilovolts). **GRSG PHMA ROW Avoidance, Alternative D.** Areas identified as avoidance areas for new ROWs and for ROWs for large transmission lines (greater than 230 kilovolts) would be required to document that they would not adversely affect GRSG	Manage areas within PHMA as avoidance areas for BLM ROW permits or Forest Service SUA permits. (See Special Stipulations applicable to **GRSG PHMA ROW Avoidance, Proposed LUPA.**) Manage areas within GHMA as avoidance areas for BLM ROW permits or Forest Service SUA permits. (See Special Stipulations applicable to **GRSG PHMA ROW Avoidance, Proposed LUPA.**) No new roads or above-ground structures would be authorized within 1 mile of an active lek. Above-ground structures are defined as structures that are located on or above the surface of the ground, including but not limited to: roads, fences, communication towers, and/or any structure that would provide perches.	**GRSG-GEN-ST-001-Standard** – In PHMA, do not permit lands or recreation special use authorizations unless all existing discrete anthropogenic disturbances cover less than 3 percent of the total GRSG habitat within the biologically significant unit and the proposed project analysis areas, regardless of ownership (**Appendix E**, Methodology for Calculating Disturbance Caps). GRSG-GEN-ST-002-Standard – In PHMA and GHMA, only allow new authorized land uses if the residual impacts to GRSG or its habitats are fully offset by compensatory mitigation projects that provide a net conservation gain to the species, which will be achieved by avoiding, minimizing, and compensating for impacts by applying beneficial mitigation actions. Any compensatory mitigation will be durable, timely, and in

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
				populations due to habitat loss or disruptive activities. Any new projects within PHMA would be subject to the 5 percent disturbance cap as described in **Appendix E**, Methodology for Calculating Disturbance Caps. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)	Above ground structures would only be authorized if: 1) It is consistent with the overall objective of the RMP Amendment; 2) The effect on GRSG populations or habitat is nominal or incidental; 3) Allowing the exception prevents implementation of an alternative more detrimental to GRSG or similar environmental concern, and; 4) Rigid adherence to the restriction would be the only reason for denying the action. PHMA and GHMA are designated as avoidance areas for high-voltage transmission line ROWs, except for the transmission projects specifically identified below. All authorizations in these areas, other than the excepted projects, must comply with the conservation measures outlined in this Proposed LUPA, including the RDFs and avoidance criteria presented in this document. The BLM is currently processing	addition to what would have resulted without the compensatory mitigation as addressed in the Mitigation Framework (Appendix X). GRSG-GEN-GL-001-Guideline – During lekking (March 1 to April 30) anthropogenic disturbances, including noise at 10 decibels above ambient (not to exceed 20 to 24 decibels) to lekking birds should be avoided from 6 pm to 9 am at a distance of 3.1 miles from the perimeter of an occupied lek. GRSG-GEN-GL-002-Guideline – During breeding and nesting (March 1 to June 15), anthropogenic disturbances to nesting birds should be avoided. GRSG-GEN-GL-003-Guideline – When breeding and nesting habitat overlaps with other seasonal habitats, habitat should be managed for breeding and nesting desired habitat conditions displayed in **Table 2.3**. GRSG-GEN-GL-004-

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					applications for the TransWest and Energy Gateway South Transmission Line projects and the NEPA review for these projects is well underway. The BLM is analyzing GRSG mitigation measures through these project's NEPA review processes. **GRSG PHMA ROW Avoidance, Proposed LUPA.** ROWs/SUAs may be issued after documenting that the ROWs/SUAs would not adversely affect GRSG populations based on the following criteria: • Location of proposed activities in relation to critical GRSG habitat areas as identified by factors, including but not limited to, average male lek attendance and/or important seasonal habitat. • An evaluation of the potential threats from proposed activities that may affect the local population as compared to benefits that could be accomplished through	Guideline – Development of tall structures within 2.0 miles from the perimeter of occupied leks, as determined by local conditions (such as vegetation or topography), with the potential to disrupt breeding or nesting by creating new perching/nesting opportunities for avian predators or by decreasing the use of an area should be avoided in nesting habitat. **GRSG-LR-SUA-ST-001-Standard** – In PHMA, restrict issuance of new lands special use authorizations that authorize infrastructure, such as high-voltage transmission lines, major pipelines, hydropower, distribution lines, and cellular towers. Exceptions must be limited and based on rationale (e.g., monitoring, modeling, or best available science) that explicitly demonstrates that adverse impacts to GRSG will be avoided by the exception. GRSG-LR-SUA-ST-003-Standard – In PHMA and GHMA, do not authorize temporary lands special uses

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					compensatory or off-site mitigation (see **Section 2.7.3**, Regional Mitigation) • An evaluation of the proposed activities in relation to the site-specific terrain and habitat features. For example, within 4 miles from a lek, local terrain features such as ridges and ravines may reduce the habitat importance, and shield nearby habitat from disruptive factors. Any new projects within PHMA would be subject to the 3 percent disturbance cap as described in **Appendix E**, Methodology for Calculating Disturbance Caps. If the 3 percent disturbance cap is exceeded in PHMA in any biologically significant unit (Colorado population) and proposed project analysis area (Colorado MZ), no new ROW would be authorized in PHMA within that Colorado MZ, unless site-specific analysis documents no impact to GRSG.	(i.e., facilities or activities) that result in loss of habitat or would have long-term (i.e., more than 5 years) negative impact on GRSG or its habitats. GRSG-LR-SUA-ST-004-Standard – In PHMA and GHMA, require protective stipulations (e.g., noise, tall structure, guy wire removal, and perch deterrent installation) when issuing new authorizations or during renewal, amendment, or reissuance of existing authorizations that authorize infrastructure (e.g., high-voltage transmission lines, major pipelines, roads, distribution lines, and cellular towers).

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
					GRSG PHMA ROW TL, Proposed LUPA: Prohibit surface occupancy and surface-disturbing activities associated with BLM ROW or Forest Service SUA permits within 4 miles from active leks during lekking, nesting, and early brood-rearing (March 1 to July 15). (See Special Stipulations applicable to **GRSG PHMA ROW TL, Proposed LUPA**).	
		(PHMA) Within designated ROW or SUA corridors encumbered by existing ROW or SUA authorizations: new ROWs or SUAs may be collocated only if the entire footprint of the proposed project (including construction and staging), can be completed within the existing disturbance associated with the authorized ROWs or SUAs.	(ADH) Within designated ROW corridors encumbered by existing ROW authorizations: new ROWs may be collocated only if the entire footprint of the proposed project (including construction and staging), can be completed within the existing disturbance associated with the authorized ROWs.	(PHMA) New ROWs may be collocated within approved ROW corridors that are encumbered by existing ROW authorizations.	Same as Alternative D, except special stipulations described in **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations would apply.	GRSG-LR-SUA-ST-008-Standard – In PHMA and GHMA, co-locate new infrastructure (e.g., high-voltage transmission lines, major pipelines, roads, distribution lines, and cellular towers) with existing infrastructure to limit disturbance to the smallest footprint, or where it best limits impacts to GRSG or its habitats. When co-location of new infrastructure cannot be accomplished, locate it adjacent to existing infrastructure, roads, or already disturbed areas. New communication tower sites may be authorized for public safety.

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
		(PHMA) Subject to valid existing rights: where new ROWs or SUAs associated with valid existing rights are required, collocate new ROWs or SUAs within existing ROWs or SUAs or where it best minimizes GRSG impacts. Use existing roads, or realignments as described above, to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then build any new road constructed to the absolute minimum standard necessary, and add the surface disturbance to the total disturbance in PHMA. If that disturbance exceeds 3 percent for that area, then evaluate and implement additional effective mitigation to offset the resulting loss of GRSG habitat.	(ADH) Subject to valid existing rights: where new ROWs associated with valid existing rights are required, collocate new ROWs within existing ROWs or where it best minimizes GRSG impacts. Use existing roads, or realignments as described above, to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then build any new road constructed to the absolute minimum standard necessary, and add the surface disturbance to the total disturbance in PHMA. If that disturbance exceeds 3 percent for that area, then make additional mitigation that has been demonstrated to be effective to offset the resulting loss of GRSG habitat.	(PHMA) Only issue ROWs after documenting that the ROWs will not adversely affect GRSG populations due to habitat loss or disruptive activities (independent of disturbance cap) except where such limitation would make accessing valid existing rights impracticable. Construct new roads to the appropriate Gold Book standard and add the surface disturbance to the total disturbance in PHMA. If anthropogenic disturbance as defined in **Appendix E**, Methodology for Calculating Disturbance Caps, exceeds 5 percent for that Colorado MZ, then make additional, effective mitigation necessary to offset the resulting loss of GRSG habitat. Disturbance Exception Criteria: Where data-based documentation is available to warrant a conclusion that GRSG populations in the applicable Colorado MZ are healthy and stable at objective levels or	(PHMA) Only issue ROWs/SUAs after documenting that the ROWs/SUAs will not adversely affect GRSG populations due to habitat loss or disruptive activities (independent of disturbance cap) except where such limitation would make accessing valid existing rights impracticable. Construct new roads to the appropriate Gold Book standard and add the surface disturbance to the total disturbance in PHMA. Any new ROW/SUA authorizations would be subject to the 3 percent disturbance cap, and would be evaluated based on an analysis of the following: • Location of proposed activities in relation to critical GRSG habitat areas as identified by factors, including but not limited to, average male lek attendance and/or important seasonal habitat. • An evaluation of the	**GRSG-GEN-ST-001-Standard** – In PHMA, do not permit lands or recreation special use authorizations unless all existing discrete anthropogenic disturbances cover less than 3 percent of the total GRSG habitat within the biologically significant unit and the proposed project analysis areas, regardless of ownership (**Appendix E**, Methodology for Calculating Disturbance Caps). GRSG-LR-SUA-ST-007-Standard – In PHMA and GHMA, if the potential long-term (more than 5 years) impacts of mitigation (e.g., relocation or burying) to GRSG or its habitats are greater than the potential impacts from new lands special use authorizations, do not pursue the mitigation. If mitigation is not feasible or would result in short-term (less than 5 years) or long-term impacts, incorporate additional terms and conditions in the special use authorization for protection of GRSG or its habitats.

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				increasing, and that the development will not adversely affect GRSG populations due to habitat loss or disruptive activities, the Authorized Officer may authorize disturbance in excess of the 5 percent disturbance cap with additional effective mitigation (i.e., above and beyond the mitigation necessary to ensure that the project remains neutral to GRSG). In many cases, this exception will require project proponents to fund studies necessary to secure the "date-based documentation" requirement.	potential threats from proposed activities that may affect the local population as compared to benefits that could be accomplished through compensatory or off-site mitigation (see **Section 2.7.3**, Regional Mitigation) • An evaluation of the proposed activities in relation to the site-specific terrain and habitat features. For example, within 4 miles from a lek, local terrain features such as ridges and ravines may reduce the habitat importance, and shield nearby habitat from disruptive factors. **GRSG PHMA ROW TL, Proposed LUPA:** Prohibit surface occupancy and surface-disturbing activities associated with BLM ROW or Forest Service SUA permits within 4 miles from active leks during lekking, nesting, and early brood-rearing (March 1 to July 15).	GRSG-LR-SUA-ST-008-Standard – In priority and GHMA, co-locate new infrastructure (e.g., high-voltage transmission lines, major pipelines, roads, distribution lines, and cellular towers) with existing infrastructure to limit disturbance to the smallest footprint, or where it best limits impacts to GRSG or its habitats. When co-location of new infrastructure cannot be accomplished, locate it adjacent to existing infrastructure, roads, or already disturbed areas. New communication tower sites may be authorized for public safety. GRSG-LR-SUA-GL-001-Guideline – In PHMA, outside of existing designated corridors, new transmission lines and pipelines should be buried to limit disturbance to the smallest footprint unless explicit rationale is provided that the biological impacts to GRSG are being avoided. When new transmission lines and pipelines are not buried, locate them adjacent to existing transmission lines

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						and pipelines.
11	Lands/ Realty	(PHMA) Evaluate and take advantage of opportunities to remove, bury, or modify existing power lines within GRSG PHMA.	Same as Alternative B.	(PHMA) Where it is not possible to evaluate new or existing overhead facilities or where existing facilities cannot be removed, buried, or modified, require perch deterrents.	In PHMA, or within 4 miles of an active lek, for ROW/SUA renewals, where existing facilities cannot be removed, buried or modified, require perch deterrents.	GRSG-LR-SUA-ST-005-Standard – In PHMA and GHMA, locate upgrades to existing transmission lines within the existing designated corridors unless an alternate route would benefit GRSG or its habitats. GRSG-LR-SUA-GL-001-Guideline – In PHMA, outside of existing designated corridors, new transmission lines and pipelines should be buried to limit disturbance to the smallest footprint unless explicit rationale is provided that the biological impacts to GRSG are being avoided. When new transmission lines and pipelines are not buried, locate them adjacent to existing transmission lines and pipelines.
12	Lands/ Realty	(PHMA) Where existing leases, ROWs or SUAs have had some level of development (e.g., road, fence, and well) and are no longer in use, reclaim the site by removing these features and restoring the habitat. *Planning Direction Note:*	Same as Alternative B.	(PHMA) Reclaim and restore ROWs considering GRSG habitat requirements. (PHMA) Designate new ROW corridors in GRSG PHMA only where there is a compelling reason to do so and location of the corridor within PHMA will not	Same as Alternative D.	GRSG-LR-SUA-ST-006-Standard – In PHMA and GHMA, when a lands special use authorization is revoked or terminated and no future use is contemplated, the authorization holder must remove overhead lines and other surface infrastructure in compliance with 36 CFR

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		Relocate existing designated ROW corridors crossing GRSG PHMA void of any authorized ROWs, outside of PHMA. If relocation is not possible, undesignate that entire corridor during the planning process (corridor would no longer exist).		adversely affect GRSG populations due to habitat loss or disruptive activities.		251.60(i).
13	Lands/ Realty	(GHMA) Manage GHMA as avoidance areas for new ROWs and/or SUAs.	No similar action.	(GHMA and LCHMA) Same as Alternative B for GHMA and LCHMA.	No similar action.	GRSG-LR-SUA-ST-003-Standard – In PHMA and GHMA, do not authorize temporary lands special uses (i.e., facilities or activities) that result in loss of habitat or would have long-term (i.e., more than 5 years) negative impact on GRSG or its habitats.
14	Lands/ Realty	(GHMA) Where new ROWs or SUAs are necessary in GHMA, collocate new ROWs or SUAs within existing ROWs and/or SUAs where possible.	No similar action.	Same as Alternative B.	No similar action.	GRSG-LR-SUA-ST-002-Standard – In GHMA, new lands special use authorizations may be authorized for infrastructure, such as high-voltage transmission lines and major pipelines, if they can be located within existing designated corridors and the authorization includes stipulations to protect GRSG and its habitats GRSG-LR-SUA-ST-008-

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						Standard – In PHMA and GHMA, co-locate new infrastructure (e.g., high-voltage transmission lines, major pipelines, roads, distribution lines, and cellular towers) with existing infrastructure to limit disturbance to the smallest footprint, or where it best limits impacts to GRSG or its habitats. When co-location of new infrastructure cannot be accomplished, locate it adjacent to existing infrastructure, roads, or already disturbed areas. New communication tower sites may be authorized for public safety.
Land Tenure Adjustment						
15	Lands/ Realty	(PHMA) Retain public ownership of GRSG PHMA. Consider exceptions where:	(PHMA) Retain public ownership of PHMA.	Same as Alternative B.	Same as Alternative B.	GRSG-LR-LOA-ST-001-Standard – In PHMA and GHMA, do not approve land ownership adjustments unless they result in a net conservation benefit to GRSG or they will not directly or indirectly adversely impact GRSG conservation.
		(PHMA) There is mixed ownership, and land exchanges would allow for additional or more	No similar action.	Same as Alternative B.	Same as Alternative B.	GRSG-LR-LOA-GL-001-Guideline – In PHMA and GHMA with minority federal ownership, consider land

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		contiguous federal ownership patterns within the GRSG PHMA.				ownership adjustments to achieve a land ownership pattern (e.g., consolidation and reducing fragmentation) that supports improved GRSG population trends and habitats.
		(PHMA) Under GRSG PHMA with minority federal ownership, include an additional, effective mitigation agreement for any disposal of federal land. As a final preservation measure, consideration should be given to pursuing a permanent conservation easement.	No similar action.	(PHMA) In isolated federal parcels, allow disposal of tracts that are not capable of altering GRSG populations (e.g., no leks).	(PHMA) In isolated federal parcels, only allow tract disposals that are beneficial or neutral to long-term management of GRSG populations. (GHMA) For lands in GHMA that are identified for disposal, the BLM will only dispose of such lands consistent with the goals and objectives of this LUPA, including, but not limited to, the LUPA objective to maintain or increase GRSG abundance and distribution.	See GRSG-LR-LOA-ST-001 and GRSG-LR-LOA-GL-001 above
16	Lands/ Realty	(PHMA) Where suitable conservation actions cannot be achieved, seek to acquire state and private lands with intact subsurface mineral estate by donation, purchase or exchange in order to best conserve, enhance, or restore GRSG habitat.	(ADH) BLM and Forest Service will strive to acquire important private lands in BLM-designated ACECs and Forest Service GRSG Special Areas. Acquisition will be prioritized over easements.	(ADH) No similar action, but consider GRSG habitat values in acquisitions. For example: Identify key GRSG habitats on private or state land, adjacent to existing BLM/Forest Service land, where acquisition and protection by BLM/Forest Service could substantially	Same as Alternative D.	See GRSG-LR-LOA-ST-001 and GRSG-LR-LOA-GL-001 above

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				benefit the local GRSG population. This could be accomplished via purchase, exchange, or donation to satisfy mitigation requirements.		
Proposed Land Withdrawals						
17	Lands/ Realty	(PHMA) Propose lands within GRSG PHMAfor mineral withdrawal.	Same as Alternative B.	No similar action.	No similar action.	GRSG-LR-LW-GL-001-Guideline – In PHMA, utilize land withdrawals as a tool, where appropriate and subject to valid existing rights, to prevent activities that will be detrimental to GRSG or its habitats.
18	Lands/ Realty	(PHMA) In PHMA, do not recommend withdrawal proposals not associated with mineral activity unless the land management is consistent with GRSG conservation measures. (For example; in a proposed withdrawal for a military training range buffer area, manage the buffer area with GRSG conservation measures.)	(ADH) Do not approve withdrawal proposals not associated with mineral activity unless the land management is consistent with GRSG conservation measures. (For example, in a proposed withdrawal for a military training range buffer area, manage the buffer area with GRSG conservation measures that have been demonstrated to be effective.)	No similar action.	No similar action.	See GRSG-LR-LW-GL-001 above
18a	Lands/ Realty	No similar action.	(ADH) ROWs will be amended to require features that enhance GRSG habitat security. (ADH) Existing designated corridors in BLM ACECs and Forest Service Special Areas	No similar action.	No similar action.	GRSG-LR-SUA-ST-004-Standard – In PHMA and GHMA, require protective stipulations (e.g., noise, tall structure, guy wire removal, and perch deterrent installation) when issuing new

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			may be accessed for maintenance.			authorizations or during renewal, amendment, or reissuance of existing authorizations that authorize infrastructure (e.g., high-voltage transmission lines, major pipelines, roads, distribution lines, and cellular towers).
Wind Energy Development						
18b	Wind	No similar action.	(ADH) Do not site wind energy development in occupied GRSG habitat (Jones 2012).	No similar action.	(PHMA) Manage PHMA as exclusion areas for wind energy development. (GHMA) Manage GHMA as avoidance areas for wind energy development.	GRSG-WS-ST-001-Standard – In PHMA, do not authorize new solar and wind utility-scale and/or commercial energy development except for on-site power generation associated with existing industrial infrastructure (e.g., mine site). GRSG-WS-GL-001-Guideline – In GHMA, new solar and wind energy utility-scale and/or commercial development should be restricted. If development cannot be restricted due to existing authorized use, adjacent developments, or split estate issues, then ensure that stipulations are incorporated into the authorization to protect GRSG and its habitats.

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18c	Wind	No similar action.	(ADH) Site wind energy development at least 5 miles from active GRSG leks.	No similar action.	No similar action.	No similar action.
Industrial Solar						
18d	Solar	No similar action.	(ADH) Industrial solar projects will be prohibited in ACECs/Zoological Areas and occupied habitats.	No similar action.	(PHMA) Manage PHMA for industrial solar projects. (GHMA) Manage GHMA as avoidance areas for industrial solar projects.	GRSG-WS-ST-001-Standard – In PHMA, do not authorize new solar and wind utility-scale and/or commercial energy development except for on-site power generation associated with existing industrial infrastructure (e.g., mine site).
Range Management		**Objectives: GRSG objectives and well managed livestock operations are compatible because forage availability for livestock, and hiding cover for GRSG, are both dependent on healthy plant communities. Agreements with partners that promote sustainable GRSG populations concurrent with sustainable ranch operations offer long-term stability. In the context of sustainable range operations, manage the range program to 1) maintain or enhance vigorous and productive plant communities, 2) maintain residual herbaceous cover to reduce predation during GRSG nesting and early brood-rearing, 3) avoid direct adverse impacts to GRSG associated range project infrastructure and 4) employ grazing management strategies that avoid concentrating animals on key GRSG habitats during key seasons.**				
19	Range	(PHMA) Within GRSG PHMA, incorporate GRSG habitat objectives and management considerations into all BLM and Forest Service grazing allotments through Allotment Management Plans or permit renewals and/or Forest Service Annual Operating Instructions.	Same as Alternative B.	(ADH) Same as Alternative B, except apply to ADH.	Same as Alternative D.	No similar action.
20	Range	(ADH) Work cooperatively on integrated ranch planning within	Same as Alternative B.	Same as Alternative B.	(ADH) Work cooperatively on integrated ranch planning within GRSG habitat.	No similar action.

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		GRSG habitat so operations with deeded/BLM and/or Forest Service allotments can be planned as single units.			Develop management strategies that are seamless with respect to actions on public and private lands within BLM and/or Forest Service grazing allotments.	
21	Range	(PHMA) Prioritize completion of land health assessments (Forest Service may use other analyses) and processing grazing permits within GRSG PHMA. Focus this process on allotments that have the best opportunities for conserving, enhancing or restoring habitat for GRSG. Utilize BLM Ecological Site Descriptions (Forest Service may use other methods) to conduct land health assessments to determine if standards of range-land health are being met.	Same as Alternative B.	(ADH) Same as Alternative B, but apply to ADH. Consider GRSG habitat requirements in conjunction with all resource values managed by the BLM, and give preference to GRSG habitat unless site-specific circumstances warrant an exemption.	(PHMA) The BLM will 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 will 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 to urgent natural resource concerns (e.g., fire) and legal obligations.	GRSG-LG-GL-001-Guideline – Grazing guidelines should be applied in each of the seasonal habitats in table 2. If values in table 2 guidelines cannot be achieved based upon a site-specific analysis using Ecological Site Descriptions, long-term ecological site capability analysis, or other similar analysis, adjust grazing management to move towards desired habitat conditions in **Table 2.3**, consistent with the ecological site capability. Do not use drought and degraded habitat condition to adjust values. Grazing guidelines in table 2 would not apply to isolated parcels of National Forest System lands that have less than 200 acres of GRSG habitat.
22	Range	(ADH) Conduct land health assessments that include (at a minimum) indicators and	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.	See GRSG-LG-GL-001 above

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		measurements of vegetation structure/condition/ composition specific to achieving GRSG habitat objectives (Doherty et al. 2011b). If local/state seasonal habitat objectives are not available, use GRSG habitat recommendations from Connelly et al. 2000a and Hagen et al. 2007.				
--	Range	No similar action.	(ADH) Retire grazing allotments within all GRSG habitat.	No similar action.	No similar action.	GRSG-LG-GL-002-Guideline – In PHMA, consider closure of grazing allotments, pastures, or portions of pastures, or managing the allotment as a forage reserve as opportunities arise under applicable regulations, where removal of livestock grazing would enhance the ability to achieve desired habitat conditions (**Table 2.3**).
Implementing Management Actions after Land Health and Habitat Evaluations						
23	Range	(PHMA) Develop specific objectives to conserve, enhance or restore PHMA based on BLM Ecological Site Descriptions (Forest Service may use other methods) and assessments (including within wetlands and riparian areas). If an	No similar action.	(ADH) Develop specific objectives – through NEPA analysis conducted in accordance with the permit/lease renewal process to conserve, enhance, or restore GRSG habitat. Base benchmarks on Ecological Site/Range Site	(ADH) Develop specific objectives – through NEPA analysis conducted in accordance with the permit/lease renewal process to conserve, enhance, or restore GRSG habitat. Base benchmarks on Ecological Site/Range Site Descriptions.	See GRSG-LG-GL-001 above

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		effective grazing system that meets GRSG habitat requirements is not already in place, analyze at least one alternative that conserves, restores or enhances GRSG habitat in the NEPA document prepared for the permit renewal (Doherty et al. 2011b; Williams et al. 2011).		Descriptions. When existing on Ecological Site/Range Site Descriptions have not been developed, or are too general to serve adequately as benchmarks, identify and document local reference sites for areas of similar potential that exemplify achievement of GRSG habitat objectives and use these sites as the benchmark reference. Establish measurable objectives related to GRSG habitat from baseline monitoring data, ecological site descriptions, or land health assessments/evaluations.	When existing on Ecological Site/Range Site Descriptions have not been developed, or are too general to serve adequately as benchmarks, identify and document local reference sites for areas of similar potential that exemplify achievement of GRSG habitat objectives and use these sites as the benchmark reference. Establish measurable objectives related to GRSG habitat from baseline monitoring data, ecological site descriptions, or land health assessments/evaluations, or other habitat and successional stage objectives.	
24	Range	(ADH) Manage for vegetation composition and structure consistent with ecological site potential and within the reference state to achieve GRSG seasonal habitat objectives.	(ADH) Manage for vegetation composition and structure consistent with ecological site potential and within the reference state to achieve GRSG habitat objectives.	(ADH) Manage for vegetation composition and structure consistent with ecological site potential and within the reference state subject to successional stage objectives.	(ADH) Manage for vegetation composition and structure consistent with ecological site potential and within the reference state subject to habitat objectives, including successional stages.	See GRSG-LG-GL-001 above
25	Range	(ADH) Implement management actions (grazing decisions, Annual Operating Instructions [Forest Service only], Allotment Management	(ADH) Implement management actions (grazing decisions, Allotment Management Plan/Conservation Plan development, or other plans or agreements) to modify grazing	(ADH) Include terms and conditions on grazing permits and leases that assure plant growth requirements are met and residual forage remains	(ADH) Include terms and conditions on grazing permits and leases that address disruptive activities that affect GRSG and assure plant growth requirements are met	See GRSG-LG-GL-001 above. GRSG-LG-GL-003-Guideline – Bedding sheep and locating camps within 1.2 miles from the perimeter of a lek during

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
		Plan/Conservation Plan development, or other agreements) to modify grazing management to meet seasonal GRSG habitat requirements (Connelly et al. 2011). Consider singly, or in combination, changes in: 1. Season or timing of use; 2. Numbers of livestock (includes temporary non-use or livestock removal); 3. Distribution of livestock use; 4. Intensity of use; and 5. Type of livestock (e.g., cattle, sheep, horse, llama, alpaca and goat) (Briske et al. 2011).	management to meet seasonal GRSG habitat requirements (Connelly et al. 2011). Consider singly, or in combination, changes in: 1. Season, or timing, and/or frequency of livestock use; 2. Numbers/AUMs of livestock (includes temporary non-use or livestock removal); 3. Distribution of livestock use; 4. Intensity of livestock use; and 5. Type of livestock (e.g., cattle, sheep, horse, llama, alpaca and goat) (Briske et al. 2011).	available for GRSG hiding cover. Specify as necessary: 1. Season or timing of use; 2. Numbers of livestock (include temporary non-use or livestock removal); 3. Distributions of livestock use; 4. Intensity of use (utilization or stubble height objectives); 5. Kind of livestock (e.g., cattle, sheep, horse, llama, alpaca, and goat); 6. Class of livestock (e.g., yearlings versus cow/calf pairs).	and residual forage remains available for GRSG hiding cover. Specify as necessary: 1. Season or timing of use; 2. Numbers of livestock (include temporary non-use or livestock removal); 3. Distributions of livestock use; 4. Intensity of use (utilization or stubble height objectives); 5. Kind of livestock (e.g., cattle, sheep, horse, llama, alpaca, and goat); 6. Class of livestock (e.g., yearlings versus cow/calf pairs); 7. Locations of bed grounds, sheep camps, trail routes, and the like.	lekking (March 1 to April 30) should be restricted. GRSG-LG-GL-004-Guideline – During breeding and nesting season (March 1 to June 15), trailing livestock through breeding and nesting habitat should be minimized. Specific routes should be identified, existing trails should be used, and stopovers on active leks should be restricted.
26	Range	(PHMA) During drought periods, prioritize evaluating effects of the drought in GRSG PHMA relative to their needs for food and cover. Since there is a lag in vegetation recovery following drought (Thurow and Taylor 1999), ensure that post-drought management allows for vegetation recovery that	(ADH) During drought periods, prioritize evaluating effects of drought in GRSG habitat areas relative to their biological needs, as well as drought effects on ungrazed reference areas. Since there is a lag in vegetation recovery following drought (Thurow and Taylor 1999), ensure that post-drought management allows for vegetation recovery that meets	(ADH) Develop drought contingency plans at the appropriate landscape unit that provide for a consistent/appropriate BLM/Forest Service response. Plans should establish policy for addressing ongoing drought and post-drought recovery for GRSG habitat objectives.	Same as Alternative D.	No similar action.

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		meets GRSG needs in GRSG PHMA.	GRSG needs in GRSG habitat areas based on GRSG habitat objectives.			
--	Range	No similar action.	No similar action.	No similar action.	The NEPA analysis for renewals and modifications of livestock grazing permits/leases that include lands within PHMA would include specific management thresholds based on GRSG Habitat Objectives Table and Land Health Standards (43 CFR 4180.2) (**Appendix K**) and defined responses that would allow the authorizing officer to make adjustments to livestock grazing without conducting additional NEPA.	No similar action.
--	Range	No similar action.	No similar action.	No similar action.	Allotments within PHMA, 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 could include monitoring for actual use, utilization, and use supervision.	No similar action.
Riparian Areas and Wet Meadows						
27	Range	(PHMA) Manage riparian areas and wet meadows for proper functioning condition or other similar	Same as Alternative B.	Same as Alternative B, but apply to ADH.	Same as Alternative D.	See **Table 2.3**.

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
		methodology (Forest Service only) within GRSG PHMA.				
28	Range	(ADH) Manage wet meadows to maintain a component of perennial forbs with diverse species richness relative to site potential (i.e., reference state) to facilitate brood-rearing. Also conserve or enhance these wet meadow complexes to maintain or increase amount of edge and cover within that edge to minimize elevated mortality during the late brood-rearing period (Hagen et al. 2007; Kolada et al. 2009; Atamian et al. 2010).	(ADH) Within GRSG habitats, manage wet meadows to maintain a component of perennial forbs with diverse species richness and productivity relative to site potential (i.e., reference state) to facilitate brood-rearing. At least 6 inches of stubble height must remain on all riparian/meadow area herbaceous species at all times. Also conserve or enhance these wet meadow complexes to maintain or increase the amount of edge and cover within that edge to minimize elevated mortality during the late brood-rearing period (Hagen et al. 2007; Kolada et al. 2009; Atamian et al. 2010).	(ADH) Within ADH, manage wet meadows to maintain diverse species richness, including a component of perennial forbs, relative to site potential (i.e., reference state).	Same as Alternative D.	See **Table 2.3**.
29	Range	(ADH) Where riparian areas and wet meadows meet proper functioning condition or meet standards using other similar methodology (Forest Service only), strive to attain reference state vegetation relative to the ecological site description.	Same as Alternative B.	(ADH) Establish permit/lease terms and conditions (Line 19) in conjunction with grazing strategies to ensure that the timing and level of utilization results in wet meadows with diverse species richness, including a component of perennial forbs, relative to site	Same as Alternative D.	See **Table 2.3**.

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		For example: Within GRSG PHMA, reduce hot season grazing on riparian and meadow complexes to promote recovery or maintenance of appropriate vegetation and water quality. Utilize fencing/herding techniques or seasonal use or livestock distribution changes to reduce pressure on riparian or wet meadow vegetation used by GRSG in the hot season (summer) (Aldridge and Brigham 2002; Crawford et al. 2004; Hagen et al. 2007).		potential (i.e., reference state).		
30	Range	(PHMA) Authorize new water development for diversion from spring or seep source only when GRSG PHMA would benefit from the development. This includes developing new water sources for livestock as part of an Allotment Management Plan/Conservation Plan to improve GRSG habitat.	(ADH) Authorize no new water developments for diversion from spring or seep sources within GRSG habitat.	(ADH) Authorize new water development only after determining that the project will not adversely impact GRSG from habitat loss. Ensure that adequate long-term grazing management is in effect before authorizing water developments that may increase levels of use or change season of use. Give specific consideration to adjacent or downstream wetland habitat when a project entails a diversion from a spring or seep.	Same as Alternative D.	GRSG-LG-ST-001-Standard – In PHMA, do not authorize construction of water developments unless beneficial to GRSG habitat. GRSG-LG-GL-006-Guideline – New permanent livestock facilities (e.g., windmills, water tanks, and corrals) should not be constructed within 1.2 miles from the perimeter of occupied leks.

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
31	Range	(PHMA) Analyze springs, seeps and associated pipelines to determine if modifications are necessary to maintain the continuity of the predevelopment riparian area within GRSG PHMA. Make modifications where necessary, considering impacts to other water uses when such considerations are neutral or beneficial to GRSG.	(ADH) Analyze springs, seeps and associated water developments to determine if modifications are necessary to maintain the continuity of the predevelopment riparian area within GRSG habitats. Make modifications where necessary, including dismantling water developments.	(PHMA) Analyze springs, seeps and associated pipelines to determine if modifications are necessary to maintain the continuity of the predevelopment riparian area. If necessary to maintain GRSG populations or reverse a downward population trend caused by habitat loss, modify or decommission the project to restore the applicable wetland habitat.	(ADH) Analyze springs, seeps and associated pipelines to determine if modifications are necessary to maintain the continuity of the predevelopment riparian area. If necessary to maintain GRSG populations or reverse a downward population trend caused by habitat loss, modify the project as necessary to restore the applicable wetland habitat.	No similar action.
--	Range	No similar action.	(ADH) Avoid grazing and trailing within lekking, nesting, brood-rearing, and winter habitats during periods of the year when these habitats are utilized by GRSG.	No similar action.	No similar action.	GRSG-LG-GL-004-Guideline – During breeding and nesting season (March 1 to June 15), trailing livestock through breeding and nesting habitat should be minimized. Specific routes should be identified, existing trails should be used, and stopovers on active leks should be restricted.
Treatments to Increase Forage for Livestock/Wild Ungulates						
32	Range	(PHMA) Only allow treatments that conserve, enhance or restore GRSG habitat (this includes treatments that benefit livestock as part of an Allotment Management Plan/Conservation Plan to improve GRSG habitat).	(ADH) Ensure that vegetation treatments create landscape patterns which most benefit GRSG. Only allow treatments that are demonstrated to benefit GRSG and retain sagebrush height and cover consistent with GRSG habitat objectives (this includes	(PHMA–Sagebrush Ecosites) Retain in sagebrush habitat, for each Colorado MZ, a minimum of 70 percent of the ecological sites capable of supporting 12 percent canopy cover of Wyoming Sagebrush or 15 percent canopy cover of Mountain	(ADH) Manage for a habitat objective that is primarily sagebrush with a mosaic of seral stages and sagebrush in all age classes. On a site-by-site basis, do not allow treatments that would adversely affect GRSG populations.	GRSG-GRSGH-ST-001-Standard – Design habitat restoration projects to move towards desired conditions (**Table 2.3**). GRSG-GRSGH-GL-006-Guideline – In PHMA, vegetation treatment projects

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			treatments that benefit livestock as part of an Allotment Management Plan/Conservation Plan to improve GRSG habitat).	Sagebrush. Manage for a total disturbance cap of less than 30 percent, to include all loss of sagebrush from all causes including anthropogenic disturbance, wildfire, plowed field agriculture, and vegetation treatments. This cap is applied to PHMA that support sagebrush ecosites in the Colorado MZ. Sites capable of supporting sagebrush habitat will count against the cap until they have recovered to at least 12 percent canopy cover in Wyoming big sagebrush and 15 percent in mountain big sagebrush dominated areas (Bohne et al. 2007). Note: • Only mappable stands of cheatgrass and Pinyon/ Juniper encroachment will count against the disturbance cap. • Irrigated meadows do not count against the cap. • On a site-by-site basis, independent of cap management issues, do not allow treatments with the potential to adversely affect GRSG populations.	See **Appendix H**, Guidelines for Implementation.	should only be conducted if they restore, enhance, or maintain desired habitat conditions (**Table 2.3**).

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
33	Range	(PHMA) Evaluate the role of existing seedings that are currently composed of primarily introduced perennial grasses in and adjacent to GRSG PHMA to determine if they should be restored to sagebrush or habitat of higher quality for GRSG. If these seedings are part of an Allotment Management Plan/ Conservation Plan or if they provide value in conserving or enhancing the rest of PHMA, then no restoration would be necessary. Assess the compatibility of these seedings for GRSG habitat or as a component of a grazing system during the land health assessments (or other analyses [Forest Service only]) (Davies et al. 2011). For example: Some introduced grass seedings are an integral part of a livestock management plan and reduce grazing pressure in important sagebrush habitats or serve as a strategic fuels management area.	(ADH) Evaluate the role of existing seedings that are currently composed of primarily introduced perennial grasses in and adjacent to GRSG habitat to determine if they should be restored to sagebrush or habitat of higher quality for GRSG. If these seedings provide value in conserving or enhancing GRSG habitats, then no restoration would be necessary. Assess the compatibility of these seedings for GRSG habitat during the land health assessments.	Same as Alternative B.	Same as Alternative B.	GRSG-GRSGH-GL-001-Guideline – Sagebrush removal in GRSG breeding and nesting and wintering habitats should be restricted unless necessary to support attainment of desired habitat conditions (**Table 2.3**). GRSG-GRSGH-GL-005-Guideline – In PHMA and GHMA, native plant species should be used, when possible, to restore, enhance, or maintain desired habitat conditions (**Table 2.3**).

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
--	Range	No similar action.	(ADH) Any vegetation treatment plan must include pretreatment data on wildlife and habitat condition, establish non-grazing exclosures, and include long-term monitoring where treated areas are monitored for at least 3 years before grazing returns. Continue monitoring for 5 years after livestock are returned to the area, and compare to treated, ungrazed exclosures, as well as untreated areas.	No similar action.	No similar action.	No similar action.
Structural Range Improvements and Livestock Management Tools						
34	Range	(PHMA) Design any new structural range improvements and location of supplements (salt or protein blocks) to conserve, enhance, or restore GRSG habitat through an improved grazing management system relative to GRSG objectives. Structural range improvements, in this context, include but are not limited to: cattle guards, fences, exclosures, corrals or other livestock handling structures; pipelines, troughs, storage tanks (including moveable	(ADH) Avoid all new structural range developments in occupied GRSG habitat unless independent peer-reviewed studies show that the range improvement structure benefits GRSG. Salt and supplement will not be used within occupied habitat. Structural range developments, in this context, include but are not limited to cattle guards, fences, exclosures, corrals or other livestock handling structures; pipelines, troughs, storage tanks (including moveable tanks used in livestock water hauling), windmills, ponds/reservoirs, solar panels and spring	(ADH) Design new range improvement projects to enhance livestock distribution and to control the timing and intensity of utilization. Examples of structural range improvement projects are cattle guards, fences, corrals, pipelines, troughs, storage tanks, windmills, ponds/reservoirs, solar panels, and spring developments. Include a plan to monitor and control invasive plant species following any related ground disturbance.	Same as Alternative D.	GRSG-LG-ST-001-Standard – In PHMA, do not authorize construction of water developments unless beneficial to GRSG habitat. GRSG-LG-GL-005-Guideline – Fences should not be constructed or reconstructed within 1.2 miles from the perimeter of occupied leks, unless the collision risk can be mitigated through design features or markings (e.g., mark, laydown fences, and design).

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		tanks used in livestock water hauling), windmills, ponds/reservoirs, solar panels and spring developments. Potential for invasive species establishment or increase following construction must be considered in the project planning process and monitored and treated post-construction.	developments. Potential for invasive species establishment or increase following construction must be considered in the project planning process and monitored and treated post-construction. Consider the comparative cost of changing grazing management instead of constructing additional range developments.	Place mineral or salt supplements away from water sources and leks in locations that enhance livestock distribution.		
35	Range	(PHMA) When developing or modifying water developments, use applicable PDFs or RDFs (see this table's PDFs/RDFs) to mitigate potential impacts from West Nile virus (Clark et al. 2006; Doherty 2007; Walker et al. 2007b; Walker and Naugle 2011).	Same as Alternative B.	(PHMA) Where conditions create the potential for impacts from West Nile virus, use PDFs/RDFs to mitigate the potential impacts. See **Appendix I**.	(PHMA) Where conditions create the potential for impacts from West Nile virus from developments or modification of water developments, use PDFs/RDFs to mitigate the potential impacts. See **Appendix I**.	GRSG-LG-ST-001-Standard – In PHMA, do not authorize construction of water developments unless beneficial to GRSG habitat.
36	Range	(PHMA) Evaluate existing structural range improvements and location of supplements (salt or protein blocks) to make sure they conserve, enhance or restore GRSG habitat.	Same as Alternative B.	(PHMA) Evaluate existing structural range improvements to determine if modifications are necessary to maintain GRSG populations or reverse a downward population trend caused by habitat loss. Modify, relocate, or remove projects as necessary. Place mineral and salt	Same as Alternative D.	GRSG-LG-GL-005-Guideline – Fences should not be constructed or reconstructed within 1.2 miles from the perimeter of occupied leks, unless the collision risk can be mitigated through design features or markings (e.g., mark, laydown fences, and design). GRSG-LG-GL-006-Guideline

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				supplements away from water sources and leks in locations that enhance livestock distribution.		– New permanent livestock facilities (e.g., windmills, water tanks, and corrals) should not be constructed within 1.2 miles from the perimeter of occupied leks.
37	Range	(PHMA) To reduce outright GRSG strikes and mortality, remove, modify or mark fences in high risk areas within GRSG PHMA based on proximity to lek, lek size, and topography (Christiansen 2009; Stevens 2011).	(ADH) Remove, modify or mark fences in areas of moderate or high risk of GRSG strikes within GRSG habitat based on proximity to lek, lek size, and topography (Christiansen 2009; Stevens 2011).	(ADH) Mark fences in high risk areas (Christiansen 2009; Stevens 2011). (PHMA) Where marking fences does not reduce fence-related GRSG mortality, modify fences. Where modification does not reduce GRSG mortality and the fence-related mortality is sufficient to adversely affect GRSG populations, remove fences.	Same as Alternative D.	See GRSG-LG-GL-005
38	Range	(PHMA) Monitor for and treat invasive species associated with existing range improvements (Gelbard and Belnap 2003; Bergquist et al. 2007).	Same as Alternative B.	Same as Alternative B, but apply to ADH.	Same as Alternative D.	No similar action.
--	Range	No similar action.	(ADH) Any vegetation treatment plan must include pretreatment data on wildlife and habitat condition, establish non-grazing exclosures, and include long-term monitoring where treated areas are monitored for at least 3 years before grazing returns.	No similar action.	No similar action.	No similar action.

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			Continue monitoring for 5 years after livestock are returned to the area, and compare to treated, ungrazed exclosures, as well as untreated areas.			
Retirement of Grazing Privileges						
39	Range	(ADH) Maintain retirement of grazing privileges as an option in PHMA when the current permittee is willing to retire grazing on all or part of an allotment. Analyze the impacts of no livestock use on wildfire and invasive species threats (Crawford et al. 2004) in evaluating retirement proposals. *Planning direction note:* Each planning effort will identify the specific allotment(s) where retirement of grazing privileges is potentially beneficial.	Same as Alternative B. *Planning direction note:* In each planning process, identify grazing allotments where permanent retirement of grazing privileges would be potentially beneficial to GRSG.	(ADH) When a permittee or lessee voluntarily relinquishes grazing preference, consider conversion of the allotment to a reserve allotment (grass bank) that will remain available for use on a temporary, nonrenewable basis for the benefit of GRSG habitat. Authorize temporary nonrenewal permits in reserve allotments to meet resource objectives elsewhere such as rest or deferment due to fire.	(ADH) At the time a permittee or lessee voluntarily relinquishes a permit or lease, the BLM will consider whether the public lands where that permitted use was authorized should remain available for livestock grazing or be used for other resource management objectives, such as fuel breaks or reserve common allotments. When a permittee or lessee voluntarily relinquishes grazing preference, consider conversion of the allotment to a reserve common allotment that will remain available for use on a temporary, nonrenewable basis for the benefit of GRSG habitat. Authorize temporary nonrenewal permits in reserve common allotments to meet resource objectives elsewhere such as rest or deferment due to fire or	GRSG-LG-GL-002-Guideline – In PHMA, consider closure of grazing allotments, pastures, or portions of pastures, or managing the allotment as a forage reserve as opportunities arise under applicable regulations, where removal of livestock grazing would enhance the ability to achieve desired habitat conditions (**Table 2.3**).

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					vegetation treatments. Temporary use of reserve common allotments would not be allowed due to drought or overuse of customary allotments.	
--	Range	No similar action.	(ADH) Encourage partners to monitor effects of retiring grazing permits in GRSG habitat.	No similar action.	No similar action.	No similar action.
Wild Horse Management		**Objective: Manage wild horses in a manner designed to 1) avoid reductions in grass, forb, and shrub cover, and 2) avoid increasing unpalatable forbs and invasive plants such as cheatgrass.**				
40	Wild Horses	(PHMA) Manage wild horse population levels within established appropriate management levels.	Same as Alternative B.	(ADH) Same as Alternative B, except apply to ADH.	Same as Alternative D.	n/a
41	Wild Horses	(ADH) Prioritize gathers in GRSG PHMA, unless removals are necessary in other areas to prevent catastrophic environmental issues, including herd health impacts.	Same as Alternative B.	(ADH) Same as Alternative B, but consider GRSG habitat requirements in conjunction with all resource values managed by the BLM, and give preference to GRSG habitat unless site-specific circumstances warrant an exemption.	Same as Alternative D.	n/a
42	Wild Horses	(PHMA) Within PHMA, develop or amend BLM HMA Plans and Forest Service Wild Horse Territory Plans to incorporate GRSG habitat objectives and management considerations for all BLM	Same as Alternative B.	Same as Alternative B. When developing HMA Plans, apply all appropriate conservation measures from the Range program, including, but not limited to utilization of forage and structural range	Same as Alternative D.	n/a

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		HMAs and Forest Service Wild Horse Territories.		improvements.		
43	Wild Horses	(PHMA) For all BLM HMAs and Forest Service Wild Horse Territories within PHMA, prioritize the evaluation of all appropriate management levels based on indicators that address vegetation structure/condition/ composition and measurements specific to achieving GRSG habitat objectives.	No similar action.	Same as Alternative B, but consider GRSG habitat requirements in conjunction with all resource values managed by the BLM, and give preference to GRSG habitat unless site-specific circumstances warrant an exemption.	Same as Alternative D.	n/a
44	Wild Horses	(ADH) Coordinate with other resources (range, wildlife, and riparian) to conduct land health assessments to determine existing vegetation structure/condition/ composition within all BLM HMAs and Forest Service Wild Horse Territories.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.	n/a
45	Wild Horses	(PHMA) When conducting NEPA analysis for wild horse management activities, water developments or other rangeland improvements for wild horses in PHMA, address the direct and indirect effects to GRSG populations and habitat.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.	n/a

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		Implement any water developments or rangeland improvements using the criteria identified for domestic livestock identified above in PHMA.				
Fluid Minerals Management[1]		**Objective: Manage fluid minerals to avoid, minimize, and compensate for 1) direct disturbance, displacement, or mortality of GRSG, 2) direct loss of habitat, or loss of effective habitat through fragmentation, and 3) cumulative landscape-level impacts. Priority will be given to leasing and development of fluid mineral resources, including geothermal, outside of PHMA and GHMA. When analyzing leasing and authorizing development of fluid mineral resources, including geothermal, in PHMA and GHMA, and subject to applicable stipulations for the conservation of GRSG, priority will be given to development in nonhabitat areas first and then in the least suitable habitat for GRSG. The implementation of these priorities will 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).**				
Unleased Fluid Minerals						
46	Fluid Minerals	(PHMA) Close GRSG PHMA to fluid mineral leasing. Upon expiration or termination of existing leases, do not accept nominations/expressions of interest for parcels within priority areas.	(ADH) Close occupied habitat areas to fluid mineral leasing. No new leases or permits will be issued. Upon expiration or termination of existing leases, do not accept nominations/expressions of interest for parcels within occupied habitat.	**GRSG PHMA NSO-46d.** Apply NSO stipulation for fluid mineral leasing in PHMA. **GRSG ADH NSO-46d.** Apply NSO stipulation for fluid mineral leasing in ADH within a minimum distance of 0.6-mile from active leks. **GRSG ADH TL-46d.** Within ADH, prohibit surface occupancy within a minimum of 4 miles from active leks during lekking, nesting, and early brood-	No new leasing 1 mile from active leks in ADH (Blickley et al. 2012; Harju 2012). NSO in PHMA and within 2 miles of active leks in GHMA. 3 percent disturbance cap in PHMA with disturbances limited to 1 disturbance per 640 acres density calculated by biologically significant unit (Colorado populations) and proposed project analysis area (Colorado MZ) would apply to new lease activities. No new leasing in PHMA if	GRSG-M-FMUL-ST-001-Standard – In PHMA, any new oil and gas leases must include an NSO stipulation. There will be no waivers or modifications. An exception could be granted by the Authorized Officer with unanimous concurrence from a team of agency GRSG experts from USFWS, Forest Service, and State wildlife agency if: • There would be no direct, indirect, or cumulative effects to GRSG or its habitats or

[1] The Oil Shale and Tar Sands Programmatic EIS (March 2013) excludes from oil shale leasing all core/priority GRSG habitat (PHMA in Colorado). Note that in GHMA, the management actions for fluid minerals also pertain to oil shale resources through all alternatives. Decisions for leasable fluid minerals also apply to uranium.

Table 2.8
Description of Alternatives B, C, D, and BLM and Forest Service Proposed LUPAs

(PHMA) = Priority Habitat Management Area, (GHMA) = General Habitat Management Area, (LCHMA) = Linkage/Connectivity Habitat Management Area, (ADH) = All Designated Habitat

NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
				rearing. **Ecological Sites that Support Sagebrush in PHMA CSU-46d.** Surface disturbance within ecological sites that support sagebrush in PHMA would not exceed 5 percent within the corresponding Colorado MZ. See **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations and **Appendix E**, Methodology for Calculating Disturbance Caps.	disturbance cap exceeds 3 percent for the biologically significant unit (Colorado populations) and proposed project analysis area (Colorado MZ) or 1 disturbance per 640 acres is exceeded. The following stipulations would apply (**Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations): **GRSG NSO-46e (1), GRSG NSO-46e (2)**: See **Appendix D** for waiver, modification and exception criteria. **GRSG TL-46e**: No activity associated with construction, drilling, or completions within 4 miles from active leks during lekking, nesting, and early brood-rearing (March 1 to July 15). Authorized Officer could grant an exception, modification, or waiver in consultation with the State of Colorado (**Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations).	• Granting the exception provides an alternative to a similar action occurring on a nearby parcel and • The exception provides a clear net conservation gain to GRSG. GRSG-M-FMUL-ST-002-Standard – In GHMA, any new leases must include appropriate CSU and TL stipulations to protect GRSG and its habitat. GRSG-M-FMUL-ST-003 – In PHMA and GHMA, when analyzing leasing of fluid mineral resources, prioritize development in nonhabitat areas first and then in the least suitable habitat for GRSG, subject to valid existing rights, law, and regulations.

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Description of Alternatives B, C, D, and BLM and Forest Service Proposed LUPAs

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					GRSG LN-46e: any lands leased in PHMA are subject to the restrictions of 1 disturbance per 640 acres calculated by biologically significant unit (Colorado population) and proposed project analysis area (Colorado MZ) to allow clustered development (**Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations).	
		(PHMA) Allow geophysical exploration within GRSG PHMA s to obtain information for existing federal fluid mineral leases or areas adjacent to state or fee lands within GRSG PHMA. Allow geophysical operations only using helicopter-portable drilling, wheeled or tracked vehicles on existing roads, or other approved methods conducted in accordance with seasonal TLs and other restrictions that may apply. Geophysical exploration shall be subject to seasonal restrictions that preclude activities in breeding,	(ADH) Allow geophysical exploration within occupied GRSG habitat areas to obtain exploratory information for areas outside of and adjacent to occupied GRSG habitat areas. Only allow geophysical operations by helicopter-portable drilling methods and in accordance with seasonal timing restrictions and/or other restrictions that may apply. Geophysical exploration shall be subject to seasonal restrictions that preclude activities in breeding, nesting, brood-rearing and winter habitats during their season of use by GRSG.	Same as Alternative B.	Same as Alternative B.	See above

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
		nesting, brood-rearing, and winter habitats during their season of use by GRSG.				
Leased Fluid Minerals						
Objective: Where a proposed fluid mineral development project on an existing lease could adversely affect GRSG populations or habitat, the BLM will 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 will work with the lessee, operator or project proponent in developing an Application for Permit to Drill for the lease to avoid and minimize impacts to GRSG or its habitat and will ensure that the best information about GRSG and its habitat informs and helps guide development of such federal leases.						
47	Fluid Minerals	(PHMA) Apply the following conservation measures through LUP implementation decisions (e.g., approval of an Application for Permit to Drill, and Sundry Notice) and upon completion of the environmental record of review (43 CFR 3162.5), include appropriate documentation of compliance with NEPA. In this process evaluate, among other things: 1. Whether the conservation measure is "reasonable" (43 CFR 3101.1-2) with the valid existing rights; and 2. Whether the action is in conformance with the approved LUP. *(see row for NTT 49 below)*	(ADH) Apply the following conservation measures as COAs at the project and well permitting stages, and through LUP implementation decisions and upon completion of the environmental record of review (43 CFR 3162.5), include appropriate documentation of compliance with NEPA. In this process evaluate, among other things: 1. Whether the conservation measure is "reasonable" (43 CFR 3101.1-2) with the valid existing rights; and 2. Whether the action is in conformance with the approved LUP.	**GRSG PHMA COA-47-51d.** Prohibit surface occupancy or disturbance within 4 miles of a lek during lekking, nesting, and early brood-rearing. **GRSG Ecological Sites that Support Sagebrush in PHMA COA-47-51d.** Limit permitted disturbances to 5 percent in any Colorado MZ. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)	Within 1 mile of active leks, disturbance, disruptive activities and occupancy are precluded. If it is determined that this restriction would render the recovery of fluid minerals infeasible or uneconomic, considering the lease as a whole, or where development of existing leases requires that disturbance density exceeds 1 disturbance per 640 acres, and/or 3 percent disturbance cap, use the criteria below to site proposed lease activities to meet GRSG habitat objectives and require mitigation as described in **Appendix G** (Greater Sage-Grouse Mitigation Strategy). In PHMA and within 4 miles of an active lek, the criteria	GRSG-M-FML-ST-001-Standard – In PHMA, when approving the Surface Use Plan of Operation portion of the Application for Permit to Drill on existing leases that are not yet developed, require that leaseholders avoid and minimize surface-disturbing and disruptive activities consistent with the rights and conditions granted in the lease. GRSG-M-FML-ST-002-Standard – In PHMA, when facilities are no longer needed or leases are relinquished, require reclamation plans to include terms and conditions to restore habitat to desired conditions as described in **Table 2.3**. GRSG-M-FML-ST-003-

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
					below would be applied to guide development of the lease or unit that would result in the fewest impacts possible to GRSG. Based on site-specific conditions, prohibit construction, drilling and completion within PHMA within 4 miles of a lek during lekking, nesting, and early brood-rearing (March 1 to July 15). In consultation with the State of Colorado, this TL may be adjusted based on application of the criteria below. Criteria*: • Location of proposed lease activities in relation to critical GRSG habitat areas as identified by factors, including but not limited to, average male lek attendance and/or important seasonal habitat. • An evaluation of the potential threats from proposed lease activities that may affect the local population as compared to benefits that could be	Standard – In GHMA, authorize new transmission line corridors, transmission line right-of-ways, transmission line construction, or transmission line-facility construction associated with fluid mineral leases with stipulations necessary to protect GRSG and its habitats, consistent with the terms and conditions of the permit. GRSG-M-FML-ST-004-Standard – Locate compressor stations on portions of a lease that are nonhabitat and are not used by GRSG, and if there would be no direct, indirect, or cumulative effects on GRSG or its habitat. If this is not possible, work with the operator to use mufflers, sound insulation, or other features to reduce noise. GRSG-M-FML-ST-005-Standard – In PHMA and GHMA, when authorizing development of fluid mineral resources, prioritize development in nonhabitat areas first and then in the least suitable habitat for

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					accomplished through compensatory or off-site mitigation (**Section 2.6.3**, Regional Mitigation) • An evaluation of the proposed lease activities, including design features, in relation to the site-specific terrain and habitat features. For example, within 4 miles from a lek, local terrain features such as ridges and ravines may reduce the habitat importance, and shield nearby habitat from disruptive factors. This is particularly likely in Colorado MZ 17, which has an atypical GRSG habitat – featuring benches with GRSG habitat interspersed with steep ravines. To authorize an activity based on the criteria above, the environmental record of review must show no significant direct disturbance, displacement, or mortality of GRSG.	GRSG, subject to valid existing rights, law, and regulations GRSG-M-FML-GL-001-Guideline – In PHMA and GHMA, operators should be encouraged to reduce disturbance to GRSG habitat. At the time of approval of the Surface Use Plan of Operation portion of the Application for Permit to Drill, terms and conditions should be included to reduce disturbance to GRSG habitat, where appropriate and feasible and consistent with the rights granted to the lessee. GRSG-M-FML-GL-002-Guideline – On federal leases in PHMA, when surface occupancy cannot be restricted due to valid existing rights or development requirements, disturbance and surface occupancy should be limited to areas least harmful to GRSG based on vegetation, topography, or other habitat features. GRSG-M-FML-GL-003-

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						Guideline – In PHMA and GHMA, where the federal government owns the surface and the mineral estate is in nonfederal ownership coordinate with the mineral estate owner/lessee to apply appropriate stipulations, COAs, conservation measures and required design features to the appropriate surface management instruments to the maximum extent permissible under existing authorities.
48	Fluid Minerals	(PHMA) Provide the following conservation measures as terms and conditions on an approved LUP: *(see row for NTT 49 below)*	Same as Alternative B.	**GRSG PHMA COA-47-51d.** Prohibit surface occupancy or disturbance within 4 miles of a lek during lekking, nesting, and early brood-rearing. **GRSG Ecological Sites that Support Sagebrush in PHMA COA-47-51d.** Limit permitted disturbances to 5 percent in any Colorado MZ. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)	See Line 47.	See Line 47.
49	Fluid Minerals	**GRSG PHMA COA-47-51b/c.** The	Same as Alternative B.	**GRSG PHMA COA-47-51d.** Prohibit surface	See Line 47.	See Line 47.

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
		operator/lessee is required to conduct site-specific review of proposed projects prior to approval of Applications for Permit to drill. For leases within PHMA, the following COAs would apply: • Preclude new surface occupancy on existing leases within PHMA. • If the lease is entirely within a PHMA, do not allow surface occupancy of any portion within 4 miles around the lek and limit permitted disturbances to one per section with no more than 3 percent surface disturbance in that section. • If the entire lease is within the 4-mile lek perimeter, limit permitted disturbances to one per section with no more than 3 percent surface disturbance in that section. Require any development to be placed at the most distal part of the lease		occupancy or disturbance within 4 miles of a lek during lekking, nesting, and early brood-rearing. **GRSG Ecological Sites that Support Sagebrush in PHMA COA-47-51d.** Limit permitted disturbances to 5 percent in any Colorado MZ. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)		

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
		from the lek, or depending on topography and other habitat aspects, in an area that is demonstrably less harmful to GRSG, such as based on topography or vegetation. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)				
50	Fluid Minerals	**GRSG PHMA COA-47-51b/c.** The operator/lessee is required to conduct site-specific review of proposed projects prior to approval of Applications for Permit to drill. For leases within PHMA, the following COAs would apply: • Preclude new surface occupancy on existing leases within PHMA. • If the lease is entirely within a PHMA, do not allow surface occupancy of any portion within 4 miles around the lek and limit permitted disturbances to one	Same as Alternative B.	**GRSG PHMA COA-47-51d.** Prohibit surface occupancy or disturbance within 4 miles of a lek during lekking, nesting, and early brood-rearing. **GRSG Ecological Sites that Support Sagebrush in PHMA COA-47-51d.** Limit permitted disturbances to 5 percent in any Colorado MZ. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)	See Line 47.	See Line 47.

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
		per section with no more than 3 percent surface disturbance in that section. • If the entire lease is within the 4-mile lek perimeter, limit permitted disturbances to one per section with no more than 3 percent surface disturbance in that section. Require any development to be placed at the most distal part of the lease from the lek, or depending on topography and other habitat aspects, in an area that is demonstrably less harmful to GRSG, such as based on topography or vegetation. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)				
51	Fluid Minerals	**GRSG PHMA COA-47-51b/c.** The operator/lessee is required to conduct site-specific	Same as Alternative B.	**GRSG PHMA COA-47-51d.** Prohibit surface occupancy or disturbance within 4 miles of a lek	See Line 47.	See Line 47.

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		review of proposed projects prior to approval of Applications for Permit to drill. For leases within PHMA, the following COAs would apply: • Preclude new surface occupancy on existing leases within PHMA. • If the lease is entirely within a PHMA, do not allow surface occupancy of any portion within 4 miles around the lek and limit permitted disturbances to one per section with no more than 3 percent surface disturbance in that section. • If the entire lease is within the 4-mile lek perimeter, limit permitted disturbances to one per section with no more than 3 percent surface disturbance in that section. Require any development to be placed at the most distal part of the lease from the lek, or depending on		during lekking, nesting, and early brood-rearing. **GRSG Ecological Sites that Support Sagebrush in PHMA COA-47-51d.** Limit permitted disturbances to 5 percent in any Colorado MZ. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)		

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
		topography and other habitat aspects, in an area that is demonstrably less harmful to GRSG, such as based on topography or vegetation. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)				
52	Fluid Minerals	**GRSG PHMA COA-52b/d.** Apply a seasonal restriction on exploratory drilling in PHMA to prohibit surface-disturbing activities during the lekking, nesting and early brood-rearing season. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)	**GRSG ADH COA-52c.** Apply a seasonal restriction on exploratory drilling that prohibits surface-disturbing activities during the lekking, nesting, and early brood-rearing season in ADH. This seasonal restriction shall also apply to related activities that are disruptive to GRSG, including vehicle traffic and other human presence. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)	Same as Alternative B.	See Line 47 (No distinction between types of drilling activities).	See Line 47 (No distinction between types of drilling activities).
53	Fluid Minerals	(PHMA) BLM/Forest Service should closely examine the applicability of categorical exclusions in PHMA. If extraordinary	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.	No similar action

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
		circumstances review is applicable, the BLM/Forest Service should determine whether those circumstances exist.				
54	Fluid Minerals	**GRSG PHMA Notice to Lessees-54b/c.** For leases within PHMA, complete Master Development Plans in lieu of single-well Applications for Permit to Drill processing for all but wildcat wells. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)	Same as Alternative B.	**GRSG PHMA Notice to Lessees-54d.** Within PHMA, complete Master Development Plans instead of single-well Applications for Permit to Drill for all but exploratory wells. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)	**GRSG PHMA Notice to Lessees-54e.** Within PHMA, operators would be encouraged to complete Master Development Plans in consultation with the State of Colorado, instead of single-well Applications for Permit to Drill for all but exploratory wells. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)	No similar action
55	Fluid Minerals	**GRSG PHMA COA-55b.** For leases that are not yet developed in PHMA, the proposed surface disturbance cannot exceed 3 percent within that Colorado MZ. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)	**GRSG ADH COA-55c.** For leases that are not yet developed in ADH, the purposed surface disturbance cannot exceed 3 percent for that entire Colorado MZ. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)	**GRSG PHMA COA-55d.** For leases that are not yet developed, the proposed surface disturbance cannot exceed 5 percent for ecological sites that support sagebrush in PHMA for that Colorado MZ. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)	See Line 47.	No similar action.
56	Fluid Minerals	(PHMA) When necessary, conduct additional,	(ADH) When necessary, conduct additional, effective	Same as Alternative B.	(PHMA) When necessary, conduct effective mitigation	No similar action

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		effective mitigation in 1) GRSG PHMA or—less preferably—2) GHMA (dependent upon the area-specific ability to increase GRSG populations).	mitigation in occupied habitat (dependent upon the area-specific ability to increase GRSG populations).		in 1) GRSG PHMA or—less preferably—2) GHMA (dependent upon the area-specific ability to increase GRSG populations and in consultation with the State of Colorado).	
57	Fluid Minerals	(PHMA) Conduct additional, effective mitigation first within the same population area where the impact is realized, and if not possible then conduct mitigation within the same Colorado MZ as the impact, per 2006 WAFWA Strategy (p. 2-17).	(ADH) Conduct additional, effective mitigation first within the same population area where the impact is realized, and if not possible then conduct mitigation within the same Colorado MZ as the impact, per 2006 WAFWA Strategy (p. 2-17).	Same as Alternative B.	(PHMA) Conduct effective mitigation first within the same Colorado MZ where the impact is realized, and if not possible then conduct mitigation within the same population as the impact, or in other Colorado GRSG populations, in consultation with the State of Colorado.	No similar action
58	Fluid Minerals	**GRSG PHMA Notice to Lessees-58b/c.** Require unitization when deemed necessary for proper development and operation of an area to minimize adverse impacts to GRSG. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)	Same as Alternative B.	**GRSG PHMA Notice to Lessees-58d**. Encourage unitization within Colorado MZs when necessary for proper development and operation of an area or to facilitate more orderly (i.e., phased and/or clustered) development as a means of minimizing adverse impacts to GRSG. (Refer to **Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations.)	No similar action.	No similar action

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59	Fluid Minerals	(PHMA) Identify areas where acquisitions (including subsurface mineral rights) or conservation easements would benefit GRSG.	Same as Alternative B.	No similar action.	No similar action.	No similar action.
60	Fluid Minerals	(ADH) For future actions, require a full reclamation bond specific to the site in accordance with 43 CFR 3104.2, 3104.3, and 3104.5. Ensure bonds are sufficient for costs relative to reclamation (Connelly et al. 2000a; Hagen et al. 2007) that would result in full restoration of the lands to the condition it was found prior to disturbance. Base the reclamation costs on the assumption that contractors for the BLM and Forest Service will perform the work.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.	No similar action.
--	Fluid Minerals	No similar action.	(ADH) Prohibit the construction of evaporation or infiltration reservoirs to hold coalbed methane wastewater.	No similar action.	No similar action.	No similar action.
--	Fluid Minerals	No similar action.	(ADH) Agencies will explore options to amend, cancel, or buy out leases in ACECs/Zoological Areas and occupied habitats.	No similar action.	No similar action.	No similar action.
--	Fluid Minerals	No similar action.	(ADH) Include conditions that require relinquishment of	No similar action.	No similar action.	No similar action.

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			leases/authorizations if doing so will: 1) mitigate the impact of a proposed development, or 2) mitigate the unanticipated impacts of an approved development.			
--	Fluid Minerals	No similar action.	(ADH) No waivers will be issued.	No similar action.	No similar action.	No similar action.
--	Fluid Minerals	No similar action.	(ADH) Any oil, gas, geothermal activity will be conducted to maximize avoidance of impacts, based on evolving scientific knowledge of impacts.	No similar action.	No similar action.	No similar action.
61	Fluid Minerals	Where applicable and technically feasible, apply PDFs/RDFs (see this table's Fluid Minerals and Multiple Program sections) as mandatory COAs within GRSG PHMA.		The range of alternatives is articulated in the specific PDF/RDF sections.		GRSG-M-FMO-ST-001-Standard – In PHMA, do not authorize employee camps. GRSG-M-FMO-ST-002-Standard – In PHMA, when feasible, do not locate tanks or other structures that may be used as raptor perches. If this is not feasible, use perch deterrents. GRSG-M-FMO-GL-001-Guideline – In PHMA, closed-loop systems should be used for drilling operations with no reserve pits, where feasible. GRSG-M-FMO-GL-002-Guideline – In PHMA and GHMA, during drilling

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						operations, soil compaction should be minimized and soil structure should be maintained using the best available techniques to improve vegetation reestablishment.
Solid Minerals		**Objective: Manage solid mineral programs to avoid, minimize and mitigate adverse impacts to GRSG habitat to the extent practical under the law and BLM/Forest Service jurisdiction.**				
Coal						
62	Solid Minerals-Coal	(ADH) Apply minimization of surface-disturbing or disruptive activities (including operations and maintenance) where needed to reduce the impacts of human activities on important seasonal GRSG habitats. Apply these measures during activity level planning. Use additional effective mitigation to offset impacts as appropriate (determined by local options/needs).	Same as Alternative B.	(ADH) *Existing Coal Leases:* During the term of the lease, encourage the lessee to voluntarily follow PDFs (**Appendix I**, Required Design Features, Preferred Design Features, and Suggested Design Features) to reduce and mitigate any adverse impacts to GRSG.	(ADH) *Existing Coal Leases:* During the term of the lease, encourage the lessee to voluntarily follow PDFs (**Appendix I**, Required Design Features, Preferred Design Features, and Suggested Design Features) to reduce and mitigate any adverse impacts to GRSG. At the time an application for a new coal lease or lease modification is submitted to the BLM, the BLM will determine whether the lease application area is "unsuitable" for all or certain coal mining methods pursuant to 43 CFR 3461.5. PHMA is essential habitat for maintaining GRSG for purposes of the suitability criteria set forth at 43 CFR 3461.5(o)(1).	GRSG-M-CML-ST-001-Standard – In PHMA, do not authorize new appurtenant surface facilities for existing underground mines unless no technical feasible alternative exists. If new appurtenant surface facilities associated with existing mine leases cannot be located outside of PHMA, co-locate them with any existing disturbed areas, if possible. If co-location is not possible, then construct new facilities to minimize disturbed areas while meeting mine safety standards and requirements, as identified by Mine Safety and Health Administration mine-plan approval process, and locate the facilities in an area least harmful to GRSG habitats based on vegetation, topography, or other habitat

Table 2.8
Description of Alternatives B, C, D, and BLM and Forest Service Proposed LUPAs

(PHMA) = Priority Habitat Management Area, (GHMA) = General Habitat Management Area, (LCHMA) = Linkage/Connectivity Habitat Management Area, (ADH) = All Designated Habitat

NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
					To authorize expansion of existing leases, the environmental record of review must show no significant direct disturbance, displacement, or mortality of GRSG based on the criteria below: • Critical GRSG habitat areas as identified by factors, including but not limited to, average male lek attendance and/or important seasonal habitat. • An evaluation of the threats affecting the local population as compared to benefits that could be accomplished through compensatory or off-site mitigation (see **Section 2.7.3**, Regional Mitigation) • An evaluation of terrain and habitat features. For example, within 4 miles from a lek, local terrain features such as ridges and ravines may reduce the habitat importance, and shield nearby habitat from disruptive factors.	features. GRSG-M-CML-GL-001-Guideline – In PHMA and GHMA, when coal leases are subject to readjustment, additional requirements should be included in the readjusted lease to protect and reduce threats to GRSG and its habitats to conserve, enhance, and restore habitat for long-term viability.

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Description of Alternatives B, C, D, and BLM and Forest Service Proposed LUPAs

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
63	Solid Minerals-Coal	(PHMA) *Surface mines*: Find unsuitable all surface mining of coal under the criteria set forth in 43 CFR 3461.5.	Same as Alternative B.	(ADH) *New Surface coal mine Leases:* Apply the requirements of 43 CFR 3461 to determine unsuitability. Find unsuitable all surface mining of coal under the criteria set forth in 43 CFR 3461.5 to ensure that the specific Lek instance or reference is adequately addressed. Where practicable, limit permitted disturbances as defined in **Appendix E**, Methodology for Calculating Disturbance Caps, to 5 percent in any Colorado MZ. Where disturbance exceeds 5 percent in any Colorado MZ make additional, effective mitigation necessary to offset the resulting loss of GRSG habitat. Disturbance Cap Exception Criteria: Where data-based documentation is available to warrant a conclusion that GRSG populations in the applicable Colorado GRSG MZ are healthy and stable at objective levels or increasing, and that the development will not	(PHMA) No new surface coal mine leases would be allowed in PHMA. At the time an application for a new coal lease or lease modification is submitted to the BLM, the BLM would determine whether the lease application area is "unsuitable" for all or certain coal mining methods pursuant to 43 CFR 3461.5. PHMA is essential habitat for maintaining GRSG for purposes of the suitability criteria set forth at 43 CFR 3461.5(o)(1).	GRSG-M-CMUL-ST-001-Standard – In PHMA, do not authorize surface disturbances (e.g., appurtenant facilities) for new underground coal mines.

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				adversely affect GRSG populations due to habitat loss or disruptive activities, the Authorized Officer may authorize disturbance in excess of the 5 percent disturbance cap without requiring additional mitigation. In many cases, this exception will require project proponents to fund studies necessary to secure the "data-based documentation" requirement.		
64	Solid Minerals-Coal	(PHMA) *Sub-surface Mining:* Grant no new mining leases unless all surface disturbances (appurtenant facilities) are placed outside of the GRSG PHMA. In GRSG PHMA, place any new appurtenant facilities outside of PHMA. Where new appurtenant facilities associated with the existing lease cannot be located outside the GRSG PHMA, collocate new facilities within existing disturbed areas. If this is not possible, then build any new appurtenant facilities to the absolute minimum standard necessary.	Same as Alternative B.	(ADH) *New Underground Coal Mines Leases:* Grant no new mining leases unless all surface disturbances (appurtenant facilities) are placed outside of the GRSG PHMA [43 CFR 3461.1 (a) and (b)]. Also see Part 3460: Environment, Subpart 3461: Federal Lands Review: Unsuitability for Mining, 3461.1. Where practicable, limit permitted disturbances as defined in **Appendix E**, Methodology for Calculating Disturbance Caps, to 5 percent in any Colorado MZ. Where disturbance exceeds 5 percent in any Colorado MZ make additional, effective	*New Underground Coal Mine Leases would be subject to:* Special Stipulations: • All surfaces disturbances will be placed more than 2 miles from active leks. • No surface disturbance on remainder of PHMA subject to the following conditions: If, after consultation with the State of Colorado, and in consideration of the following criteria, there is no significant direct disturbance, displacement, or mortality of GRSG or impact to GRSG habitat;	GRSG-M-CML-ST-001-Standard – In PHMA, do not authorize new appurtenant surface facilities for existing underground mines unless no technical feasible alternative exists. If new appurtenant surface facilities associated with existing mine leases cannot be located outside of PHMA, co-locate them with any existing disturbed areas, if possible. If co-location is not possible, then construct new facilities to minimize disturbed areas while meeting mine safety standards and requirements, as identified by Mine Safety and Health Administration mine-plan approval process, and locate

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
				mitigation necessary to offset the resulting loss of GRSG habitat. Disturbance Cap Exception Criteria: Where data-based documentation is available to warrant a conclusion that GRSG populations in the applicable Colorado GRSG MZ are healthy and stable at objective levels or increasing, and that the development will not adversely affect GRSG populations due to habitat loss or disruptive activities, the Authorized Officer may authorize disturbance in excess of the 5 percent disturbance cap without requiring additional mitigation. In many cases, this exception will require project proponents to fund studies necessary to secure the "data-based documentation" requirement.	(List criteria) • 3 percent disturbance cap in PHMA with disturbances limited to 1 disturbance per 640 acres density calculated by biologically significant unit (Colorado population) and proposed project analysis area (Colorado MZ) would apply to new lease activities. • No new leasing in PHMA if disturbance cap exceeds 3 percent for the biologically significant unit (Colorado population) and proposed project analysis area (Colorado MZ) or 1 disturbance per 640 acres is exceeded.	the facilities in an area least harmful to GRSG habitats based on vegetation, topography, or other habitat features. GRSG-M-CML-GL-001-Guideline – In PHMA and GHMA, when coal leases are subject to readjustment, additional requirements should be included in the readjusted lease to protect and reduce threats to GRSG and its habitats to conserve, enhance, and restore habitat for long-term viability.
		No similar action.	No similar action.	(ADH) Underground mining exemption criteria for new leases: 1. Federal lands with coal deposits that would be mined by underground	Same as Alternative D.	No similar action.

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
				mining methods shall not be assessed as unsuitable where there would be no surface coal mining operations, as defined in 43 CFR 3400.0-5 (mm) of this title, on any lease, if issued. 2. Where underground mining will include surface operations and surface impacts on federal lands to which a criterion applies, the lands shall be assessed as unsuitable unless the surface management agency find that a relevant exception or exemption applies. See 43 CFR 3461.1(b). Where practicable, limit permitted disturbances as defined in **Appendix E**, Methodology for Calculating Disturbance Caps, to 5 percent in any Colorado MZ. Where disturbance exceeds 5 percent in any Colorado MZ make additional, effective mitigation necessary to offset the		

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
				resulting loss of GRSG habitat.		
--	Solid Minerals-Coal	No similar action.	No similar action.	(PHMA) See 43 CFR 3461.4 (a) and (b) Exploration. Authorized exploration activities may be conducted only if the Authorized Officer reviews any application for an exploration license on such lands to ensure that any exploration does not harm any value for which the area has been assessed as unsuitable and determines that the exploration will not adversely affect GRSG populations due to habitat loss or disruptive activities or that the impact can be fully mitigated. Where practicable, limit permitted disturbances as defined in **Appendix E**, Methodology for Calculating Disturbance Caps, to 5 percent in any Colorado MZ. Where disturbance exceeds 5 percent in any Colorado MZ make additional, effective mitigation necessary to offset the resulting loss of GRSG habitat. Disturbance Cap Exception Criteria:	(PHMA) See 43 CFR 3461.4 (a) and (b) Exploration. Authorized exploration activities may be conducted only if the Authorized Officer reviews any application for an exploration license on such lands to ensure that any exploration does not harm any value for which the area has been assessed as unsuitable and determines that the exploration will not adversely affect GRSG populations due to habitat loss or disruptive activities or that the impact can be fully mitigated. Where practicable, limit permitted disturbances as defined in **Appendix E**, Methodology for Calculating Disturbance Caps, to 3 percent in PHMA any Colorado MZ. Where disturbance exceeds 3 percent in any Colorado MZ and proposed project analysis area make additional, effective mitigation necessary to offset the resulting loss of GRSG habitat.	No similar action.

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				Where data-based documentation is available to warrant a conclusion that GRSG populations in the applicable Colorado GRSG MZ are healthy and stable at objective levels or increasing, and that the development will not adversely affect GRSG populations due to habitat loss or disruptive activities, the Authorized Officer may authorize disturbance in excess of the 5 percent disturbance cap without requiring additional mitigation. In many cases, this exception will require project proponents to fund studies necessary to secure the "data-based documentation" requirement.		
--	Solid Minerals – Coal	No similar action.	No similar action.	(PHMA) *Underground mining – lease renewals:* • Require that all surface mining appurtenant facilities for underground mining be located outside of PHMA (unless the lessee establishes that that such location is not technically feasible).	Same as Alternative D.	No similar action.

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				• If surface mining facilities must be located in PHMA, require the facilities be located in areas of existing disturbance and to have the smallest footprint possible utilizing design strategies to minimize disturbance such as those identified in the PDF section of this table. • Apply as conditions of lease renewal all appropriate conservation measures, PDFs, and mitigation designed to avoid, minimize impacts to GRSG. (ADH) *Surface mining – lease renewals/ readjustments:* Apply as conditions of lease renewal all appropriate conservation measures, PDFs, and mitigation designed to avoid, minimize impacts to GRSG.		
--	Solid Minerals-Coal	No similar action.	No similar action.	(ADH) Recommend or require as appropriate during all relevant points of the coal leasing and	Same as Alternative D.	No similar action.

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
				authorization process, minimization of surface-disturbing or disrupting activities (including operations and maintenance) where needed to reduce the impacts of human activities on important seasonal GRSG habitats. Apply these measures during activity level planning (jurisdiction is managed by the State.) The Office of Surface Mining or a delegated State Regulatory authority under the Surface Mining Control and Reclamation Act of 1977authorizes surface disturbance activities of active coal mining operations on federal mineral estate. The BLM/Forest Service coordinates with the Surface Mining Control and Reclamation Act of 1977regulatory authority in overseeing coal leasing and permitting on federal lands. The resource recovery and protection plan for which BLM/Forest Service recommends approval to the Secretary integrates the reclamation plan		

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				recommended by the Surface Mining Control and Reclamation Act of 1977regulatory authority for active coal mines on federal mineral estate. Approval of coal mining plans on lands containing leased federal coal is reserved to the Secretary of the Interior. 30 CFR 740.4. BLM and Forest Service issue coal leases and exploration licenses for right of entry to promote development of minerals on federal lands. See the following in regards to BLM exploration: 43 CFR 3461.4. Exploration. States with delegated authority on federal lands from the Office of Surface Mining may have their own GRSG guidance in association with state wildlife agencies and such guidance may differ from state to state.		
		No similar action.	No similar action.	(ADH) (a) Assessment of any area as unsuitable for all or certain stipulated methods of coal mining operations pursuant to Section 522 of the Surface Mining Control and Reclamation Act of 1977 (30 USC 1272) and the	Same as Alternative D.	No similar action.

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				regulations of this subpart does not prohibit exploration of such area under 43 CFR 3410 and 43 CFR 3480. 43 CFR 3461.4(a)		
		No similar action.	No similar action.	(ADH) (b) An application for an exploration license on any lands assessed as unsuitable for all or certain stipulated methods of coal mining shall be reviewed by the BLM/Forest Service to ensure that exploration does not harm any value for which the area has been assessed as unsuitable. 43 CFR 3461.4(b)	Same as Alternative D.	No similar action.
Locatable Minerals						
65	Locatable Minerals	(PHMA) Recommend withdrawal from mineral entry based on risk to the GRSG and its habitat from conflicting locatable mineral potential and development.	Same as Alternative B.	No similar action.	No similar action.	No similar action.
66	Locatable Minerals	(PHMA) Make any existing claims within the withdrawal area subject to validity exams or buy out. Include claims that have been subsequently determined to be null and void in the proposed withdrawal.	Same as Alternative B.	(PHMA) In accordance with 43 CFR 3809.100, require validity exams for mining claims within withdrawn areas.	No similar action.	No similar action.

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67	Locatable Minerals	(PHMA) In plans of operations required prior to any proposed surface-disturbing activities, include the following: • Additional effective mitigation in perpetuity for conservation (in accordance with existing policy, BLM Washington Office Instruction Memorandum 2013-142). For example, purchase private land and mineral rights or severed subsurface mineral rights within the priority area and deed to US Government. • Consider seasonal restrictions if deemed effective	Same as Alternative B.	(PHMA) In plans of operations required prior to any proposed surface-disturbing activities include as appropriate effective mitigation for conservation in accordance with existing policy (BLM Washington Office Instruction Memorandum 2013-142). (PHMA) Where applicable to prevent unnecessary or undue degradation, apply seasonal restrictions if deemed necessary.	Same as Alternative D.	GRSG-M-LM-ST-001-Standard – In PHMA, approve Plans of Operation with mitigation to protect GRSG and its habitats, consistent with the rights of the mining claimant as granted by the General Mining Law of 1872, as amended. GRSG-M-LM-GL-001-Guideline – In PHMA and GHMA to keep habitat disturbance at a minimum, a phased development approach should be applied to operations consistent with the rights granted under the General Mining Law of 1872, as amended. Disturbed areas should be reclaimed as soon as they are no longer needed for mineral operations. GRSG-M-LM-GL-002-Guideline – In PHMA and GHMA, abandoned mine sites should be closed or mitigated, subject to valid or existing rights, to reduce predation of GRSG by eliminating tall structures that could provide nesting opportunities and perching sites for predators.
68	Locatable	(PHMA) Where applicable to prevent unnecessary or undue		The range of alternatives is articulated in **Appendix I**, Required Design Features,		

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	Minerals	degradation, apply PDFs/RDFs/SDFs (**Appendix I**, Required Design Features, Preferred Design Features, and Suggested Design Features) as mandatory COAs.		Preferred Design Features, and Suggested Design Features.		
Nonenergy Leasable Minerals						
69	Nonenergy Leasable Minerals	(PHMA) Close PHMA to nonenergy leasable mineral leasing. This includes not permitting any new leases to expand an existing mine.	Same as Alternative B.	(PHMA) Consider allowing expansion of existing nonenergy mineral leases. Where practicable, limit permitted disturbances, as defined in **Appendix E**, Methodology for Calculating Disturbance Caps, to 5 percent in any Colorado MZ. Where disturbance exceeds 5 percent in any Colorado MZ make additional, effective mitigation necessary to offset the resulting loss of GRSG habitat. Disturbance Cap Exception Criteria: Where data-based documentation is available to warrant a conclusion that GRSG populations in the applicable Colorado GRSG MZ are healthy and stable at objective levels or increasing, and that the development will not adversely affect GRSG populations due to habitat loss or disruptive activities,	<u>New nonenergy mineral leases:</u> No new nonenergy mineral leasing in PHMA. <u>Existing nonenergy mineral leases:</u> Apply the following conservation measures as COAs where applicable and feasible: Preclude new surface occupancy on existing leases within 1 mile of active leks (Blickley et al. 2012; Harju 2012). If the lease is entirely within 1 mile of an active lek, require any development to be placed in the area of the lease least harmful to sage-grouse based on vegetation, topography, or other habitat features (**Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations).	**GRSG-M-NEL-GL-001-Guideline** – In PHMA and GHMA, at the time of issuance of prospecting permits, exploration licenses and leases, or readjustment of leases, the Forest Service should provide recommendations to the BLM for the protection of GRSG and its habitats. **GRSG-M-NEL-GL-002-Guideline** – In PHMA and GHMA, the Forest Service should recommend to the BLM that expansion or readjustment of existing leases avoid, minimize, or mitigate the effects to GRSG and its habitat

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				the Authorized Officer may authorize disturbance in excess of the 5 percent disturbance cap without requiring additional mitigation. In many cases, this exception will require project proponents to fund studies necessary to secure the "data-based documentation" requirement.	Preclude new surface disturbance on existing leases within 2 miles of active leks within PHMA. If the lease is entirely within 2 miles of an active lek, require any development to be placed in the area of the lease least harmful to sage-grouse based on vegetation, topography, or other habitat features (**Appendix D**, Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations). Limit permitted disturbances to 1 disturbance per 640 acres average across the landscape in PHMA. Disturbances may not exceed 3 percent in PHMA in any biologically significant unit (Colorado populations) and proposed project analysis area (Colorado MZ). **GRSG TL-47-51** – Based on site-specific conditions, prohibit surface occupancy or disturbance within PHMA within 4 miles of a lek during lekking, nesting, and early brood-rearing (March 1 to	

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					July 15).	
70	Nonenergy Leasable Minerals	(PHMA) For existing nonenergy leasable mineral leases, in addition to the solid minerals PDFs/RDFs, follow the same PDFs/RDFs applied to Fluid Minerals when wells are used for solution mining.		The range of alternatives is articulated in **Appendix I**, Required Design Features, Preferred Design Features, and Suggested Design Features.		
Salable Mineral Materials						
71	Salable Minerals	(PHMA) Close PHMA to mineral material sales.	Same as Alternative B.	(PHMA) Consider allowing existing mineral material sale sites to continue operations. Consider allowing expansion of existing mineral material sales sites. Where practicable, limit permitted disturbances, as defined in **Appendix E**, Methodology for Calculating Disturbance Caps, to 5 percent in any Colorado MZ. Where disturbance exceeds 5 percent in any Colorado MZ make additional, effective mitigation necessary to offset the resulting loss of GRSG habitat. Disturbance Cap Exception Criteria: Where data-based documentation is available to warrant a conclusion that GRSG populations in the applicable Colorado GRSG MZ are healthy and stable at objective levels or	(PHMA) Close PHMA to new mineral material sales. However, these areas would remain open to free use permits and the expansion of existing active pits, only if the following criteria are met: • The activity is within the biologically significant unit and the project area disturbance cap; • The activity is subject to the provisions set forth in the mitigation strategy (**Appendix G**); • All applicable required/preferred design features are applied; and, [if applicable] the activity is permissible under the regional screening criteria (**Appendix H**, Guidelines for Implementation).	GRSG-M-MM-ST-001-Standard – In PHMA, do not allow new mineral material disposal or development. GRSG-M-MM-ST-002-Standard – In PHMA, free-use mineral material collection permits may be issued and expansion of existing active pits may be allowed, except from March 1 to April 30 between 6 pm and 9 am within 2 miles from the perimeter of occupied leks, if doing so is within the biologically significant unit and does not exceed the disturbance cap. GRSG-M-MM-ST-003-Standard – In PHMA and GHMA, any existing permit for mineral material operations must include appropriate requirements for operation and reclamation of the site to restore, enhance, or maintain desired habitat

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				increasing, and that the development will not adversely affect GRSG populations due to habitat loss or disruptive activities, the Authorized Officer may authorize disturbance in excess of the 5 percent disturbance cap without requiring additional mitigation. In many cases, this exception will require project proponents to fund studies necessary to secure the "data-based documentation" requirement.		conditions (**Table 2.3**).
72	Salable Minerals	(PHMA) Restore salable mineral pits no longer in use to meet GRSG habitat conservation objectives.	Same as Alternative B.	(ADH) Restore salable mineral pits no longer in use to meet GRSG habitat conservation objectives. Require reclamation/restoration of GRSG habitat as a viable long-term goal to improve the GRSG habitat. (Appendix G, Surface Reclamation Plan, of the Draft LUPA/EIS includes guidelines for reclamation in ecological sites that support sagebrush.)	Same as Alternative D.	No similar action.
Mineral Split Estate		**Objective: Utilize federal authority to protect GRSG habitat on split estate lands to the extent provided by law.**				
73	Split Estate Minerals	(PHMA) Where the federal government owns the	Same as Alternative B.	(PHMA) Where the federal government owns the	(PHMA/GHMA) Where the federal government owns the	No similar action

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		mineral estate and the surface is in nonfederal ownership, apply the conservation measures applied to public lands.		mineral estate and the surface is in nonfederal ownership, apply conservation measures to the developer (lessee) of the mineral as allowable.	mineral estate in PHMA and GHMA, and the surface is in nonfederal ownership, apply the same stipulations, COAs, and/or conservation measures and RDFs/PDFs applied if the mineral estate is developed on BLM-administered lands in that management area, to the maximum extent permissible under existing authorities, and in coordination with the landowner.	
74	Split Estate Minerals	(PHMA) Where the federal government owns the surface, and the mineral estate is in non-federal ownership, apply appropriate Fluid Mineral PDFs to surface development.	Same as Alternative B.	(PHMA) Where the federal government owns the surface, and the mineral estate is in non-federal ownership, apply appropriate PDFs to surface development.	(PHMA/GHMA) Where the federal government owns the surface and the mineral estate is in nonfederal ownership in PHMA and GHMA, apply appropriate surface use COAs, stipulations, and mineral RDFs/PDFs through ROW grants or other surface management instruments, to the maximum extent permissible under existing authorities, in coordination with the mineral estate owner/lessee.	No similar action
Wildfire Suppression, Fuels Management and Fire Rehabilitation						
Fuels Management		**Objective: Manage the fuels program to avoid GRSG habitat loss and restore damaged habitat.**				
75	Fuels Manage-ment	(PHMA) Do not reduce sagebrush canopy cover to less than 15 percent	(ADH) Design and implement fuels treatments with an emphasis on protecting existing	(PHMA) Do not reduce sagebrush canopy cover to less than 15 percent	(PHMA) Do not reduce sagebrush canopy cover to less than 15 percent	GRSG-GRSGH-ST-001-Standard – Design habitat restoration projects to move

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
		(Connelly et al. 2000a; Hagen et al. 2007) unless a fuels management objective requires additional reduction in sagebrush cover to meet strategic protection of GRSG PHMA and conserve habitat quality for the species. Closely evaluate the benefits of the fuel breaks against the additional loss of sagebrush cover in the future NEPA process.	sagebrush ecosystems. Do not reduce sagebrush canopy cover to less than 15 percent (Connelly et al. 2000a; Hagen et al. 2007) unless a fuels management objective requires additional reduction in sagebrush cover to meet strategic protection of occupied GRSG habitat and conserve habitat quality for the species. Closely evaluate the benefits of the fuel break against the additional loss of sagebrush cover in the environmental assessment process.	(Connelly et al. 2000a; Hagen et al. 2007) unless a vegetation management objective requires additional reduction in sagebrush cover to meet strategic protection of GRSG PHMA and conserve habitat quality for the species.	(Connelly et al. 2000a; Hagen et al. 2007) in a project area unless a vegetation management objective requires additional reduction in sagebrush cover to meet strategic protection of GRSG PHMA and conserve habitat quality for the species, in consultation with the State of Colorado.	towards desired conditions (**Table 2.3**).
76	Fuels Manage-ment	(PHMA) Apply appropriate seasonal restrictions for implementing fuels management treatments according to the type of seasonal habitats present in a priority area.	(ADH) Apply appropriate seasonal restrictions for implementing fuels management treatments according to the type of seasonal habitats present.	(PHMA) Apply appropriate seasonal restrictions for implementing vegetation management treatments according to the type of seasonal habitats present in a Colorado MZ.	Same as Alternative D.	**GRSG-FM-GL-003-Guideline** – In PHMA and GHMA, fuel treatments should be designed to restore, enhance, or maintain GRSG habitat.
77	Fuels Manage-ment	(PHMA) Allow no treatments in known winter range unless the treatments are designed to strategically reduce wildfire risk around or in the winter range and will maintain winter range habitat quality.	(ADH) Allow no fuels treatments in known winter range unless the treatments are designed to strategically reduce wildfire risk around or in the winter range and will maintain winter range habitat quality.	(ADH) Retain in sagebrush habitat, for each Colorado MZ, a minimum of 70 percent of the ecological sites capable of supporting 12 percent canopy cover of Wyoming Sagebrush or 15 percent canopy cover of Mountain Sagebrush. Manage for a total disturbance cap of less than 30 percent, to include all	(PHMA) Allow no treatments in known winter range unless the treatments are designed to strategically reduce wildfire risk around or in the winter range and will maintain winter range habitat quality, unless in consultation with the State of Colorado it is deemed necessary to reduce risk to life and property.	GRSG-GRSGH-GL-001-Guideline – Sagebrush removal in GRSG breeding and nesting and wintering habitats should be restricted unless necessary to support attainment of desired habitat conditions (**Table 2.3**). **GRSG-FM-GL-001-Guideline** – In wintering or breeding and nesting habitat,

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Description of Alternatives B, C, D, and BLM and Forest Service Proposed LUPAs

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
				loss of sagebrush from all causes including anthropogenic disturbance, wildfire, plowed field agriculture, and vegetation treatments. This cap is applied to ADH in the entire Colorado MZ. Sites capable of supporting sagebrush habitat will count against the cap until they have recovered to at least 12 percent canopy cover in Wyoming big sagebrush and 15 percent in mountain big sagebrush dominated areas (Bohne et al., 2007). Note: • Only mappable stands of cheatgrass and Pinyon/ Juniper encroachment will count against the disturbance cap. • Irrigated meadows do not count against the cap. • On a site-by-site basis, independent of cap management issues, do not allow treatments with the potential to adversely affect GRSG populations.		sagebrush removal or manipulation, including prescribed fire, should be restricted unless the removal strategically reduces the potential impacts from wildfire.
78	Fuels Manage-ment	(PHMA) Do not use fire to treat sagebrush in less than 12-inch precipitation zones	(ADH) Do not use fire to treat sagebrush in less than 12-inch precipitation zones (e.g.,	(ADH) Do not use fire to treat sagebrush in less than 12-inch precipitation zones	(ADH) Do not use fire to treat sagebrush in less than 12-inch precipitation zones	GRSG-GRSGH-GL-004-Guideline – To facilitate safe and effective fire management

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		(e.g., Wyoming big sagebrush or other xeric sagebrush species) (Connelly et al. 2000a; Hagen et al. 2007; Beck et al. 2009). However, if as a last resort and after all other treatment opportunities have been explored, and site-specific variables allow, the use of prescribed fire for fuels breaks that would disrupt fuel continuity or enhance land health could be considered where cheatgrass is a very minor component in the understory (Brown 1982).	Wyoming big sagebrush or other xeric sagebrush species) (Connelly et al. 2000a; Hagen et al. 2007; Beck et al. 2009). However, if as a last resort and after all other treatment opportunities have been explored and site-specific variables allow, the use of prescribed fire for fuel breaks that would disrupt the fuel continuity across the landscape could be considered, in stands where cheatgrass is a very minor component in the understory (Brown 1982).	(e.g., Wyoming big sagebrush or other xeric sagebrush species) (Connelly et al. 2000a; Hagen et al. 2007; Beck et al. 2009). However, if as a last resort and after all other treatment opportunities have been explored, and site-specific variables allow, the use of prescribed fire or natural ignition fire for fuels breaks that would disrupt fuel continuity or enhance land health could be considered where cheatgrass is a very minor component in the understory (Brown 1982).	(e.g., Wyoming big sagebrush or other xeric sagebrush species) (Connelly et al. 2000a; Hagen et al. 2007; Beck et al. 2009). However, if as a last resort and after all other treatment opportunities have been explored, and site-specific variables allow, the use of prescribed fire or natural ignition fire for fuels breaks that would disrupt fuel continuity or enhance land health could be considered where cheatgrass is deemed a minor threat. If prescribed fire is used in GRSG habitat, the NEPA analysis for the burn plan will address: • why alternative techniques were not selected as viable options; • how GRSG goals and objectives would be met by its use; • how the COT report objectives would be addressed and met; a risk assessment to address how potential threats to GRSG habitat would be	actions, in PHMA and GHMA, fuels treatments should be designed to reduce the spread and intensity of wildfire in high-risk areas (i.e., areas of increased potential for ignition and in areas where there is a potential for wildfire that would be difficult for suppression resources to contain and control). **GRSG-FM-ST-001-Standard** – In PHMA and GHMA, do not use prescribed fire, except for pile burning, in 12-inch or less precipitation zones unless necessary to facilitate site preparation for restoration of GRSG habitat consistent with desired conditions in **Table 2.3**. **GRSG-FM-GL-008-Guideline** – In PHMA and GHMA, roads and natural fuel breaks should be incorporated into fuel break design to improve effectiveness and minimize loss of existing sagebrush habitat.

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					minimized. Prescribed fire as a vegetation or fuels treatment shall only be considered after the NEPA analysis for the burn plan has addressed the four bullets outlined above. Prescribed fire could be used to meet specific fuels objectives that would protect GRSG habitat in PHMA (e.g., creating fuel breaks that would disrupt the fuel continuity across the landscape in stands where annual invasive grasses are a minor component in the understory, burning slash piles from conifer reduction treatments, or being used as a component with other treatment methods to combat annual grasses and restore native plant communities). Prescribed fire in known winter range shall only be considered after the NEPA analysis for the burn plan has addressed the four bullets outlined above. Any prescribed fire in winter habitat would need to be designed to strategically reduce wildfire risk around	

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					and/or in the winter range and designed to protect winter range habitat quality.	
79	Fuels Manage-ment	(PHMA) Monitor and control invasive vegetation post-treatment.	No similar action.	(ADH) Same as Alternative B, except apply to ADH.	Same as Alternative D.	**GRSG-FM-GL-009-Guideline** – In PHMA and GHMA, all fire-associated vehicles and equipment should be power-washed before entering and exiting the area to minimize the introduction of undesirable invasive plant species.
80	Fuels Manage-ment	(PHMA) Rest treated areas from grazing for two full growing seasons unless vegetation recovery dictates otherwise (Wyoming Game and Fish Department 2011).	No similar action.	(ADH) Same as Alternative B, except apply to ADH.	Same as Alternative D.	No similar action
81	Fuels Manage-ment	(PHMA) Require use of native plant seeds for fuels management treatment based on availability, adaptation (site potential), probability for success (Richards et al. 1998). Where probability of success or native seed availability is low, nonnative seeds may be used as long as they meet GRSG habitat objectives (Pyke 2011).	No similar action.	(ADH) Require use of native plant seeds for vegetation treatments based on availability, adaptation (site potential), probability for success (Richards et al. 1998), and the vegetation management objectives for the area covered by the treatment. Where probability of success or native seed availability is low, use species that meet soil stability and hydrologic function objectives as well as vegetation and GRSG	Same as Alternative D.	GRSG-GRSGH-GL-003-Guideline – In PHMA and GHMA, actions and authorizations should include design features to limit the spread and effect of undesirable nonnative plant species. GRSG-GRSGH-GL-005-Guideline – In PHMA and GHMA, native plant species should be used, when possible, to restore, enhance, or maintain desired habitat conditions (**Table 2.3**).

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
				habitat objectives (Pyke 2011).		**GRSG-FM-GL-002-Guideline** – In PHMA and GHMA, when reseeding in fuel breaks, fire resistant native plant species should be used if available, or consider using fire resistance nonnative species to meet resource objectives.
82	Fuels Manage-ment	(PHMA) Design post fuels management to ensure long-term persistence of seeded or pre-burn native plants. This may require temporary or long-term changes in livestock grazing, wild horse management, travel management, and other uses to achieve and maintain the desired condition of ESR projects to benefit GRSG (Eiswerth and Shonkwiler 2006).	(ADH) Design post fuels management projects to ensure long-term persistence of seeded or pre-treatment native plants, including sagebrush. This may require temporary or long-term changes in livestock grazing management, wild horse management, travel management, or other activities to achieve and maintain the desired condition of the fuels management project (Eiswerth and Shonkwiler 2006). Lands will be managed to be in the good or better ecological condition to help minimize adverse impacts of fire. Any fuels treatments will focus on interfaces with human habitation or significant existing disturbances.	Same as Alternative B.	Same as Alternative B.	GRSG-GRSGH-ST-001-Standard – Design habitat restoration projects to move towards desired conditions (**Table 2.3**).
83	Fuels Manage-	(PHMA) Design fuels management projects in	No similar action.	(ADH) Design vegetation treatments in GRSG habitats	Same as Alternative D.	GRSG-GRSGH-GL-004-Guideline – To facilitate safe

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	ment	PHMA to strategically and effectively reduce wildfire threats in the greatest area. This may require fuels treatments implemented in a more linear versus block design (Launchbaugh et al. 2007).		to strategically facilitate firefighter safety, reduce wildfire threats, and extreme fire behavior. This may involve spatially arranging new vegetation treatments with past treatments, vegetation with fire-resistant serial stages, natural barriers, and roads in order to constrain fire spread and growth. This may require vegetation treatments to be implemented in a more linear versus block design (Launchbaugh et al. 2007).		and effective fire management actions, in PHMA and GHMA, fuels treatments should be designed to reduce the spread and intensity of wildfire in high-risk areas (i.e., areas of increased potential for ignition and in areas where there is a potential for wildfire that would be difficult for suppression resources to contain and control).
84	Fuels Manage-ment	(PHMA) During fuels management project design, consider the utility of using livestock to strategically reduce fine fuels (Diamond at al. 2009), and implement grazing management that will accomplish this objective (Davies et al. 2011; Launchbaugh et al 2007). Consult with ecologists to minimize impacts to native perennial grasses. consistent with the objectives and conservation measures of the grazing section.	No similar action.	Same as Alternative B, except apply to ADH.	Same as Alternative D.	No similar action.

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	Fuels Manage-ment	No similar action.	(ADH) Lands will be managed to be in the good or better ecological condition to help minimize adverse impacts of fire.	No similar action.	No similar action.	No similar action.
	Fuels Manage-ment	No similar action.	(ADH) Any fuels treatments will focus on interfaces with human habitation or significant existing disturbances.	No similar action.	No similar action.	No similar action.
Fire Operations		**Objective: Manage fire to maintain and enhance large blocks of contiguous sagebrush.**				
85	Fire Operations	(PHMA) In GRSG PHMA, prioritize suppression, immediately after life and property, to conserve the habitat. See **Appendix O**, Greater Sage-Grouse Wildfire and Invasive Species Habitat Assessment.	Same as Alternative B.	(PHMA) Prioritize suppression immediately after firefighter and public safety. Consider GRSG habitat requirements in conjunction with all resource values managed by the BLM and Forest Service, and give preference to GRSG habitat unless site-specific circumstances warrant an exemption. See **Appendix O**, Greater Sage-Grouse Wildfire and Invasive Species Habitat Assessment.	(PHMA) Prioritize suppression immediately after firefighter and public safety. Consider GRSG habitat requirements commensurate with all resource values at risk managed by the BLM and Forest Service. See **Appendix O**, Greater Sage-Grouse Wildfire and Invasive Species Habitat Assessment.	**GRSG-FM-GL-013-Guideline** – On critical fire weather days, available fire suppression resources should be pre-positioned to optimize a quick and efficient response into PHMA and GHMA.
86	Fire Operations	(GHMA) In GHMA, prioritize suppression where wildfires threaten PHMA. See **Appendix O**, Greater Sage-Grouse Wildfire and Invasive Species Habitat Assessment.	No similar action.	(GHMA) Prioritize suppression immediately after firefighter and public safety. Consider GRSG habitat requirements in conjunction with all resource values managed by the BLM and Forest Service, and give preference to	(GHMA) Prioritize suppression immediately after firefighter and public safety. Consider GRSG habitat requirements commensurate with all resource values at risk managed by the BLM and Forest Service. See	See Line 85 above.

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				GRSG habitat unless site-specific circumstances warrant an exemption. See **Appendix O**, Greater Sage-Grouse Wildfire and Invasive Species Habitat Assessment.	**Appendix O**, Greater Sage-Grouse Wildfire and Invasive Species Habitat Assessment.	
--	Fire Operations	No similar action.	No similar action.	No similar action.	In PHMA and GHMA, temporary closures would be considered in accordance with 43 CFR subpart 8364; 43 CFR subpart 8351, 43 CFR subpart 6302; 43 CFR subpart 8341.	No similar action.
Emergency Stabilization and Rehabilitation (ESR)		**Objective: Use ESR to address post-wildfire threats to GRSG habitat.**				
87	ESR	(ADH) Prioritize native seed allocation for use in GRSG habitat in years when preferred native seed is in short supply. This may require reallocation of native seed from ESR (BLM) and/or Burn Area Emergency Rehabilitation (Forest Service) projects outside of GRSG PHMA to those inside it. Use of native plant seeds for ESR or Burn Area Emergency Rehabilitation seedings is required based on availability, adaptation (site	Same as Alternative B.	(ADH) Require use of native plant seeds for vegetation treatments based on availability, adaptation (site potential), probability for success (Richards et al. 1998), and the vegetation management objectives for the area covered by the treatment. Where attempts to use native seeds have failed, or native seed availability is low, use species that meet soil stability and hydrologic function objectives as well as vegetation and GRSG	(ADH) Require use of native plant seeds that are beneficial for GRSG for vegetation treatments based on availability, adaptation (site potential), probability for success (Richards et al. 1998), and the vegetation management objectives for the area covered by the treatment. Where attempts to use native seeds have failed, or native seed availability is low, use species that meet soil stability and hydrologic function objectives as well as	**GRSG-FM-GL-002-Guideline** – In PHMA and GHMA, when reseeding in fuel breaks, fire resistant native plant species should be used if available, or consider using fire resistance nonnative species to meet resource objectives.

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		potential), and probability of success Richards et al. 1998). Where probability of success or native seed availability is low, nonnative seeds may be used as long as they meet GRSG habitat conservation objectives (Pyke 2011). Re-establishment of appropriate sagebrush species/subspecies and important understory plants, relative to site potential, shall be the highest priority for rehabilitation efforts.		habitat objectives (Pyke 2011).	vegetation and GRSG habitat objectives (Pyke 2011).	
88	ESR	(ADH) Design post-fire ESR and Burn Area Emergency Rehabilitation management to ensure long-term persistence of seeded or pre-burn native plants. This may require temporary or long-term changes in livestock grazing, wild horse management, travel management, and other uses to achieve and maintain the desired condition of ESR and Burn Area Emergency Rehabilitation projects to benefit GRSG (Eiswerth and Shonkwiler 2006).	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.	No similar action.

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NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
89	ESR	(ADH) Consider potential changes in climate (Miller et al. 2011) when proposing restoration seedings when using native plants. Consider collection from the warmer component of the species' current range when selecting native species (Kramer and Havens 2009).	Same as Alternative B.	No similar action.	No similar action.	No similar action.
--	ESR	No similar action.	(ADH) Establish and strengthen networks with seed growers to assure availability of native seed for ESR projects.	No similar action.	No similar action.	No similar action.
--	ESR	No similar action.	(ADH) Post fire recovery must include establishing adequately sized exclosures (free of livestock grazing) that can be used to assess recovery.	No similar action.	No similar action.	No similar action.
--	ESR	No similar action.	(ADH) Livestock grazing should be excluded from burned areas until woody and herbaceous plants achieve GRSG habitat objectives.	No similar action.	(ADH) Rest burned areas from grazing for two full growing seasons unless vegetation recovery dictates otherwise (Wyoming Game and Fish Department 2011).	No similar action.
--	ESR	No similar action.	(ADH) Where burned GRSG habitat cannot be fenced from other unburned habitat, the entire area (i.e., allotment/pasture) should be closed to grazing until recovered.	No similar action.	(ADH) Rest burned areas from grazing for two full growing seasons unless vegetation recovery dictates otherwise (Wyoming Game and Fish Department 2011).	No similar action.

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--	ESR	No similar action.	(ADH) Mowing of grass will be used in any fuel break fuels reduction project (roadsides or other areas).	No similar action.	No similar action.	No similar action.
Habitat Restoration		**Objective: (1) Use habitat restoration as a tool to create and/or maintain landscapes that benefit GRSG; (2) Use Integrated Vegetation Management to control, suppress, and eradicate, where possible, noxious and invasive species per BLM Handbook H-1740-2; and (3) In PHMA, the desired condition is to maintain a minimum of 70 percent of lands capable of producing sagebrush with 10 to 30 percent sagebrush canopy cover. The attributes necessary to sustain these habitats are described in Interpreting Indicators of Rangeland Health (BLM Technical Reference 1734-6).**				
90	Habitat Restora-tion	(ADH) Prioritize implementation of restoration projects based on environmental variables that improve chances for project success in areas most likely to benefit GRSG (Meinke et al. 2009). Prioritize restoration treatments and monitoring in seasonal habitats that are thought to be limiting GRSG distribution and/or abundance.	(ADH) Prioritize implementation of restoration projects based on environmental variables that improve chances for project success in areas most likely to benefit GRSG (Meinke et al. 2009). Prioritize restoration in seasonal habitats that are thought to be limiting GRSG distribution and/or abundance and where factors causing degradation have already been addressed (e.g., changes in livestock management).	(ADH) When planning restoration treatments in GRSG habitat, identify seasonal habitat availability and prioritize treatments in areas that are thought to be limiting GRSG distribution and/or abundance, in accordance with the Prioritization section of the narrative for Alternative D.	Same as Alternative D.	GRSG-GRSGH-ST-001-Standard – Design habitat restoration projects to move towards desired conditions (**Table 2.3**). GRSG-GRSGH-GL-006-Guideline – In PHMA, vegetation treatment projects should only be conducted if they restore, enhance, or maintain desired habitat conditions (**Table 2.3**).
91	Habitat Restora-tion	(PHMA) Include GRSG habitat parameters as defined by Connelly et al. (2000b), Hagen et al. (2007) or if available, State GRSG Conservation plans and appropriate local information in habitat restoration objectives.	(ADH) Include GRSG habitat objectives in habitat restoration projects. Make meeting these objectives within occupied GRSG habitat the highest restoration priority.	Same as Alternative B.	Same as Alternative B.	See **Table 2.3**.

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		Make meeting these objectives within GRSG PHMA areas a high restoration priority.				
92	Habitat Restora-tion	(PHMA) Require the use of native seeds for restoration based on availability, adaption (ecological site potential, and probability of success (Richards et al. 1998). Where probability of success or adapted seed availability is low, nonnative seeds may be used as long as they support GRSG habitat objectives.	Same as Alternative B.	(ADH) Require use of native plant seeds for vegetation treatments based on availability, adaptation (site potential), probability for success (Richards et al. 1998), and the vegetation management objectives for the area covered by the treatment. Where probability of success or native seed availability is low, use species that meet soil stability and hydrologic function objectives as well as vegetation and GRSG habitat objectives (Pyke 2011).	(ADH) Require use of native plant seeds that are beneficial for GRSG, for vegetation treatments based on availability, adaptation (site potential), probability for success (Richards et al. 1998), and the vegetation management objectives for the area covered by the treatment. Where probability of success or native seed availability is low, use species that meet soil stability and hydrologic function objectives as well as vegetation and GRSG habitat objectives (Pyke 2011).	GRSG-GRSGH-GL-005-Guideline – In PHMA and GHMA, native plant species should be used, when possible, to restore, enhance, or maintain desired habitat conditions (**Table 2.3**).
93	Habitat Restora-tion	(PHMA) Design post restoration management to ensure long-term persistence of seeded or pre-burn native plants. This may require temporary or long-term changes in livestock grazing, wild horse management, travel management, and other uses, to achieve and maintain the desired condition of ESR projects	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.	No similar action.

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		to benefit GRSG (Eiswerth and Shonkwiler 2006).				
94	Habitat Restora-tion	(PHMA) Consider potential changes in climate (Miller et al. 2011) when proposing restoration seedings when using native plants. Consider collection from the warmer component of the species' current range when selecting native species (Kramer and Havens 2009).	Same as Alternative B.	No similar action.	No similar action.	No similar action.
95	Habitat Restora-tion	(ADH) Restore native (or desirable) plants and create landscape patterns which most benefit GRSG.	(ADH) Exotic seedings will be rehabbed, interseeded, restored to recover sagebrush in areas to expand occupied habitats.	(ADH) Retain in sagebrush habitat, for each Colorado MZ, a minimum of 70 percent of the ecological sites capable of supporting 12 percent canopy cover of Wyoming Sagebrush or 15 percent canopy cover of Mountain Sagebrush. Manage for a total disturbance cap of less than 30 percent, to include all loss of sagebrush from all causes including anthropogenic disturbance, wildfire, plowed field agriculture, and vegetation treatments. This cap is applied to ADH in the entire Colorado MZ. Sites capable of supporting	(ADH) Manage for a habitat objective that is primarily sagebrush with a mosaic of seral stages and sagebrush in all age classes. On a site-by-site basis, do not allow treatments that would adversely affect GRSG populations. Remove conifers encroaching into sagebrush habitats. Prioritize treatments closest to occupied GRSG habitats and near occupied leks, and where juniper encroachment is phase 1 or phase 2. Use of site-specific analysis and principles like those included in the FIAT report (Chambers et al. 2014) and	GRSG-GRSGH-ST-001-Standard – Design habitat restoration projects to move towards desired conditions (**Table 2.3**).

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				sagebrush habitat will count against the cap until they have recovered to at least 12 percent canopy cover in Wyoming big sagebrush and 15 percent in mountain big sagebrush dominated areas (Bohne et al., 2007). Note: • Only mappable stands of cheatgrass and Pinyon/ Juniper encroachment will count against the disturbance cap. • Irrigated meadows do not count against the cap. • On a site-by-site basis, independent of cap management issues, do not allow treatments with the potential to adversely affect GRSG populations.	other ongoing modeling efforts to address conifer encroachment will help refine the location for specific priority areas to be treated. See **Appendix H**, Guidelines for Implementation.	
96	Habitat Restora-tion	(ADH) Make reestablishment of sagebrush and desirable understory plant cover (relative to ecological site potential) the highest priority for restoration efforts.	No similar action.	Same as Alternative B, but consider GRSG habitat requirements in conjunction with all resource values managed by the BLM/Forest Service, and give preference to GRSG habitat unless site-specific circumstances warrant an exemption.	Same as Alternative D.	GRSG-GRSGH-ST-001-Standard – Design habitat restoration projects to move towards desired conditions (**Table 2.3**).
97	Habitat Restora-tion	(ADH) In fire prone areas where sagebrush seed is required for GRSG habitat	Same as Alternative B.	Same as Alternative B. Work with local plant material centers and/or	(ADH) Authorize local sagebrush seed collection to support local restoration	No similar action.

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Description of Alternatives B, C, D, and BLM and Forest Service Proposed LUPAs

(PHMA) = Priority Habitat Management Area, (GHMA) = General Habitat Management Area, (LCHMA) = Linkage/Connectivity Habitat Management Area, (ADH) = All Designated Habitat

NTT No.[2]	Program Area	Alternative B	Alternative C	Alternative D	BLM Proposed LUPA	Forest Service Proposed LUPA
		restoration, consider establishing seed harvest areas that are managed for seed production (Armstrong 2007) and are a priority for protection from outside disturbances.		groups to establish seed harvest areas and local seed stocks.	efforts.	
--	Habitat Restora-tion	No similar action.	(ADH) Composition, function, and structure of native vegetation communities will be consistent with the reference state of the appropriate Ecological Site Description and will provide for healthy, resilient, and recovering GRSG habitat components.	No similar action.	No similar action.	No similar action.
--	Habitat Restora-tion	No similar action.	(ADH) Avoid sagebrush reduction/treatments to increase livestock or big game forage in occupied habitat and include plans to restore high-quality habitat in areas with invasive species.	No similar action.	No similar action.	No similar action.
--	Habitat Restora-tion	No similar action.	(ADH) Ensure that soil cover and native herbaceous plants are at their Ecological Site Description potential to help protect against invasive plants.	No similar action.	No similar action.	No similar action.
Areas of Critical Environmental Concern (ACECs)/Zoological Areas						
--	ACECs	No similar action.	(PHMA) Designate all PHMA as the GRSG Habitat ACEC/Zoological Area.	No similar action.	No similar action.	No similar action.

[1]All Designated Habitat (ADH) includes Priority Habitat Management Areas (PHMA), General Habitat Management Areas (GHMA), and Linkage/Connectivity Habitat Management Areas (LCHMA).
[2]NTT is the "National Technical Team" as it relates to the "Report on National Greater Sage-Grouse Conservation Measures" released on December 21, 2011 (NTT 2011).

2.11 ALTERNATIVES ELIMINATED FROM DETAILED ANALYSIS

The following alternatives were considered but were not carried forward for detailed analysis because (1) they would not fulfill the requirements of FLPMA, NFMA or other existing laws or regulations, (2) they did not meet the purpose and need, (3) they were already part of an existing plan, policy, or administrative function, or (4) they did not fall within the limits of the planning criteria. FLPMA requires the BLM and Forest Service to manage the public lands and resources in accordance with the principles of multiple use and sustained yield.

2.11.1 Area of Critical Environmental Concern Proposals Applied to All Designated Habitat

Two public-proposed alternatives for designations of new ACECs/Zoological Areas were submitted to the BLM/Forest Service during the public scoping period:

- ADH would be an ACEC/Zoological Area
- PHMA would be an ACEC/Zoological Area

The PHMA proposal was found to meet ACEC relevance and importance criteria by a team of BLM biologists and was carried forward under Alternative C. See **Appendix J**, Areas of Critical Environmental Concern Relevance and Importance Rationale, for the relevance and importance worksheet.

The proposal to designate ADH as an ACEC did not meet relevance and importance criteria. Refer to **Appendix J**, Areas of Critical Environmental Concern Relevance and Importance Rationale, for the relevance and importance worksheet for GHMA and LCHMA.

ACECs differ from other special designations, such as Wilderness Study Areas, in that designation by itself does not automatically prohibit or restrict other uses in the area.

2.11.2 Garfield County Alternative

On March 21, 2013, Garfield County, Colorado, submitted their Greater Sage-Grouse Conservation Plan to the BLM. Garfield County formally requested that this alternative be included as the preferred alternative for the Garfield County portion of the Northwest Colorado Draft GRSG LUPA/EIS. The alternative is presented in Appendix D of the Draft LUPA/EIS, Garfield County Greater Sage-Grouse Conservation Plan, but has not been analyzed as a separate alternative in detail primarily because it is contained within the existing range of alternatives and is not significantly distinguishable from those alternatives. The Garfield County alternative is more focused regarding "modeled suitable habitat" than Alternative A. The Garfield County alternative identifies a smaller amount of priority habitat but applies similar restrictions to the BLM/Forest Service preferred alternative (Alternative D).

Garfield County's effort was motivated by their observation that the GRSG habitat in the county was "naturally fragmented" relative to the expanses of sagebrush-dominated rangeland further north. Figure 6 of the Garfield County alternative is noteworthy because it depicts the lands to be managed with specific conservation measures under the alternative. The natural fragmentation concept is supported by **Figure 2-1** (in **Appendix A**, Figures), which identifies ecological sites in PHMA that support stands of sagebrush. It is evident from this figure that the GRSG in Garfield County and southern Rio Blanco County use sagebrush habitat that is relatively discontinuous.

Garfield County's valid observations, however, fail to allow for the connectivity of habitat necessary to maintain the GRSG population. The Parachute-Piceance-Roan population in northwest Colorado is relatively small and isolated in the southernmost extent of the species' range. Birds in this population have been documented to use atypical habitat, including sagebrush/mixed shrub communities where the mountain shrub component is greater than 10 percent (Apa 2010). PHMA mapped by CPW have incorporated known seasonal bird movements and habitat use within this population.

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Chapter 3
Affected Environment

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CHAPTER 3
AFFECTED ENVIRONMENT

3.1 INTRODUCTION

The planning area is the geographic area within which the BLM and USFS will make decisions during this planning effort. The planning area boundary includes all lands regardless of jurisdiction. Lands addressed in the LUP amendments will be public lands (including split estate lands) managed by the BLM and USFS in GRSG habitats. Any decisions in the LUP amendments will apply only to federal lands administered by *either* the BLM *or* the USFS.

This chapter documents the existing conditions and trends of resources in the planning area that may be affected by implementing any of the proposed alternatives described in **Chapter 2**, Alternatives. The affected environment provides the context for assessing the potential impacts described in **Chapter 4**, Environmental Consequences. For this LUPA/EIS, the planning area is the entire Northwest Colorado sub-region, which contains BLM-administered and Forest-Service-administered lands, as described in **Chapter 1**, Introduction.

To augment this planning document at a biologically meaningful scale for GRSG, a Baseline Environmental Report (BER) of GRSG was produced by USGS for BLM and Forest Service (Manier et al. 2013). The BER is a science support document that provides information to put planning units and issues into the context of the larger WAFWA GRSG Management Zones. The BER examines each threat identified in USFWS listing decision published on March 15, 2010. For each threat, the report summarizes the current, scientific understanding of various impacts to GRSG populations and habitats. When available, patterns, thresholds, indicators, metrics, and measured responses that quantify the impacts of each specific threat are reported. Data from the BER are presented throughout this chapter to illuminate the location (e.g., PH and GH), magnitude, and extent of the threats within each WAFWA Management Zone that comprises the planning area.

Because the BER focuses on threats to GRSG at the WAFWA Management Zone (or "range-wide") scale, it provides biologically meaningful data for larger-scale analyses, such as the cumulative effects analysis for GRSG in **Chapter 5**, Cumulative Effects.

Chapter 3, Affected Environment, also presents data that are available at a finer scale than used in the BER's larger-scale, WAFWA Management Zone

focus. These fine-scale, local data are incorporated into the affected environment discussion to complement the BER's biologically meaningful data, characterize the relative contributions of threats in the planning area versus the WAFWA Management Zones, and to set the stage for the cumulative effects analysis for GRSG (**Chapter 5**, Cumulative Effects). Unless specifically described as WAFWA Management Zone (or referred to as the Wyoming Basin or the Colorado Plateau Management Zone), references to management zones throughout Chapter 3 describe the affected environment in the Colorado MZs in the planning area, as described in **Chapter 1**, Introduction.

Acreage figures and other numbers used are approximate projections; readers should not infer that they reflect exact measurements or precise calculations. Acreages were calculated using GIS technology, and there may be slight variations in total acres between resources.

3.1.1 Organization of Chapter 3

This chapter contains sections describing the biological, physical, cultural, and human resources of the planning area and follows the order of topics addressed as follows:

- Fish and Wildlife
- Special Status Species (GRSG and Other Special Status Species of Issue)
- Lands and Realty
- Vegetation (Forest, Rangelands, Riparian and Wetlands, and Weeds)
- Wildland Fire Ecology and Management
- Minerals – Leasable (Oil and Gas, Oil Shale, Coalbed Natural Gas, Carbon Dioxide, Geothermal Resources, Sodium, Uranium, Coal)
- Minerals – Locatable
- Minerals – Salable
- Travel Management
- Recreation
- Range Management
- Wild Horse and Burro Management
- Special Designations (ACEC, Wilderness Areas, Wilderness Study Areas, Inventoried Roadless Areas, Wild and Scenic Rivers, National Scenic and Historic Trails, Scenic Byways, Watchable Wildlife Areas, Special Interest Areas)
- Water Resources
- Soil Resources

- Air Quality and Climate Change
- Visual Resources
- Lands with Wilderness Characteristics
- Soundscapes
- Cultural Resources
- Paleontological Resources
- Social and Economic Conditions (Including Environmental Justice)

Each resource section in this chapter contains a discussion of existing conditions and trends:

- Existing conditions describe the location, extent, and current condition of the resource in the planning area in general and on BLM-administered and National Forest System lands. Conditions for a resource can vary depending on the resource. The Northwest Colorado sub-region planning area contains approximately 15 million acres, regardless of land status, including approximately 8.5 million acres of public lands managed by the five BLM field offices and the Routt National Forest. Within the Northwest Colorado sub-region planning area, the decision area includes GRSG habitat. In the decision area there are approximately 1.7 million acres of BLM-administered surface lands and approximately 20,000 acres of Routt National Forest lands (totaling approximately 2.9 million acres of federal mineral estate and surface acres). For each resource, a general description of the existing conditions is provided for the Northwest Colorado sub-region planning area, regardless of land status. This is done to provide a regional context for the resource. Then, a more detailed description of the existing conditions is provided for the BLM-administered and National Forest System lands managed according to the BLM and Forest Service LUPs being amended by this LUPA/EIS. This is done to provide an area-specific description of the existing conditions for the resource. When possible, greater emphasis is placed on describing the existing conditions of the resource as it pertains to GRSG and their habitat.
- Trends identify the degree and direction of resource change between the present and some point in the past. If there is change, the degree and direction of resource change is characterized as moving toward or away from the current desired condition based on the indicators, and the reasons for the change are identified. Similar to indicators, trends can also be described in quantitative or qualitative terms. Identifying the trends is done to provide an understanding of how BLM and Forest Service management influences the desired condition of the resource over time. It can be

difficult to analyze trends for certain resources, because changes to the resource often occur due to factors beyond the control of the BLM and Forest Service.

The BLM and Forest Service reviewed the LUPs being amended under this LUPA/EIS and other relevant information sources (such as LUP amendments, maps, and state GRSG conservation assessments) for existing conditions and trends for the resources listed above with respect to GRSG and their habitat. This affected environment information is summarized below and, where appropriate, noted when the information is incorporated by reference.

3.2 FISH AND WILDLIFE

This section describes the existing conditions of fish and wildlife resources within the planning area, including aquatic and terrestrial animal species and their habitats. The planning area lies within three EPA Level III Ecoregions: Southern Rockies, Wyoming Basin, and Colorado Plateaus. Although CPW and USFWS are directly responsible for the management of fish and wildlife species, the BLM and Forest Service are responsible for land management. Therefore, on BLM-administered and Routt National Forest lands in the decision area, these agencies are directly responsible for the management of habitat for fish and wildlife species and indirectly responsible for the health of fish and wildlife populations that are supported by these habitats. In addition, the BLM and Forest Service are mandated by the ESA, the BLM is mandated by BLM Land Use Planning Handbook (BLM 2005), and the Forest Service is mandated by Forest Service Manual 2670, to ensure that special status species are protected. This mandate is reinforced through a Memorandum of Agreement with USFWS, Forest Service, and National Marine Fisheries Service (BLM et al. 2000).

The fish and wildlife habitats present in the planning area are primarily characterized in the soil, water, and vegetation existing conditions discussions in **Sections 3.16**, **3.15**, and **3.5**, respectively. The discussions of aquatic and terrestrial habitat in this section identify attributes of these resources that are particularly important to their role in providing fish and wildlife habitat (**Table 3.1**). Special status species are described in **Section 3.3**, Special Status Species.

Table 3.1
Fish and Wildlife Species of Primary Interest in the Planning Area

Species	Rationale for Priority Designation
Birds	
Eagles (bald and golden)	High interest, protected by law, apex predators
Other raptors (prairie falcon, red-tailed hawk, goshawk, owls)	High interest, protected by law, apex predators
Upland game birds (GRSG)	Economic and recreational value
Great blue heron	Protected by law, uses concentrated nesting areas
Ducks, geese, and other waterfowl	Economic and recreational value
Migratory birds	High interest, protected by law

Table 3.1
Fish and Wildlife Species of Primary Interest in the Planning Area

Species	Rationale for Priority Designation
Mammals	
Elk	High interest, economic and recreational value
Mule deer	High economic and recreational value
Pronghorn antelope	High economic and recreational value
Bighorn sheep	High economic and recreational value
Moose	High interest, economic and recreational value
Black bear	High interest, economic and recreational value; apex predators
Mountain lion	High interest, economic and recreational value, apex predators
River otter	High interest, protected by law
White-tailed prairie dog	High interest, association with federally listed black-footed ferret
Aquatic Wildlife	
Cold water fish (sport and native)	Economic and recreational value, protected by law
Warm water fish (sport and native)	Economic and recreational value, protected by law

BLM

Wildlife and Terrestrial Habitat

BLM-administered lands within the planning area sustain an abundance and diversity of wildlife (including insects, birds, and mammals) and wildlife habitat. These lands provide a permanent or seasonal home for numerous species of amphibians, reptiles, birds (including migratory birds protected under the Migratory Bird Treaty Act), and mammals. Wildlife populations are found in areas where their basic needs (such as food, shelter, water, reproduction, and movement) are met. The area in which the needs of a particular population are met is referred to as habitat. Plants or animals that have been officially listed, proposed for listing, or are candidates for listing as threatened or endangered under provisions of the ESA, as well as those listed by a state in a category implying potential endangerment or extinction, and those designated by a BLM State Director as sensitive are discussed in **Section 3.3**, Special Status Species. This section will focus on those species that are less specialized and can use a wider range of habitats.

Several features make certain habitats better for wildlife than others. In turn, the more of these features that are present, the greater the diversity of wildlife species that is likely to be present. These features include:

- Structure: shape, height, density, and diversity of the vegetation and other general features of the terrain
- Vertical layers: layers of vegetation (such as herbaceous, shrub, and forest canopy)
- Horizontal zones: vegetation and other habitat features that vary across an area
- Complexity: an integration of vertical layers and horizontal zones

- Edge: the area where two types of vegetative communities meet (such as a forest and shrub community)
- Special features: unique habitat features needed for survival or reproduction, including snags (dead trees), water, and rock outcrops (Cooperrider 1986) BLM-administered lands within the planning area are important habitat for many types of wildlife. Wildlife and their habitat are impacted by a variety of land uses, such as timber harvesting, grazing, recreation, as well as by natural events, such as wildfire and insects. The BLM is indirectly responsible for the health and well-being of fish and wildlife populations that are supported by the habitats under the management of the BLM. The BLM works cooperatively with the USFWS and the CPW in order to manage wildlife habitats on BLM-administered lands.

Standards for Public Land Health

One method the BLM uses in order to measure the health of the land that it manages is through land health assessments. These assessments follow several standards that the BLM developed in response to public concern about livestock grazing management on western public lands. Standards for Public Land Health describe conditions needed in order to sustain public land health, and relate to all uses of the public lands. Standards, based upon their associated indicators, are applied on a landscape scale and relate to the potential of the landscape. See **Appendix K**, BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado.

Guidelines for Livestock Grazing Management

Guidelines are the management tools, methods, strategies, and techniques, such as best management practices, designed to maintain or achieve healthy public lands as defined by the standards. Currently, the only guidelines developed in concert with the Resource Advisory Councils for the BLM Colorado are livestock grazing management guidelines. See **Appendix K**, BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado.

Proper Functioning Condition

Another method used to evaluate habitat is to assess the proper functioning condition of streams and water bodies. Many surveys using the proper functioning condition protocol have been conducted as part of land health assessments on various landscapes within the planning area.

Aquatic Resources

Fish and other aquatic resources are critical resources to humans and, as such, have influenced the development, status, and success of social and economic systems in the western US. Aquatic organisms, such as insects and aquatic

invertebrates, provide food for fish. The health of fish and other aquatic organisms is often indicative of the health of the watershed.

Forest Service

Wildlife Species on the Routt National Forest are categorized into four main categories as it related to this analysis:

- Sensitive Species
- Threatened and Endangered Species
- Management Indicator Species (MIS)
- Other wildlife species

Sensitive Species

Sensitive species are a special status species for the Forest Service. The Forest Service has developed policy regarding the designation of plant and animal species (Forest Service Manual 2670.32; Region 2 Forest Service Manual Supplement 2670-2011-1). In the Rocky Mountain Region, species are identified as Forest Service Sensitive, and are included on a comprehensive list, using eight evaluation criteria to determine the merits of sensitive status for a particular species (Forest Service Manual 2672.11, Region 2 Forest Service Manual Supplement No. 2600-2003-1, Exhibit 02). The Regional Forester's list was last updated in 2011 (Holifield 2011). All candidate species are automatically placed on the Forest Service Sensitive species list. As such, because GRSG is a candidate species, it also is a Forest Service Sensitive species. Sensitive species are addressed in **Appendix M**, US Forest Service Biological Evaluation, and are not further discussed in this section.

Threatened and Endangered Species

Threatened and Endangered Species are a special status species which have been listed by USFWS under the ESA. A Biological Assessment will be prepared for the preferred alternative with the Final EIS. Threatened and Endangered Species are not further addressed in this section.

Management Indicator Species

The NFMA directs the Forest Service to select certain plants, communities, and vertebrate or invertebrate species to manage for maintenance and improvement of habitat. Requirements to identify and utilize MIS in the decision area and project-level planning were identified under NFMA planning regulations in 1982-219.19(a) (1). MIS are species that respond to habitat changes, are scarce or unique, are of high economic interest, or are listed as federal or state threatened or endangered species. By monitoring and assessing population trends of MIS, managers can determine if management actions are affecting species populations. MIS are also included in **Appendix M**, US Forest Service Biological Evaluation.

Other Wildlife Species

These are not conservation priority species with a 'special status,' but are those that may be related to this specific analysis. For this analysis the focus is on elk. The Routt National Forest Plan contains management direction specifically related to elk and deer. GRSG habitat overlaps with designated elk and deer winter range on the Routt National Forest (see **Figure 3-1** and **Figure 3-2**), and issues were raised during scoping regarding the potential impacts that elk may be having on GRSG habitat.

During the scoping process, commenters were interested in the Forest Service (and the BLM) addressing the issue of competition for resources (i.e., habitat and food) with other wildlife (e.g., the increasing numbers of elk in Colorado). In recent years, competition between livestock and wildlife, or more specifically, wild ungulates such as moose (*Alces alces*), deer (*Odocoileus* spp.), and elk (*Cervus elaphus*) has become an increasing concern by the public as well as range conservationists and wildlife biologists. Little scientific evidence has been collected on whether competition is occurring between species such as GRSG and elk and the direct and indirect effects on the resource when combined with livestock grazing. It is the Forest Service' responsibility to adjust livestock numbers according to wildlife use, so that allowable use criteria are not exceeded. The Routt National Forest Plan (Forest Service 1998) Range Standards state, "remove livestock from the grazing unit or allotment when further utilization on key areas will exceed allowable-use criteria in the forest plan or allotment management plan."

Competition begins to occur when the food resources are in short supply and one species may decline due to the limited food resources. In the drier west, the spatial configuration of cover types leads to wild and domestic ungulates, as well as other wildlife species congregating in the same areas where there is desirable forage and cover. At the landscape level, competition may be causing site-level resource impacts in these areas such that community types may shift in succession. Resource competition may include community types that are converted to a different ecotype. A specific example is the introduction of noxious weeds into habitats that displace important resources for a species such as GRSG, thus impacting their life history requirements.

Aquatic organisms include fish and amphibians that reside in streams and water bodies as well as wetlands and riparian areas. The Routt National Forest includes the headwaters of the North Platte, Yampa, and upper Colorado River basins. Elkhead Creek and Slater Creek Watersheds are within GH in the California and Slater Parks areas. These areas support many priority aquatic resources, including several designated sensitive species, such as Colorado River cutthroat trout, mountain sucker, boreal toad, and northern leopard frog.

3.2.1 Indicators

Management Indicator Species

According to the Routt National Forest Plan Amendment #4 (Forest Service 2007), terrestrial MIS for the Routt National Forest include the six fish and wildlife species found in **Table 3.2**. At the project and plan level, management indicators are selected that best represent the issues, concerns, and opportunities.

Table 3.2
Routt National Forest Management Indicator Species in the Decision Area

Common Name of MIS	Management Issue	Species Present in Analysis Area?	Habitat Present in Analysis Area?	Species selected for MIS analysis?
Golden-crowned Kinglet	Spruce-fir timber management	No	No	No
Northern goshawk	Lodgepole pine timber management	No	No	No
Vesper sparrow	Rangeland residual forage	Yes	Yes	Yes
Wilson's warbler	Herbivory in riparian areas	Yes	Yes	Yes
Colorado River cutthroat trout and brook trout	Aquatic habitat conditions	Yes	Yes	Yes

3.2.2 Existing Conditions

Conditions of the Planning Area

Within the planning area, the BLM manages over 1.7 million acres of fish and wildlife habitat, and the Forest Service manages just over 20,000 acres. The presence and interspersion of many habitat types support a large number of wildlife species. The discussion of fish and wildlife populations and habitat addresses the entire planning area, not just the BLM-administered or Routt National Forest lands (decision area), because fish and wildlife are mobile and may readily cross these boundaries, mule deer, pronghorn (*Antilocapra americana*), bighorn sheep (*Ovis canadensis canadensis*, *O. c. nelsoni*, and *O. c. mexicana*), mountain lion (*Felis concolor*), raptors, and many nongame species, including, but not limited to, migratory birds, are among the species that use habitat in the planning area. The diversity and populations of fish and wildlife throughout the planning area provide considerable recreational opportunity and economic benefit.

A group of species that are of primary interest to the BLM and Forest Service for environmental planning within the planning area are presented in **Table 3.1**. These species are of management concern to one or more agencies, such as the BLM, Forest Service, CPW, and USFWS, because they are game, rare, or keystone species. Therefore, they require consideration in management activities and may affect land management decisions. A keystone species is one

whose presence and role within an ecosystem has a disproportionate effect on other organisms within the system.

Conditions on BLM-Administered Lands

Wildlife

A variety of terrestrial wildlife species use the vegetation types discussed in **Section 3.5**, Vegetation. The key terrestrial wildlife species within the planning area are primarily herptiles (reptile and amphibians), birds, and mammals. However, many terrestrial invertebrate species also exist, and adequate populations of terrestrial invertebrates are assumed when populations of the vertebrate groups that prey on invertebrates are healthy. The land health assessments, Rocky Mountain Bird Observatory, Colorado Natural Heritage Program, and GIS data maintained by CPW provide information on terrestrial wildlife distribution in the planning area. In addition, CPW maintains statistics on big game harvests, recreational use days, and population trends. The general conditions of key terrestrial and aquatic life within the decision area are summarized below.

Reptiles

Several species of reptiles exist within the planning area, mostly in lower elevations and in dryer habitats, such as semi-desert shrub, sagebrush, greasewood, and pinyon-juniper. Species found in the planning area include bull/gopher snake (*Pituophis catenifer*), sagebrush lizard (*Sceloporus graciosus*), prairie/plateau lizard (*Sceloporus undulates*), smooth green snake (*Liochlorophis vernalis*), western terrestrial garter snake (*Thamnophis elegans*), and milk snake (*Lampropeltis triangulum*). Other reptiles in the planning area include collared lizard (*Crotaphytus collaris*), tree lizard (*Urosaurus ornatus*), side blotched lizard (*Uta stansburiana*), short-horned lizard (*Phrynosoma hernandesi*), plateau striped whiptail (*Cnemidophorus velox*), western whiptail (*Cnemidophorus tigris*), desert striped whipsnake (*Masticophis taeniatus*), western blackneck garter snake (*Thamnophis cyrtopsis*), wandering garter snake (*Thamnophis elegans vagrans*), western yellow-belly racer (*Coluber constrictor*), corn snake (*Elaphe guttata*), Mesa Verde night snake (*Hypsiglena torquata loreala*), Utah blackhead snake (*Tantilla planiceps*), and prairie rattlesnake (*Crotalus viridis*).

Waterfowl and Shorebirds

The numerous streams, rivers, reservoirs, ponds, associated riparian areas, and wetlands vegetation provide excellent habitat for a wide variety of waterfowl and shorebirds. Canada geese (*Branta canadensis*), mallards (*Anas platyrhynchos*), pintail (*Anas acuta*), gadwall (*Anas strepera*), green-winged teal (*Anas crecca carolinensis)*, American wigeon (*Anas americana*), and other waterfowl species winter along many of the major rivers within the planning area. Waterfowl production also occurs throughout the planning area. Important foraging areas include private lands in agricultural areas and within the river corridors.

Wading birds such as great blue heron (*Ardea herodias*), cattle egret (*Bubulcus ibis*), snowy egret (*Egretta thula*), and white-faced ibis (*Plegadis chihi*) are found throughout the planning area. Great blue heron foraging and breeding areas are primarily along rivers, streams, and ponds throughout the planning area. Killdeer (*Charadrius vociferus*), American avocet (*Recurvirostra americana*), willet (*Tringa semipalmata*), and Wilson's phalarope (*Phalaropus tricolor*) are also commonly found within the planning area.

Upland Game Birds

Species common to the planning area include dusky grouse (*Dendragapus obscurus*; formerly known as blue grouse), Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*), and Merriam's turkey (*Meleagris gallopavo merriami*). Dusky grouse are widely distributed throughout the higher elevation woodlands and mixed mountain shrub, aspen, and coniferous forest habitats above 7,200 feet in the planning area. Turkeys use a variety of habitats, including riparian areas, mixed mountain shrub, and pinyon-juniper woodlands. Small flocks of chukar (*Alectoris chukar*) can also be found in the western portion of the planning area. Gunnison Sage-Grouse (*Centrocercus minimus*) and GRSG (*Centrocercus urophasianus*) exist in the decision area. GRSG occupy the sagebrush-dominant rangelands at lower elevations throughout the planning area and are discussed further in **Section 3.3**, Special Status Species.

Raptors

Raptors serve as important indicators of overall ecosystem health because they are keystone species at the top of the food web. Raptors are found throughout the planning area and include bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), peregrine falcon (*Falco peregrinus*), prairie falcon (*Falco mexicanus*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*B. swainsoni*), ferruginous hawk (*B. regalis*), osprey (*Pandion haliaetus*), northern harrier (*Circus cyaneus*), great-horned owl (*Bubo virginianus*), burrowing owl (*Athene cunicularia*), and flammulated owl (*Otus flammeolus*).

The BLM has particular management interest in concentrations of raptors, particularly bald eagles and golden eagles. Active nests of all species of raptors are protected under the Migratory Bird Treaty Act. Bald and golden eagles are also protected under the Bald and Golden Eagle Protection Act. Red-tailed hawks, golden eagles, Cooper's hawk (*Accipiter cooperii*), and sharp-shinned hawk (*A. striatus*) are the most common raptor species breeding and nesting in the planning area. Other raptors known to nest in the area include American kestrel (*Falco sparverius*), Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*A. striatus*), and prairie falcons. Accipiters, such as the Cooper's hawk, goshawk, and sharp-shinned hawk, are primarily woodland nesting species and are common in the forested areas. Precipitous rock formations and large trees provide suitable nesting habitat for these species. The numerous songbirds and small mammal populations provide the primary prey base.

Cavity-Nesting Birds

Cavity nesting species are those species of birds that excavate nesting holes. These birds create cavities from decaying or dead trees or cavities created by other species. Historically, dead or decaying trees (called snags) have been considered undesirable by forest managers. They are now, however, being recognized as important components to forested areas. Some 85 species of birds are considered cavity nesters, including migratory birds, raptors, and waterfowl (Scott et al. 1977). Some of the cavity nesters known within the planning area include the tree swallow (*Tachycineta bicolor*), barn owl (*Tyto alba*), and the common goldeneye (*Bucephala clangula*). The Lewis's woodpecker (*Melanerpes lewis*) also exists in the planning area and inhabits open pine forests, burn areas, cottonwoods in riparian areas, and pinyon-juniper forests (Johnsgard 1986).

Migratory Birds

The planning area supports a wide variety of migratory bird species during the summer and winter, or as they migrate through the area. The habitat diversity provided by the broad expanses of sagebrush, mixed mountain shrub, aspen, pinyon-juniper woodlands, other types of coniferous forests, riparian areas, and wetlands support many species. The most abundant species found within the planning area include the mourning dove (*Zenaida macroura*), common nighthawk (*Chordeiles minor*), horned lark (*Eremophila alpestris*), sage thrasher (*Oreoscoptes montanus*), green-tailed towhee (*Pipilo chlorurus*), sage sparrow (*Amphispiza belli*), and Brewer's sparrow (*Spizella breweri*).

Other migratory bird species found within the planning area include, but are not limited to, dusky flycatcher (*Empidonax oberholseri*), plain titmouse (*Baeolophus inornatus*), house wren (*Troglodytes aedon*), loggerhead shrike (*Lanius ludovicianus*), black-crowned night-heron (*Nycticorax nycticorax*), yellow warbler (*Dendroica petechia*), Cassin's finch (*Carpodacus cassinii*), Grace's warbler (*Dendroica graciae*), juniper titmouse (*Baeolophus ridgwayi*), and pinyon jay (*Gymnorhinus cyanocephalus*).

Sandhill cranes use areas within the planning area as a migratory stopover in the fall and spring. Ponds and reservoirs managed by the BLM provide a migratory stopover for sandhill cranes. Long-billed curlew (*Numenius americanus*) occasionally nests in the desert areas near the Utah border.

Big Game Species

The three primary big game species in the planning area are elk, mule deer (*Odocoileus hemionus*), and pronghorn antelope. Bighorn sheep and moose exist in more limited numbers throughout the planning area, and their habitat is not as extensively managed. Important big game ranges in relation to PH and GH are identified in **Table 3.3**. Mule deer severe winter range in relation to PH and GH on leased or unleased federal mineral estate are identified in **Table 3.4**.

Table 3.3
Big Game Ranges in PH and GH on BLM-Administered Lands

Species/Range	PHPH (Acres)	ADH (Acres)
Elk		
Summer Range	712,200	1,522,200
Severe/Critical Winter Range	1,025,500	1,723,800
Mule Deer		
Summer Range	1,868,200	3,254,300
Severe/Critical Winter Range	561,000	1,134,600
Pronghorn		
Summer Range	1,920,400	2,896,500
Severe/Critical Winter Range	310,300	425,100

Source: BLM 2013

Table 3.4
Acres of Mule Deer Winter Range on Federal Mineral Estate

Location	Leased		Unleased	
	Mule Deer Winter Range		Mule Deer Winter Range	
	PHPH	ADH	PHPH	ADH
CRVFO	0	100	16,600	26,600
GJFO	0	3,000	0	1,400
KFO	14,100	14,100	45,600	55,900
LSFO	115,400	187,900	232,800	473,400
WRFO	17,500	98,900	3,000	59,800
Roan Plateau	0	0	0	0
Routt National Forest	10	10	500	500
Total	**147,010**	**304,010**	**298,500**	**617,600**

Source: BLM 2013
Note: Mule Deer Winter Range includes Mule Deer Critical Winter Range, Mule Deer Severe Winter Range, and Mule Deer Winter Concentration Areas.
Areas not available for mineral leasing (i.e., WSAs) are not included.

Habitat supporting elk and mule deer throughout the planning area are quite varied and include forested and shrublands, especially mountain shrub. Summer habitats tend to be more forested areas and occupy higher elevations. Production occurs in the best habitats within summer concentration areas and occurs in both forested areas and shrublands, with cover sometimes provided by trees and sometimes by topography. The White River herd is the largest of the elk herds in the planning area, with an estimated population range between 34,000 and 38,000 elk (CPW 2011a).

Elk and mule deer migrate to lower elevation sagebrush-dominant ridges and south-facing slopes in the winter. BLM-administered lands provide most of the winter range available to elk and mule deer in the planning area. Critical winter ranges for elk, mule deer, and pronghorn antelope are essential to the survival

of these species in the planning area. In several areas, large concentrations of big game species are degrading winter habitats.

Severe winter range is defined as that part of the winter range where 90 percent of the individuals are located when annual snowpack is at its maximum or temperatures are at a minimum in the two worst winters out of ten CPW 2011). Critical winter range is defined as the winter habitat which is used during the most extreme portion of the winter (CPW 2011). There are several herds of mule deer whose range spans most of the planning area except for areas of high human concentrations. Mule deer occupy nearly all public lands during part of the year, with winter use being the most significant. During the winter, mule deer depend on the sagebrush steppe and mountain shrub habitats for survival. Winter concentrations of mule deer are observed in sagebrush habitats along the Colorado and Eagle Rivers.

Pronghorn antelope are present on BLM-administered lands in diffuse regions throughout the planning area. Pronghorn use habitat including sagebrush-dominant ridges and valleys as well as lower elevation desert areas. Their overall range consists primarily of salt desert and sagebrush shrublands and lowland grassland. The general distribution migrates to lower elevations in winter. Moose and bighorn sheep are present in more limited numbers within the planning area. Moose were introduced to Colorado by CPW in the late 1970s near North Park in willow and lodgepole pine habitat at an elevation of 8,850 to 9,350 feet. Since then, animals from this population have been reported in several adjacent areas, including Middle Park, the upper reaches of the Laramie and Cache la Poudre rivers, and Rocky Mountain National Park. Other sightings have been reported in South Park, near Leadville, near Gunnison, near Yampa, and west of Denver. In the east, moose occupy Routt National Forest, moving to higher elevations in the summer. Moose also move from these areas downstream along the Yampa River and up Elkhead Creek, where the headwaters have been designated as a moose concentration area. The habitat supporting moose in the planning area includes sagebrush, saltbush, and mountain shrub shrublands, as well as some willow, pinyon-juniper woodlands, and aspen forests. Concentration areas, including those used during winter, are found especially in saltbush, but also in sagebrush and mountain shrub habitats.

Moose and bighorn sheep are present in more limited numbers within the planning area. Moose were introduced to Colorado by CPW in the late 1970s near North Park in willow and lodgepole pine habitat at an elevation of 8,850 to 9,350 feet. Since then, animals from this population have been reported in several adjacent areas, including Middle Park, the upper reaches of the Laramie and Cache la Poudre rivers, and Rocky Mountain National Park. Other sightings have been reported in South Park, near Leadville, near Gunnison, near Yampa, and west of Denver. In the east, moose occupy Routt National Forest, moving to higher elevations in the summer. Moose also move from these areas downstream along the Yampa River and up Elkhead Creek, where the

headwaters have been designated as a moose concentration area. The habitat supporting moose in the planning area includes sagebrush, saltbush, and mountain shrub shrublands, as well as some willow, pinyon-juniper woodlands, and aspen forests.

The planning area contains both desert bighorn sheep (south of the Colorado River and west of the Gunnison River) and Rocky Mountain bighorn sheep (east of the Gunnison River and north of the Colorado River). Desert bighorn sheep is a BLM Sensitive species and is discussed in **Section 3.3**, Special Status Species. Bighorn sheep herds are widely scattered throughout the planning area and prefer high-visibility habitat. The habitat supporting use areas is primarily pinyon-juniper woodlands and adjacent sagebrush and mountain shrub habitat. Topography and rock cover play the most important role in the locations used within these habitats.

Bighorn sheep have been reintroduced into the Red Canyon area in North Park and may use portions of Sheep Mountain. Bighorn sheep are found primarily on National Forest System- and National Park Service-administered lands within Rocky Mountain National Park. However, this species is known to use BLM-administered lands in certain areas. The Battlement Mesa herd (Rocky Mountain Bighorn sheep unit S24) is found northwest of the town of Mesa, Colorado, and ranges across both BLM-administered and National Forest System lands. It is one of 34 native, indigenous herds in the State of Colorado and is one of the few low-elevation herds still persisting in native habitat. The Battlement Mesa population is approximately 50 individuals (Duckett 2012).

Other Key Mammal Species

Several other key mammal species are found within the planning area, such as the black bear (*Ursus americanus*), mountain lion, river otter (*Lutra canadensis*), white-tailed prairie dog *(Cynomys leucurus)*, coyotes (*Canis latrans*), bobcats (*Lynx rufus*), and red fox (*Vulpes vulpes*). These species are found within all habitat types, with coyotes being the most habitat-general species.

The habitats supporting black bear use areas are primarily pinyon-juniper woodland and aspen and coniferous forests. Habitat for mountain lion is found throughout the planning area where high densities and concentrations of mule deer are located. White-tailed prairie dogs are present in the lower elevations of the planning area. This sensitive species is described further in **Section 3.3**, Special Status Species. White-tailed prairie dog towns provide potential habitat for black-footed ferrets and are confined to shrublands, and almost exclusively to saltbush habitats, although a few colonies have been mapped in sagebrush or mountain shrub habitats.

An undetermined number of small mammals reside within the planning area, including ground squirrels, mice, chipmunks, rabbits, skunks, and raccoons. Many of these small mammals provide the main prey for raptors and larger carnivores.

Numerous bats use the abandoned mines and natural caves in the planning area. The Townsend's big-eared bat (*Corynorhinus townsendii*) is known to exist in the planning area. Common species observed include the silver-haired bat (*Lasionycteris noctivagans*), followed by the big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*), and long-legged bat (*Macrophyllum macrophyllum*) (Chung-MacCoubrey 2008).

Fish and Aquatic Wildlife

Aquatic habitats in the planning area consist of both lentic (still, as in ponds and lakes) and lotic (moving, as in streams and rivers) systems. Not all of the perennial aquatic habitats support fish, but it is very likely that most of the perennial waters support some abundance of aquatic insects. Amphibians are scattered across the landscape and may exist either exclusively or seasonally in a variety of aquatic habitat types. Within these aquatic systems, the diversity of habitats and differing elevations in which aquatic systems reside dictate the presence of a diverse array of fish and amphibian species. Within these aquatic systems, the diversity of habitats and differing elevations dictate the presence of a diverse array of fish and amphibian species.

Cold Water and Native Fish Species

Higher elevation waters located generally above 5,200 feet support cold water fishes, consisting primarily of brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), and cutthroat trout (*Oncorhynchus clarkii*). The primary cold water game fish species include cutthroat, rainbow, brook, and brown trout. Of the five trout species found within the planning area, two are native species: the Colorado River cutthroat trout (*Salmo clarki pleuriticus*) and the greenback cutthroat trout. The greenback cutthroat trout is federally threatened, and the Colorado River cutthroat trout is listed as a BLM Sensitive Species. These species are discussed further in **Section 3.3**, Special Status Species. Other native fishes within the planning area include mountain whitefish (*Prosopium williamsoni*) and mottled sculpin (*Cottus bairdi*).

Several large reservoirs throughout the planning area provide important recreational fisheries for rainbow trout, lake trout (*Salvelinus namaycush*), and kokanee salmon (*Oncorhynchus nerka*). Other sport fish found in the reservoirs include, but are not limited to, brown trout, cutthroat trout, northern pike, and splake (*Salvelinus namaycush x Salvelinus fontinalis*). Most of these sport fish populations are maintained by CPW stocking programs.

Warm Water Fish Species

Waters generally below 6,500 feet support primarily cool water and warm water fishes, including nonnative northern pike (*Esox lucius*), yellow perch (*Perca flavescens*), smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), black crappie (*Pomoxis nigromaculatus*), bluegill (*Lepomis macrochirus*), common carp (*Cyprinus carpio*), and walleye (*Stizostedion vitreum*). Additional

nonnative fish that may exist in the planning area include red shiner (*Cyprinella lutrensis*), fathead minnow (*Pimephales promelas*), and plains topminnow (*Fundulus sciaticus*).

Native warm water fish within the planning area include black bullhead (*Ameiurus melas*), channel catfish (*Ictalurus punctatus*), green sunfish (*Lepomis cyanellus*), Johnny darter (*Etheostoma nigrum*), long-nose dace (*Rhinichthys cataractae*), bluehead sucker (*Catostomus discobolus*), flannelmouth sucker (*Catostomus latipinnis*), roundtail chub (*Gila robusta*), razorback sucker, creek chub (*Semotilus atromaculatus*), Colorado pikeminnow, plains killifish (*Fundulus zebrinus*), bonytail chub, and humpback chub. Speckled dace (*Rhinichthys osculus*) are the most widely distributed native non-game fish, found regularly in most perennial streams within the planning area. The long-nose sucker (*Catostomus catostomus*) and white sucker (*Catostomus commersonii*) are found in warm and cool water habitats and are also considered invasive, nonnative, or competitive species within the planning area. Special status fish species are discussed further in **Section 3.3**, Special Status Species.

Amphibians

Many species of amphibians are found within the planning area including the western chorus frog (*Pseudacris triseriata*), wood frog, Woodhouse's toad (*Bufo woodhousii*), boreal toad, northern leopard frog, and tiger salamanders (*Ambystoma tigrinum*). For a more complete discussion of special status amphibian species refer to **Section 3.3**, Special Status Species.

High elevation areas within the planning area contain sufficient aquatic habitat to support boreal toads. Lower elevation amphibians include the Great Basin spade-foot toad (*Spea intermontana*).

Conditions on National Forest System Lands

Routt National Forest

Wildlife

Terrestrial wildlife species on the Routt National Forest portion of the analysis area include many of the common mammals, birds, reptiles and amphibians addressed in the BLM wildlife section.

The species highlighted in section include the Routt National Forest MIS and elk.

Terrestrial Management Indicator Species

Vesper Sparrow (Poocetes gramineus). Vesper sparrow was selected as an MIS to represent issues associated with rangeland residual forage. Vesper sparrows are primarily summer residents on the Routt National Forest and use shrublands and grass/forb habitats within or near the planning area for breeding. Vesper sparrow habitat does overlap with mapped GRSG habitat within both PHPH and GH. In selecting the vesper sparrow as an MIS for the 1997 Revision of the

Routt National Forest Plan (Forest Service 1998), no concern existed for species viability or viability of local populations and "viability" was neither a rationale nor motivation for its inclusion on the Forest Service MIS list. All MIS selected in the 1997 Revision were chosen because they "reflect the habitat needs for the majority of the species inhabiting the Routt National Forest" (Forest Service 1998). The vesper sparrow was carried forward in the 2007 Plan Amendment of the Routt National Forest, because it was considered as an appropriate MIS and monitoring of this species will likely answer specific questions to management issues (Forest Service 2007).

Vesper sparrow breeds in grasslands, open shrublands mixed with grasslands, and open pinyon-juniper woodlands. Vesper sparrows have two broods per nesting season with three to six eggs per clutch (Kingery 1998). This species seeks a narrow set of habitat conditions within its nesting range (middle to high elevation sagebrush and grassland habitats) and subtle changes in these conditions (reductions in residual grass and forbs) can impact essential nesting habitat components (Kingery 1998).

In migration, this sparrow is found in open riparian and agricultural areas (Natural Diversity Information Source 2011a). Breeding Bird Atlas (Kingery 1998) data show that, in Colorado, the densest populations inhabit middle- to high-elevation sagebrush. The Atlas also shows that montane grasslands support high population densities, as do lower-elevation sagebrush grasslands in northwestern Colorado. Sparsely or patchily distributed shrubs with a good grass cover make the best habitat (Kingery 1998). This sparrow is rarely above timberline in late summer and fall. It appears that this species is occasionally present in these areas during the winter as described by the Colorado Natural Diversity Information Source website (Natural Diversity Information Source 2011a).

Wilson's Warbler (Wilsonia pusilla). The 2007 Routt National Forest Plan Amendment of the Routt National Forest identifies the Wilson's warbler as an indicator species for the "herbivory in riparian areas" management issue (Forest Service 2007). The Routt National Forest Plan identifies the Wilson's warbler as a MIS associated with the "riparian/wetland" habitat complex (Forest Service 1998). Wilson's warblers are summer residents on the Routt National Forest and use riparian and wetland habitats during their breeding season from about late May to mid-August. Though Wilson's warblers are known for nesting in high elevation riparian/willow habitats, this warbler can be found as low as 6,000 feet in elevation (Kingery 1998). Uncontrolled livestock grazing in riparian areas and degradation of willow shrub riparian systems may adversely affect this species. In selecting the Wilson's warbler as an MIS for the 1997 Revision of the Routt National Forest Plan (Forest Service 1998), no concern existed for species viability or viability of local populations and "viability" was neither a rationale nor motivation for its inclusion on the Forest MIS list. All MIS selected in the 1997 Revision were chosen because they "reflect the habitat needs for

the majority of the species inhabiting the Routt National Forest" (Forest Service 1998). The Wilson's warbler was carried forward in the 2007 Plan Amendment of the Routt National Forest, because it was considered as an appropriate MIS and monitoring of this species will likely answer specific questions to management issues (Forest Service 2007).

The Wilson's warbler was selected for this analysis to assess if changes to livestock grazing within riparian areas under the NTT direction or other alternatives influence the habitats of riparian dependent species, which may include the GRSG. Grazing and browsing by wild and domestic ungulates can have impacts on riparian vegetation that are important to GRSG. If managed improperly, grazing by domestic and wild ungulates can affect streams and can adversely impact the stream bank leading to long-term changes in stream and associated riparian communities. Grazing impacts on riparian systems has been identified as a problem in local areas on the Routt National Forest but has not been identified broadly. The Wilson's warbler, a riparian dependent species, was selected to evaluate if riparian habitats are being maintained in a proper functioning condition.

The Wilson's warbler breeds in willow thickets of lakeshores, stream banks, and wet meadows. These warblers nest in willow and alder thickets of stream banks, lake shores, and wet meadows. They may be the most common breeding birds in Colorado's montane and subalpine willow habitats (Andrews and Righter 1992). Wilson's warblers arrive on their breeding grounds in late May and lay eggs soon after. Most young leave their nests by mid-July. Fall migration begins in mid-August (Rocky Mountain Bird Observatory 2011). Migration occurs in riparian forests, shrublands, and wooded urban areas (Natural Diversity Information Source 2011b). Winter range includes northern Mexico south to Panama (Rocky Mountain Bird Observatory 2011).

The Wilson's warbler is an insectivorous species and is part of the gleaning guild. This warbler displays foraging behavior and habitat selection where high populations of insects are present. Because the Wilson's warbler is an active searcher for gleaning perches, this warbler has a narrow range of preferences in habitat structure (Eckhardt 1979). For foraging, the Wilson's warbler prefers larger, more open shrubs surrounded by smaller shrubs (Ruth and Stanley 2002).

According to the Colorado Breeding Bird Atlas, the high altitude habitat of the Wilson's warbler has few threats other than grazing, thus both species' populations appears to be secure where appropriate management of grazing has been implemented (Kingery 1998).

Other Wildlife: Elk. The elk and deer winter range on the Routt National Forest is likely the most heavily used area by wildlife as well as domestic livestock. Approximately 1,300 acres of PHPH and 400 acres of GH overlap Management Area 5.41-Elk and Deer Winter Range on the Routt National Forest.

Table 3.5 includes Routt National Forest critical big game ranges present in GRSG PHPH and GH. Critical big game ranges are used in the spring, fall, and winter and may not have a chance to recover especially in heavy snow years when deer and elk are unable to move out of the wintering grounds.

Heavy snow years and cool weather in the spring may also affect GRSG habitat quality when wild and domestic ungulates are moving onto the Forest at about the same time. The cool weather delays the initiation of plant growth and does not provide the time for plants to grow or recover from last year's use before the ungulates begin use. In drier snow years, the wild ungulates can move onto the decision area prior to livestock and can have an influence on forage and habitat attributes important to GRSG. It is the Forest Service' responsibility to adjust livestock numbers according to wildlife use so that allowable use criteria are not exceeded. The Routt National Forest Plan (Forest Service 1998) Range Standards state, "remove livestock from the grazing unit or allotment when further utilization on key areas will exceed allowable-use criteria in the forest plan or allotment management plan."

Important big game ranges in relation to PHPH and GH are identified in **Table 3.5**.

Table 3.5
Big Game Ranges on PHPH and GH on the Routt National Forest

Species/Range	Total (Acres)	PHPH (Acres)	GH (Acres)
Designated Deer and Elk Winter Range	1,700	1,300	400

Source: Query of Forest Service GIS Database, Medicine Bow Routt National Forest, 2013

Fish and Aquatic Wildlife

The condition of aquatic organisms varies by the different geographic areas that contain GRSG habitat within the Routt National Forest. Streams in the Forest occupy a variety of settings ranging from steep narrow valleys with narrow floodplains and riparian areas to broad, low gradient valleys in the lower reaches. Water resources in areas with steep headwater stream channels provide little habitat for fish and amphibians. Drainages with active roads, livestock grazing, and logging are associated with marginal aquatic habitat and populations. Conversely, streams with more moderate gradients and broad floodplains provide more aquatic and riparian habitat.

Native fish species thought to have historically occupied streams in the Routt National Forest include Colorado River cutthroat trout, mountain sucker, speckled dace, and mottled sculpin. Colorado River cutthroat trout are part of CPW's Elkhead Creek conservation population (CPW Fish Management Unit YP-6) which comprises 41 miles of interconnected habitat. Nonnative white

sucker are also present in the larger streams. Nonnative brook trout currently occupy all perennial streams. Little Muddy Creek is thought to contain a healthy population of brook trout, and the North Platte River contains healthy populations of nonnative brook, brown, and rainbow trout. Habitat protection and restoration projects are ongoing within the Routt National Forest.

Wetlands are associated with beaver ponds along the streams in the Routt National Forest providing an abundance of suitable habitat for amphibians. Three native amphibians are found in the planning area: Western chorus frog, northern leopard frog, and boreal toad. Western chorus frogs are widely distributed in appropriate moist habitats across the Forest, including ponds, ephemeral pools and wet areas, marshes, wet meadows and lake margins. Northern leopard frogs are found primarily in beaver ponds. Breeding populations of boreal toad exist near the north end of California Park and in the Lake Agnes area.

Aquatic Management Indicator Species

Colorado River Cutthroat Trout (Oncorhynchus clarki pleuriticus). The Colorado River cutthroat trout range includes colder headwaters of the Green and Colorado rivers that include the Yampa River drainage in Colorado, Utah, and Wyoming (Young 1995). Recent work by Hirsch et al. (2006) estimates that Colorado River cutthroat trout occupy 13 percent and potentially up to 14 percent of their historical range in the mountainous regions of the Colorado River Basin identified by Benhke (1992).

Colorado River cutthroat trout have been documented on the Routt National Forest (December 2012 NRIS Wildlife database). This includes two sites within the analysis area—along multiple streams in GH in the California Park area of the Hahns Peak/Bears Ears Ranger District, and along one stream north of Toponas on the Yampa Ranger District. The Yampa River Basin has 53 conservation populations identified in 79 streams or 339 miles of stream and has the third highest number of conservation populations (Upper Green River Basin has 76 populations, ranked 1st and Upper Colorado has 75 populations, ranked 2nd).

Colorado River cutthroat trout thrive in cold, clean water environments within high elevation streams and lakes that have well-vegetated stream banks for cover and bank stability. The decline of Colorado River cutthroat trout is attributed to the following threats: replacement by brown, rainbow, and brook trout, hybridization with rainbow trout, over harvest, and habitat fragmentation or alteration from livestock overgrazing, logging, mining, and water diversions (Behnke 1992, Young 1995).

Brook Trout (Salvelinus fontinalis). Brook trout are nearly ubiquitous in most Routt National Forest watersheds. At the broadest scale, none of the common trout species (brook, brown, or rainbow) are native to Region 2. However, these desired nonnative game fish have been stocked repeatedly for more than 100

years throughout most of the Rocky Mountain Region. They are now widely distributed, commonly captured and generally abundant in the Rocky Mountain Region as a whole. These fish occur in both stocked and wild (naturally reproducing) populations, although the distribution of species varies locally by habitat type and elevation as a result of minor ecological differences. Brook trout are capable of living under a wide variety of conditions from high to low elevation, often at very high densities.

The primary threats to brook trout populations are negative factors that lower survival of large juveniles and small adults. Introduced brook trout have contributed to the decline of native fishes, amphibians, and invertebrates. In areas identified for Colorado River cutthroat trout restoration, brook trout are targeted for eradication. Methods such as depletion-removal electrofishing have significantly reduced populations and recruitment, but did not totally eradicate brook trout.

3.2.3 Trends

Trends on BLM-Administered Lands

For most fish and wildlife species, habitat loss and fragmentation have been and remain the primary cause for declining populations. Some of these species have also suffered from historic efforts to extirpate them, and some suffer competition or predation from species that have expanded their range or that have been introduced. Management efforts by the BLM, Forest Service, USFWS, CPW, and others have reversed the downward trend for a number of these populations, but few populations are near their historic levels.

Wildlife

Certain wildlife species are of high interest to the CPW due to their economic and recreational values. As a result, the CPW maintains accurate population estimates for these species including general trends for wildlife and aquatic species. CPW also maintains population estimates for other wildlife, such as GRSG, due to the current interest in this species, and because its numbers are relatively easy to estimate each year as compared with other species (CPW 2004) General trend information for wildlife species that depend upon habitat managed by the BLM for at least part of their annual life cycle is discussed below.

<u>Reptiles</u>

No trend data are available at this time.

<u>Waterfowl and Shorebirds</u>

In the planning area, waterfowl populations have been high during wet years and low during dry years. Despite these fluctuations, the population trend within the planning area is believed to be stable.

Upland Game Birds

Generally dusky grouse and turkey populations are believed to be stable in Colorado. The trends for GRSG and Columbian sharp-tailed grouse are discussed further in **Section 3.3**, Special Status Species.

Raptors

In general, raptors that tolerate disturbance in the environment tend to have increasing populations while those species that require large patches of undisturbed habitat are declining (NatureServe 2012). The wide variety of habitats available within the planning area offers nesting and hunting habitat for these species. Population trends for raptors appear stable throughout the planning area.

Numerous active golden eagle nest sites have been documented on private and public lands within the planning area. Population levels throughout the planning area appear stable, as golden eagles can be readily observed in many vegetative types, especially during spring and summer. In addition to breeding season, some golden eagles remain in the area year-round.

Cavity-Nesting Birds

No trend data are available at this time.

Migratory Birds

Population trends for migratory birds vary by species and largely depend on associated habitat types. Habitat conditions for these species are relatively intact throughout the planning area and associated migratory bird populations are generally stable. However, populations of some migratory species are declining because of habitat loss and fragmentation within the planning area. Obligate bird species expected to be found in the sagebrush habitat type have been documented in sufficient numbers to indicate a stable or increasing trend.

Big Game Species

The CPW classifies all of the species described below as big game animals. Big game species are important due to the high level of public interest in them for their recreational value. The recreational opportunities provided by big game animals found within the planning area equate to high economic value to the CPW, as well as contribute to the economy of local communities.

Elk populations are stable to increasing within the planning area according to data maintained by CPW. Elk herd numbers are greater than long-term objectives within the KFO planning area. It is assumed that these stable/increasing trends are similar throughout the GRSG planning area.

Mule deer populations are stable to declining throughout the planning area. Mule deer are well below the carrying capacity of their habitat and below population objectives established by the CPW.

Pronghorn numbers steadily increased within the planning area since 1984. However, recent CPW surveys suggest pronghorn numbers are stable to declining within the planning area. Pronghorn numbers are within the range of CPW management objectives in the planning area.

Moose were introduced into southeast North Park in the late 1970s, and this population has continued to expand their range. These populations are increasing and are within the population objective range.

Rocky Mountain Bighorn sheep are believed to be stable at this time within the planning area. It is likely that populations of this species will continue to increase, assuming ongoing reintroduction efforts are successful.

Other Key Mammal Species

Black bear and mountain lion population estimates are generally deficient due to the difficulty in counting them accurately. In two reports, one by Martens (2006) and the other by Yost (2006), biologists for the CPW indicated that populations of these species are stable and likely increasing. The distribution and abundance of other small mammal and non-game populations in the planning area are unknown, poorly documented, or studies have been confined to a small geographic area.

Fish and Aquatic Wildlife

Fish Species

The CPW is the lead agency responsible for fisheries management of public waters in the State of Colorado. While some areas within the planning area are stocked by CPW, other areas are managed as wild self-sustaining fisheries. The population of cold water sport fish varies greatly across the planning area, however fish survey and management reports generally indicate a stable to increasing population.

Declines in populations are generally localized and largely due to a number of factors including alteration of habitat, water quality impairment, disease, hybridization, flow reductions resulting from water diversions and other water-depleting activities, and nonnative predatory sport fish.

Amphibians

No trend data are available at this time.

Trends on National Forest System Lands

Routt National Forest

Wildlife

Most wildlife species occur at desired population levels. Those species of concern are considered priorities for conservation and these include those

classified as threatened, endangered, or sensitive. Forest Service Sensitive species are addressed in **Appendix M**, US Forest Service Biological Evaluation. Species identified as indicators for this analysis include MIS and elk.

Management Indicator Species

Vesper Sparrow (Pooecetes gramineus). Several sources of information are available and are useful for estimating current population trend and abundance for vesper sparrows on the Routt National Forest. These data reflect different landscape scales and include results that have been gathered over large geographic areas (i.e., the southern Rocky Mountains) as well as locally.

Though Breeding Bird Survey (BBS) (1966-2009) and Christmas Bird Count data indicate widespread and severe declines in eastern North America, the vesper sparrow appears relatively secure and stable in western North America, with declines in some regions (Sauer et al. 2011, NatureServe 2011a). Since 1990, there has been a positive population trend for vesper sparrow within the Colorado BBS region (Sauer et al. 2011). According to Kingery (1998), the vesper sparrow ranks 21 out of the 32 most abundant bird species in Colorado (and 21 out of 264 known breeding birds in the state). Kingery (1998) estimated that the vesper sparrow population ranges between 176,985 and 1,137,179 breeding pairs.

Based on the Breeding Evidence map in Kingery's (1998) Colorado Breeding Bird Atlas; this bird is well distributed and common within suitable habitat on the Routt National Forest. Natural Diversity Information Source (Natural Diversity Information Source 2011a) records also indicate that this bird is considered "common" for all of the counties that overlap the Routt National Forest, including Garfield, Grand, Jackson, Moffat, Rio Blanco, and Routt.

Existing habitat conditions for vesper sparrows across the Routt National Forest are well-suited to sustaining current populations of these birds. Though numbers may be variable on private lands where human encroachment and habitat alteration/conversion continues, vesper sparrow habitat appears to be improving on National Forest System lands. Within PHPH and GH, suitable habitat does exist within the various MZs that intersect with the Routt National Forest.

Collectively, available population and habitat information suggests vesper sparrows on the Routt National Forest have a population trend that is currently stable but likely is increasing. In addition, the vesper sparrow is widely distributed on the Forest and is well-distributed throughout all shrubland and grassland areas in Colorado. BBS suggest that populations are increasing slightly in Colorado as well as across the southern Rocky Mountain region (Sauer et al. 2011). Conservation measures for the GRSG would likely benefit the vesper sparrow.

Wilson's Warbler (Wilsonia pusilla). Several sources of information are available and are useful for estimating current population trend and abundance for Wilson's warblers on the Routt National Forest. These data reflect different landscape scales and include results that have been gathered over large geographic areas (i.e., the southern Rocky Mountains) as well as locally. While none of these data are independently adequate to estimate Wilson's warbler population trend and abundance, and some information may even be contradictory, collectively the information affords a basis for making credible inferences about population trend and abundance for these warblers on the Forest.

The Wilson's warbler experienced a significant population increase in western North America between 1978 and 1988 (NatureServe 2011b). However, conflicting information apparently exists at the state level, in which NatureServe (2011b) describes them as apparently secure within Colorado whereas the Rocky Mountain Bird Observatory Partners in Flight (2011) describes them as significantly declining. Kingery (1998) estimated their population in Colorado to range between 60,483 and 379,676 breeding pairs, thereby ranking it as the 53rd most common bird out of 264 breeding birds in Colorado.

Sauer et al. (2011) have analyzed bird count data gathered between 1966 and 2007 from BBS transects across North America. The results of their analyses are available at the continental scale and at other geographic scales as well. Across the Southern Rockies BBS Region, data has been collected nearly every spring on each of 41 BBS routes region-wide. Data derived from these surveys from 1966-2007 imply a significantly decreasing trend and since 1980, the trend is decreasing even more rapidly (Sauer et al. 2011).

Other estimates of Wilson's warbler abundance estimates have been derived for each county in Colorado through collaboration of the Colorado Division of Wildlife, Colorado State University, and the Colorado Natural Heritage Program. As a result of this collaborative effort, the Colorado Natural Diversity Information Source website (Natural Diversity Information Source 2011b) identifies the Wilson's warbler abundance as common (observed daily; 25 to 100 per day in appropriate season and habitat) for the counties of Garfield, Grand, Rio Blanco, and Routt. The warbler is considered fairly common (observed daily; 10 to 25 per day in appropriate season and habitat) for Jackson and Moffat counties. Additionally, raw data associated with this monitoring program is included in the Rocky Mountain Bird Observatory database. A query of the Rocky Mountain Bird Observatory database for this species provided positive (increasing) populations trend information on observations of Wilson's warbler from monitoring transects located on the Routt National Forest (Rocky Mountain Bird Observatory 2011).

The net status of habitat conditions on the Routt National Forest is uncertain. Kingery (1998) suggests that "the higher elevation habitats would seem to face

few threats other than grazing pressure, so the species, at least in Colorado, appears secure." Though rangeland management practices have improved over the last 50 years such that impacts to willow and riparian habitats should have lessened over time, elk populations have increased in the same timeframe. Therefore, the riparian/willow habitats of the Wilson's warbler may be suppressed, because elk will hedge and trample willows (Baker et al. 2005).

The information presented here has some conflicting estimates on trend. The Wilson's warbler appears to be common in the Colorado (53rd most common out of 264 breeding bird species) (Kingery 1998) and Rocky Mountain Bird Observatory trend estimates suggest that this warbler is increasing. BBS suggest a declining trend within the southern Rocky Mountain region and the State of Colorado (Sauer et al. 2011). On the Routt National Forest, Wilson's warblers are found in their preferred habitats when surveyed for, thus suggesting that this warbler is common on the planning unit. Trend and abundance information will need to be collected to verify the status of the Wilson's warbler through the continued implementation of the Routt National Forest standardized survey. Conservation measures for the GRSG would likely benefit the Wilson's warbler.

Colorado River Cutthroat Trout (Oncorhynchus clarki pleuriticus). Several sources of information are available and are useful for estimating current population trend and abundance for Colorado River cutthroat trout. The data used for Colorado River cutthroat trout is from various sources which include conservation plans, CPW stocking reports, and survey data from within the project area. While none of these data are independently adequate to estimate Colorado River cutthroat trout population trend and abundance, and some information may even be contradictory, collectively the information affords a basis for making credible inferences about population trend and abundance for Colorado River cutthroat trout.

Behnke (1992) reported that pure Colorado River cutthroat trout populations were thought to occupy less than 1 percent of their historical range. More recent work by Hirsch et al. (2006) estimates that Colorado River cutthroat trout occupy 13 percent and potentially up to 14 percent of their historical range in the mountainous regions of the Colorado River Basin identified by Benhke 1992). The recent information update by Hirsch et al. (2006) identified 3,022 miles of occupied stream habitat in 42 4th level HUC's. Of the 3,022 miles, 224 miles were outside of historical habitats identified by Behnke (1992), which adds an additional 1 percent, thus it is estimated that up to 14 percent of historical habitat is occupied by Colorado River cutthroat trout. The additional information was concluded to be the result of the establishment of an interagency Colorado River cutthroat trout Conservation Team in 1999. As the Colorado River cutthroat trout team focused their efforts many more populations were discovered or re-located. Through this effort "conservation populations" were identified based on genetic purity or if Colorado River cutthroat trout displayed unique life history traits and ecological characteristics

in the presence of hybridization. A "core conservation population" is a conservation population that is greater than 99 percent pure, and representative of the historic genome of native cutthroat trout. Of occupied habitat, 285 Colorado River cutthroat trout conservation populations were identified (Hirsch et al. 2006). The Yampa River Basin has 53 conservation populations identified in 79 streams or 339 miles of stream. The Yampa River Basin has the third highest number of conservation populations (Upper Green River Basin has 76 populations, ranked 1st and Upper Colorado has 75 populations, ranked 2nd).

Within the state of Colorado, the cutthroat trout is a game species that can be caught, but fishing regulations often require cutthroat to be released. Many cutthroat waters, specifically identified in the cutthroat conservation require fishing by artificial flies and lures and all cutthroat must be returned to the water immediately (CPW 2007). These restrictions are designed to protect the growing number of cutthroat streams and lakes included in conservation and recovery actions. CPW manages fisheries and stocking of approximately 173 lakes across the Routt National Forest. CPW is actively stocking mountain lakes on the Routt National Forest with an average of 58,000 cutthroats per year. There are several lakes that are managed as a pure cutthroat fishery. Many of the lakes are stocked at high numbers so that the cutthroat can successfully compete with the nonnative trout. Although the cutthroat trout are stocked at high numbers, competition, replacement, or hybridization probably is occurring. To provide for plausible replacement or hybridization occurring in these lakes, additional data was provided on the number of cutthroat lakes with other trout species present. Few lakes on the Routt National Forest are stocked by the CPW with brook or rainbow trout, because rainbow or brook trout populations can complicate restoration efforts for re-establishing native cutthroat trout populations.

For the preparation of the Forest Plan Revision (Forest Service 1998), 606 miles of streams were analyzed for four trout species: cutthroat, brook, brown, or rainbow trout. Of the 606 miles, 197 miles had cutthroat trout present (Routt National Forest 1996). Of the 197 miles of cutthroat streams, 37 miles had presence of brook trout, 3.5 miles had brown trout, and 7 miles had rainbow trout. Overall, 24 percent of the cutthroat streams have the presence of other trout species which suggests that replacement or hybridization is likely occurring.

There is uncertainty on how to define viability or stability among researchers for Colorado River cutthroat trout populations (Colorado River Cutthroat Trout Coordination Team 2006). Some small, isolated populations of Colorado River cutthroat trout have been stable for many years while other populations are at risk of decline. Hirsch et al. (2006) provided measures of population health which includes population connectivity, disease risk, genetic purity, population estimate, habitat condition, and presence of nonnatives for each

conservation population. Hirsch et al. (2006) is the first comprehensive attempt at assessing population viability or stability for Colorado River cutthroat trout populations. Until further understanding and agreement is reached by the Colorado River Cutthroat Trout Conservation Team on how to assess population viability and stability, a collective population trend across the Routt National Forest will not be provided.

Brook Trout (Salvelinus fontinalis). Several sources of information are available and are useful for estimating current population trend and abundance for brook trout. The data used for brook trout is from various sources which include CPW stocking reports and survey data from within the analysis area. While none of these data are independently adequate to estimate brook trout population trend and abundance, and some information may even be contradictory, collectively the information affords a basis for making credible inferences about population trend and abundance for brook trout.

Globally and nationally, the conservation status is G5 ~ Secure and N5 ~ Secure, respectively (NatureServe 2006). NatureServe (2006) does not have a conservation status rank for Colorado, because it is not a suitable target for conservation activities. Within the state of Colorado, the brook trout is a game species and can be harvested (CPW 2007). The daily bag limit is 4 and possession limit is up to 8. In addition to the 4 bag/8 possession limit, brook trout that are 8 inches or less, the daily bag and possession limit is 10 brook trout. The brook trout was first introduced into Colorado in the late 1800's (CPW 2006). In the early 1900's, state and federal hatcheries began stocking brook trout in great numbers. The numbers peaked in 1930, when 15.4 million brook trout were stocked into Colorado streams and lakes. Most streams in Colorado have a self-sustaining population of wild brook trout that likely are descendants of the 19th Century pioneers.

At a broad scale, brook trout are found to be abundant across the streams of the Routt National Forest. For the preparation of the Forest Plan Revision (1998), a GIS analysis was completed for presence of trout species. Approximately 606 miles of stream were analyzed for the presence of brook, brown, cutthroat, or rainbow trout species. Out of the 606 miles of streams analyzed, approximately 439 miles of stream had brook trout present (Forest Service 1996). Through this analysis it was estimated that 72 percent of the streams on the Routt National Forest have the presence of brook trout, but this percentage is likely higher with so few streams having only Colorado River cutthroat, brown, or rainbow trout present.

Collectively, available population and habitat information suggests brook trout on the Routt National Forest have a population trend that is stable or likely increasing. Except for streams that are designated as Colorado River cutthroat trout 'conservation populations', the brook trout is widely distributed across the Forest and is well-distributed in mountain streams, ponds, and lakes. The

Natural Diversity Information Source (2007) categorizes this cold water game fish in Colorado streams as extremely prolific with up to 3,500 brook trout per acre which also suggests stability and likely increasing populations.

Other Wildlife: Elk

The Forest Service Range and Wildlife Programs continue to work collaboratively with the CPW to monitor changes in elk and deer numbers as well as vegetation. In addition, all three agencies, with assistance from the Habitat Partnership Program, have collaborated on wildlife habitat improvement projects for elk, deer, and GRSG in northwest Colorado to improve habitat conditions and forage availability for elk and other wildlife species.

CPW adjust elk and deer herd objectives to address the land management agencies and the public's concern about competition for resources in northwest Colorado as Data Analysis Unit plans for deer and elk are developed. For example, during the development of the E-6 Data Analysis Unit plan for elk, which covers a large area in northwest Colorado, CPW recommended a 25 percent decrease in elk to address management concerns, which included maintenance of acceptable range and forage conditions, concerns regarding drought, potential impacts of oil and gas development on winter ranges, and elk and mule deer competition on winter range (Finley 2005). Due to issues and concerns raised by CPW, Forest Service, BLM, and the public during the development of the E-6 Data Analysis Unit plan, the elk herd objective was set at a recommended range of 32,000 to 39,000 (Finley 2005). Currently, the elk herds are estimated at a range of 36,000 to 40,000 based on the post-hunt data from 2011 (Finley 2012).

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3.3 SPECIAL STATUS SPECIES

The ESA requires that federal agencies ensure, in consultation with USFWS, that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered and threatened species, or result in the destruction or adverse modification of habitat of such species

that is determined critical by USFWS. There are three effect (impact) determinations for consultation:

- no effect (concludes consultation)
- may affect, not likely to adversely affect (effects must be discountable, insignificant, or completely beneficial for this determination; USFWS concurrence required)
- may affect, likely to adversely affect (the appropriate determination when adverse effects may occur as a direct or indirect consequence and are not discountable, insignificant, or completely beneficial; triggers formal consultation and requires a Biological Assessment from the action agency and, subsequently, a Biological Opinion from USFWS

BLM

Special status species include animal or plant species that are formally designated by USFWS as federally endangered or threatened, proposed for listing, or candidates for listing. They also include those species designated by the CPW as state endangered or threatened Species, and those identified as BLM Sensitive species in the State of Colorado.

Responsibilities for management of federally listed, proposed, or candidate species are outlined in the ESA, as well as in the BLM Special Status Species Manual (Manual 6840; BLM 2008). The policy for management of federally listed species is to not authorize, fund, or implement any actions that are likely to jeopardize the continued existence of listed species, or to destroy or adversely modify designated critical habitat, and to develop programs to conserve listed species.

The goal of special status species management is to improve or provide habitat for the species that may exist on public lands in order to maintain viable populations of these species. Principal considerations include management of species habitat in order to ensure continued use by these species, identification of areas where other resource activities may conflict with special status species and their habitat requirements, and incorporation of programmatic consultations and conservation strategies.

Species discussed in this section have been listed by USFWS or by the State of Colorado, or have been placed on the Colorado BLM State Director's sensitive species list. The USFWS manages threatened and endangered species and designated critical habitat, in cooperation with other federal agencies, in order to support recovery. The BLM cooperates with USFWS in order to determine and manage habitats to support the species. Candidate species are managed in a manner designed to maintain viable populations, with the objective of preventing the need for them to be listed by the federal government. Under the ESA, federally listed threatened and endangered species require specific management.

The ESA requires a consultation with USFWS (a Section 7 consultation) on any actions taken that are planned to occur where these species reside.

The BLM Special Status Species Manual defines Special Status Species as:

- species listed, or proposed for listing, under the ESA; and
- species requiring special management consideration in order to promote their conservation and to reduce the likelihood and need for future listing under the ESA, which are designated as BLM Sensitive by the BLM State Director(s).

All federal candidate species, proposed species, and delisted species in the 5 years following delisting, will be conserved as BLM Sensitive species. Species designated as BLM Sensitive species must be native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management, and either:

- there is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range, or
- the species depends upon ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk (BLM 2008).

It is BLM policy to provide BLM Sensitive species with the same level of protection that is given federal candidate species. The major objective of this protection is to preclude the need for federal listing.

Forest Service

The Forest Service has policy and direction on how wildlife, fish, and plant species and their habitats are managed. These species may be threatened, endangered, or sensitive plants and animals. Direction on how these species should be managed is described in the Forest Service Manual 2600, Chapter 2670. The 2670.12 US Department of Agriculture Directives, Departmental Regulation 9500-4, provides regulation and directs the Forest Service to:

1. Manage "habitats for all existing native and desired nonnative plants, fish, and wildlife species in order to maintain at least viable populations of such species."
2. Conduct activities and programs "to assist in the identification and recovery of threatened and endangered plant and animal species."

3. Avoid actions "which may cause a species to become threatened or endangered."

Federal land management agencies must consult on any action that may affect a federally listed species (threatened or endangered) and must conference on any action that may affect a species proposed for listing. Section 7(c)(1) of the ESA requires a Biological Assessment be performed if a listed species or critical habitat may be present in the action area (US Department of Agriculture 2011).

The Forest Service has developed policy regarding the designation of plant and animal species (Forest Service Manual 2670.32; Region 2 Forest Service Manual Supplement 2670-2011-1). In the Rocky Mountain Region, species are identified as Forest Service Sensitive, and are included on a comprehensive list, using eight evaluation criteria to determine the merits of sensitive status for a particular species (Forest Service Manual 2672.11, Region 2 Forest Service Manual Supplement No. 2600-2003-1, Exhibit 02). The Regional Forester's list was last updated in 2011 (Holifield 2011). All candidate species are automatically placed on the Forest Service Sensitive species list. As such, because GRSG is a candidate species, it also is a Forest Service Sensitive species.

3.3.1 Existing Conditions

Conditions of the Planning Area

There are 14 federally listed wildlife species and 9 listed plant species in the planning area. In addition, the planning area includes five candidates for federal listing, including the GRSG. These species may also be listed as sensitive by the BLM/Forest Service or as priority species by the State of Colorado. Within the planning area, the distribution of most of the special status wildlife species is known from land health assessment comments, Colorado Natural Heritage Program, CPW GIS data, Rocky Mountain Bird Observatory, field surveys, and other reports. Limited inventories and surveys have been conducted for special status wildlife species in the planning area. Specific management direction to influence habitat components, leading to species recovery, is integrated into BLM and Forest Service management plans.

Table 3.6 and **Table 3.7** summarize those species located in the planning area and in which field office(s) or National Forest their habitat exists. These are also displayed in **Figure 3-3**. The tables include each species' listing status and its habitat requirements. GRSG is discussed in more detail following the tables.

Table 3.6
Special Status Animal Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
MAMMALS									
American marten	*Martes Americana*	FSS	Mature coniferous and mixed deciduous forest				X		X
Big free-tailed bat	*Nyctinomops macrotis*	BLMS	Found in rocky canyons where it roosts in crevices		X			X	
Black-footed ferret	*Mustela nigripes*	FE, SE	Occupies prairie dog towns almost exclusively; prairie dog prey base in the planning area unlikely to be large enough to support breeding population				X	X	
Canada lynx[3]	*Lynx canadensis*	FT (P), SE	Habitat suitable to support viable populations of lynx is thought to consist of 15- to 25-square-mile areas of contiguous Spruce-fir and lodgepole pine forests on slopes of less than 30 percent	X	X	X	X	X	X
Fringed myotis	*Myotis thysanodes*	BLMS, FSS	Coniferous forest and woodland; ponderosa pine, pinyon-juniper, greasewood, saltbush and oak; roosts in rock crevices, caves, abandoned mines and buildings and trees; hibernates in caves and buildings	X	X			X	X
Gray wolf[4]	*Canis lupus*	FC, SE	Range through mixed open and forestland with abundant prey; can disperse long distances when not taken by humans						

Table 3.6
Special Status Animal Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
Hoary bat	*Lasiurus cinereus*	FSS	Roosts primarily in foliage of coniferous trees, occasionally in caves, and forages over open areas				X	X	X
North[4] American wolverine	*Gulo gulo*	SE, FC, FS, SE-S	Dense forest at higher elevations; nearly extirpated from Colorado			X	X		X
Pygmy shrew	*Sorex hoyi*	FSS	Open wet areas in coniferous and deciduous forests						X
Rocky Mountain bighorn sheep	*Ovis canadensis*	FSS	Found in alpine meadows, grassy mountain slopes and foothills near rugged, rocky cliffs and bluffs		X	X			X
Southwest river otter	*Lutra canadensis sonorae*	SE, FS, SE-S	Inhabits high quality riparian areas along permanent water with abundant food base	X	X	X	X	X	X
Spotted bat	*Euderma maculatum*	BLMS, FSS	Found in cliffs, dense forests, agricultural fields, marshes, riparian areas and shrub-steppe grasslands		X		X	X	X
Swift fox	*Vulpes velox*	BLMS, FSS	Dens in sandy soils of deserts and short-grass prairies				X		
Townsend's big eared bat	*Corynorhinus townsendii pallescens*	BLMS, FSS	Roosts and hibernates usually in caves and abandoned mines; however, may roost in old buildings, tunnels and bridges; typically feeds along riparian habitat, open areas, edge habitats	X	X	X		X	X

Table 3.6
Special Status Animal Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
White-tailed prairie dog	*Cynomys leucurus*	BLMS, FSS	Found in valleys between 5,000 and 10,000 feet in desert grasslands and shrub grasslands	X	X	X	X	X	
BIRDS									
American peregrine falcon	*Falco peregrinus anatum*	BLMS, SC, FS, SC-S	Nests in high cliffs and hunts along riparian zones, especially the Colorado river and uplands above the Roan cliffs	X	X	X	X	X	X
American white pelican	*Pelecanus erythrorhynchos*	BLMS	Found in open areas of brackish or freshwater lakes near vegetation or rocks	X	X	X	X	X	X
Bald eagle	*Haliaeetus leucocephalus*	FS, ST FSS Protected under Bald and Golden Eagle Protection Act	Nests in tall trees (typically mature cottonwood in this area) along the Colorado River and hunt along the river and adjacent uplands; seasonal migrant/historic resident	X	X	X	X	X	X
Barrow's goldeneye	*Bucephala islandica*	BLMS	Breeds in wooded lakes and ponds of western mountains						
Black swift	*Cypseloides niger*	BLMS, FSS	Nests on steep cliffs near waterfalls and forages in high elevation areas			X			X
Black tern	*Chlidonias niger*	BLMS FSS	Freshwater marshes, nesting on floating material or near-shore vegetation			X			
Boreal owl	*Aegolius funereus*	FSS	Cavity nester in dense coniferous forests			X			X

Table 3.6
Special Status Animal Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
Brewer's sparrow	*Spizella breweri*	BLMS, FSS	Sagebrush/shrubland obligate, found on mesas and foothills in dense stands interspersed with grassy areas	X	X	X	X	X	X
Columbian sharp-tailed grouse	*Tympanuchus phasianellus columbianus*	SE, BLMS, FSS	Breeding in grassland, savanna, partially cleared boreal forest, shrubland, and sagebrush; leks are usually found on small knolls; nests in small depression in grass or under a shrub; may be a seasonal migrant	X		X	X	X	X
Ferruginous hawk	*Buteo regalis*	BLMS, SC, FSS	Breeding: open country (prairies, plains, badlands); nests in tree with commanding view, on ground, bank, butte or slope; historic and seasonal migrants	X	X	X	X	X	
Flammulated owl	*Otus flammeolus*	FSS	Cavity nester in mature mixed coniferous forests, primarily Douglas fir and ponderosa pine; migratory				X	X	X
Golden eagle	*Aquila chrysaetos*	Protected under Bald and Golden Eagle Protection Act	Nest in cliffs, tall trees or human structures; forage over large areas	X	X	X	X	X	X
Greater Sage-Grouse	*Centrocercus urophasianus*	BLMS, FC(w), FS	Breeding in sagebrush, nests under sagebrush	X	X	X	X	X	X

Table 3.6
Special Status Animal Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
Greater sandhill crane	*Grus canadensis tabida*	ST	Breeding in shallow wetlands, freshwater margins; nests on ground and requires surrounding water or undisturbed habitat; seasonal migrant	X	X	X	X	X	
Gunnison Sage-Grouse	*Centrocercus minimus*	FP, FSS	Breeding in sagebrush, nests under sagebrush		X				
Least tern	*Sterna antillarum*	FE, SE	Bare sand on shorelines of rivers, lakes, and reservoirs			X[2]			
Lewis's woodpecker	*Melanerpes lewis*	FSS	Open pine woodlands, and other areas with scattered trees and snags		X	X	X		X
Loggerhead shrike	*Lanius ludovicianus*	FSS	Open grassland, pasture, sagebrush, and desert		X		X	X	X
Long-billed curlew	*Numenius americanus*	BLMS, SC, FSS	Short-growth grasslands, mixed-grass prairies, meadows, scrub communities, cultivated fields, mud flats, salt marshes and edges of ponds, and lakes	X	X	X	X	X	
Mexican spotted owl	*Strix occidentalis*	FT, ST	Breeding: in dense old growth conifer (especially old growth fir) and deciduous (especially in steep walled canyons); nests in cliffs and abandoned platform nests of raven, eagle and hawks	X		X	X		
Mountain plover	*Charadrius montanus*	BLMS, PT, SC, FSS	Nests in flat dry land with sparse vegetation: short-grass prairie, farms, shrub-steppe, grazed areas			X	X		

Table 3.6
Special Status Animal Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
Northern goshawk	*Accipiter gentilis*	BLMS, FSS	Breeding: mixed, often mostly coniferous, forest, open woodland typically in mature aspen, mixed aspen/conifer and in lodgepole pine; nest in crotch or by trunk, occasionally in aspen	X	X	X	X	X	X
Northern harrier	*Circus cyaneus*	FSS	Wet grassland and marshes; less common in dry grassland, shrub-steppe and desert		X	X	X	X	X
Olive-sided flycatcher	*Contopus cooperi*	FSS	Coniferous forests and mixed woodlands, early colonizer after fire			X	X	X	X
Piping plover	*Charadrius melodus circumcinctus*	FT, ST	Open, sparsely vegetated sand and gravel near alkali wetlands, beaches and sandbars			X[2]			
Purple martin	*Progne subis*	FSS	Breed in open areas near water, nest in cavities				X	X	X
Sage sparrow	*Amphispiza belli*	FSS, BLMS	Found in sagebrush shrub-steppe; sagebrush obligate species	X	X	X	X	X	X
Southwestern willow flycatcher	*Empidonax traillii extimus*	FE, SE,	Breeding in willow (and tamarisk) thickets along rivers and streams; nests in upright or slanting fork; Colorado River, west of Rifle, Colorado						

Table 3.6
Special Status Animal Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
Western burrowing owl	*Athene cunicularia*	ST, BLMS, FSS	Breeding: grassland, prairie, savanna, open areas near human habitation; nests in burrows, often associated with prairie dog towns	X	X	X	X	X	
Western snowy plover	*Charadrius alexandrinus nivosus*	BLMS, SC	Breeding in beaches and dry mud or salt flats; sand margins of rivers, lakes, and ponds			X			
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FC, FSS	Cottonwood-willow galleries along streams and river corridors	X	X	X	X		
White-faced ibis	*Plegadis chihi*	BLMS	Breeds in marsh, swamps, ponds, rivers-mostly freshwater, nests in aquatic vegetation, usually on ground but occasionally in shrubs or low trees; may be seasonal migrant	X	X	X	X	X	
White-tailed ptarmigan	*Lagopus leucurus*	FSS	Alpine and sub-alpine habitats			X			X
Whooping crane	*Grus americana*	FE, SE	Seasonal migrant with sandhill cranes			X[2]			
FISH									
Bluehead sucker	*Catostomus discobolus*	BLMS FSS	Colorado River Basin	X	X	X	X	X	
Bonytail chub	*Gila elegans*	FE, SE	Critical habitat: Colorado River, Yampa River, Dinosaur National Monument west, Ruby Canyon west (not in planning area)	X	X	X[2]	X	X[2]	

Table 3.6
Special Status Animal Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
Colorado River cutthroat trout	*Oncorhynchus clarkii pleuriticus*	BLMS, FSS, SC	Tributaries to the Colorado River Basin	X	X	X	X	X	
Flannelmouth sucker	*Catostomus latipinnis*	BLMS, FSS	Colorado River Basin	X	X	X	X	X	
Colorado pikeminnow	*Ptychocheilus lucius*	FE, SE	Upper Colorado River Basin	X	X	X[2]	X	X	
Greenback cutthroat trout	*Oncorhynchus clarkii stomias*	FT, ST	South Platte and Arkansas Rivers	X	X	X	X		
Humpback chub	*Gila cypha*	FE, SC	Critical habitat: Colorado River, Yampa River, Dinosaur National Monument west, Ruby Canyon west (not in planning area)	X	X	X[2]	X	X[2]	
Mountain sucker	*Catostomus platyrhynchus*	BLMS, SC, FSS, SC-S	Colorado River Basin	X			X	X	X
Pallid sturgeon	*Scaphirhynchus albus*	FE, SE	North Platte and Missouri Rivers			X[2]			
Razorback sucker	*Xyrauchen texanus*	FE, SE	Critical habitat: Colorado River, Rifle west, Yampa River, Gunnison River	X	X	X[2]	X	X[2]	
Roundtail chub	*Gila robusta*	BLMS, SC, FSS, SC-S	Colorado River Basin	X	X	X	X	X	X
REPTILES									
Midget faded rattlesnake	*Crotalus viridis concolor*	BLMS, SC	Desert scrub, rocky outcrops, canyonlands	X	X		X	X	

Table 3.6
Special Status Animal Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
AMPHIBIANS									
Boreal toad	*Bufo boreas boreas*	FC (w), ST, BLMS, FSS	Wetlands, elevation range from 8,000 to 12,000 feet	X		X	X		X
Great Basin spadefoot	*Spea intermontana*	BLMS, SC	Pinyon-juniper, sagebrush, semi-desert shrub, dry rocky slopes and canyons, elevation range less than 6,000 feet	X	X		X	X	
Milk snake	*Lampropeltis triangulum taylori*	BLMS, SC	Forested or open areas and rocky slopes	X	X			X	
Northern leopard frog	*Rana pipiens*	BLMS, SC, FSS, SC-S	Wetlands, ponds, riparian areas, elevation range up to 11,000 feet	X	X	X	X	X	X
Wood frog	*Rana sylvatica*	SC, FSS, SC-S	Forest and woodland habitats, and at edges of ponds and streams			X			X

[1]Status Codes:
FE Federally listed as endangered
FT Federally listed as threatened
FC Federally listed as a candidate species
FP Federally proposed for listing as endangered
SE State listed as endangered
ST State listed as threatened
SC State listed as species of special concern (no legal status)
BLMS Colorado BLM Sensitive
FSS Forest Service Sensitive
[2] These species do not occur in the KFO planning area, but water depletions may affect the species and/or critical habitat in downstream reaches.
[3] These species are relatively uncommon species in the BLM planning area.
[4] These species are unlikely to occur in the BLM planning area.

Table 3.7
Special Status Plant Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
Bladder's-mouth orchid	*Malaxis brachypoda* (= *M. monophyllus* spp. *Brachypoda)*	FSS	Riparian areas (7,200-8,000 feet)						X
Autumn willow	*Salix serissima*	FSS	Wetland areas including marshes, fens, and bogs (7,800-10,200 feet)						X
Boat-shaped bugseed	*Corispermum navicula*	BLMS	Endemic to cold climate dunes in northern Colorado			X			
Cathedral Bluff dwarf gentian	*Gentianella tortuosa*	BLMS	Barren shale knolls and slopes of the Green River Formation (8,500-10,800 feet)					X	
Cathedral Bluffs meadow-rue	*Thalictrum heliophilum*	BLMS	Dry shale barren communities in Garfield, Mesa, and Rio Blanco Counties in northwestern Colorado (6,200-8,800 feet)	X	X			X	
Clay hill buckwheat	*Eriogonum viridulum*	BLMS	Sand flats or clay slopes and hills, saltbush or sagebrush communities, pinyon-juniper woodlands				X		
Club spikemoss	*Selaginella selaginoides*	FSS	Marshy areas and wet spruce forests; east side of the Park Range						X

Table 3.7
Special Status Plant Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
DeBeque milkvetch	*Astragalus debequaeu*	BLMS	Saline, selenium rich soils found on barren outcrops of dark clay interspersed with lenses of sandstone (5,100-6,400 feet)		X				
DeBeque phacelia	*Phacelia submutica*	FT	fine-textured, sandy, clay soils (4,970-6,500 feet)		X				
Colorado feverfew	*Parthenium ligulatum (Bolophyta ligulata)*	BLMS	Gypseous shale soils; bare clayey and gravelly areas				X		
Colorado hookless cactus	*Sclerocactus glaucus*	FT	Deserts, sagebrush/scrublands (3,900-6,000 feet)		X				
Colorado tansy aster	*Machaeranthera coloradoensis*	FSS	Mountain parks, slopes and rock outcrops and dry tundra (8,500-12,500 feet)						X
Debris milkvetch	*Astragalus desperatus*	BLMS	Pinyon-juniper and mixed desert shrub, often on rocky soils ranging from sandy clays to sandy loams: also alluvial terraces with cobbles (5,400-7,200 feet)				X	X	
Dropleaf buckwheat	*Eriogonum exilifolium*	FSS	Sagebrush flats; North and Middle Parks (7,500-9,000 feet)			X			X
Duchesne milkvetch	*Astragalus duchesnensis*	BLMS	Pinyon-juniper woodland and desert shrub, around sandstone or shale outcrops (4,600-6,400 feet)				X	X	

Table 3.7
Special Status Plant Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
Dudley Bluffs bladderpod	*Physaria congesta*	FT	Barren, white shale outcrops of the Green River and Uinta Formations (6,000-6,700 feet)					X	
Dudley Bluffs Twinpod	*Physaria obcordata*	FT	Barren, white outcrops and steep slopes of the Parachute Creek Member of the Green River Formation (5,900-7,500 feet)					X	
Dwarf raspberry	*Rubus arcticus* var. *acaulis (= Cylactis arctica* ssp. *Acaulis)*	FSS	Wetlands in willow carrs and mossy stream sides (8,600-9,700 feet)						X
Elliptic spikerush	*Eleocharis elliptica*	FSS	Wetlands; widely distributed in North America but with few confirmed Colorado records						X
Ephedra buckwheat	*Eriogonum ephedroides*	BLMS	Shale and clay flats of slopes in saltbush, sage and pinyon-juniper habitats (4,900-6,900 feet)				X	X	
Flaming Gorge evening primrose	*Oenothera acutissima*	BLMS	Seasonally wet areas in meadows, depressions or along arroyos, mixed conifer forest to sagebrush, on sandy gravelly, or rocky soils (5,300-8,500 feet)				X	X	

Table 3.7
Special Status Plant Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
Fragile rockbrake	*Cryptogramma stelleri*	BLMS	Rarely seen fern that exists in cool, moist, sheltered calcareous cliff crevices and rock ledges, typically in coniferous forest or other boreal habitats			X			
Gibbens' beardtongue	*Penstemon gibbensii*	BLMS	Shale and sandy clay in sagebrush, saltbush and pinyon-juniper woodland				X		
Graham's beardtongue	*Penstemon grahamii*	FC (w), FSS	Talus slopes and knolls of the Green River Formation in sparsely vegetated desert scrub and pinyon-juniper (5,800-6,000 feet)					X	X
Hairy Townsend daisy	*Townsendia strigosa*	BLMS	Open sites, sands, shales, clays with desert scrub, juniper, pinyon				X		
Harrington's penstemon (Harrington's beardtongue)	*Penstemon harringtonii*	BLMS, FSS	Found in open sagebrush shrublands (*Artemisia tridentata* ssp. *pauciflora* or *A. tridentata* ssp. *Wyomingensis*) on rocky loams or rocky clay loams derived from coarse calcareous parent materials (basalt) (6,200-10,000 feet)	X		X			X
Hoary willow	*Salix candida*	FSS	Fens and pond and stream edges in foothill/montane wetlands (8,800-10,600 feet)						X

Table 3.7
Special Status Plant Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
Largeflower triteleia	*Triteleia grandiflora*	FSS	Full sunlight to partial shade in meadows, grasslands, sagebrush, pinyon-juniper woodlands, aspen woodlands, pine forests, and scattered woodlands (7,760 feet)						X
Lesser bladderpod	*Utricularia minor*	FSS	Shallow water of subalpine ponds (5,500-9,000 feet)						X
Lesser panicled sedge	*Carex diandra*	FSS	Wet meadows and subalpine willow cars (7,400-9,000 feet)			X			X
Ligulate feverfew	*Bolophyta ligulata (Parthenium ligulatum)*	BLMS	Barren shale knolls (5,400-6,500 feet)					X	
Narrow-leaved moonwort	*Botrychium lineare*	FSS	Disturbed sites, grassy slopes among medium height grasses, along edges of streamside forests, alpine areas and aspen forests (7,900-9,500 feet)			X			X
Narrow-stem gilia	*Gilia stenothyrsa*	BLMS	Grassland, sagebrush, mountain mahogany, or pinyon-juniper; silty to gravelly loam soils of the Green River formation (6,200-8,600 feet)					X	
Naturita milkvetch	*Astragalus naturitensis*	BLMS	Sandstone ledges and canyon rims pinyon-juniper woodland (5,400-6,200 feet)		X				

Table 3.7
Special Status Plant Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
North Park phacelia	*Phacelia formosula*	FE	Barren exposures where Coalmont Formation forms outcrops or ledges of sandy soil or ledges; most abundant on steep, sparsely vegetated, erodible slopes (such as on the sides of deep ravines)			X			
Osterhout milkvetch	*Astragalus osterhoutii*	FE, BLMS	Indigenous to Grand County, this species prefers alkaline, selenium-rich clay soils derived mostly from Niobrara and Pierre shale; found between 7,500 and 7,700 feet on barren and relatively flat areas			X			
Pale blue-eyed grass	*Sisyrinchium pallidum*	BLMS	Prefers fens, wet meadows, and stream edges			X			
Parachute penstemon (Parachute beardtongue)	*Penstemon debilis*	FT	Steep talus slopes of the Parachute Creek Member of the Green River Shale Formation in Garfield County (8,000-9,000 feet)	X					
Park Milkvetch	*Astragalus leptaleus*	FSS	Moist swales and meadows; South Park to the Wet Mountain Valley (7,500-10,000 feet)						X
Paradox moonwort	*Botrychium paradoxum*	FSS	Grassy meadows, gravelly road sides, low herbaceous cover under small conifer saplings; probably at 5,000–9,000 feet; 2 small sites in Colorado.						X

Table 3.7
Special Status Plant Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
Penland alpine fen mustard	*Eutrema penlandii*	FT	Alpine tundra habitat above 12,000 feet			X			
Penland beardtongue	*Penstemon penlandii*	FE, BLMS	Indigenous to Grand County, this species is found in run-off channels shaded by deeply cut banks			X			
Piceance bladderpod	*Lesquerella parviflora*	BLMS	Shale outcrops of the Green River Formation, on ledges and slopes of canyons in open areas (6,200-8,600 feet)		X			X	
Roan Cliffs blazingstar	*Mentzelia rhizomata*	BLMS	Steep talus slopes of the Green River Shale Formation in Garfield County (5,800-9,000 feet)	X					
Rock tansy	*Sphaeromeria capitata*	BLMS	Dry, rocky hills (5,000-7,800 feet)				X		
Rollins cryptantha	*Cryptantha rollinsii (Oreocarya rollinsii)*	BLMS	White shale slopes of the Green River Formation, in pinyon-juniper or cold desert shrub communities (5,300-5,800 feet)					X	
Selkirk violet	*Viola selkirkii*	FSS	Forests from montane to subalpine (6,000-9,100 feet)						X
Singlestem buckwheat	*Eriogonum acaule*	BLMS	Gravelly or clayey flats and slopes, saltbush or sagebrush (6,500-8,000 feet)				X		
Slender cotton grass	*Eriophorum gracile*		Montane and subalpine wetlands, wet meadows and pond edges (8,100-12,000 feet)			X			X

Table 3.7
Special Status Plant Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
Tufted cryptantha	*Cryptantha caespitosa (Oreocarya caespitosa)*	BLMS	Sparsely vegetation shale knolls, with pinyon-juniper or sagebrush; usually with other cushion plants (5,500-8,100 feet)				X	X	
Uinta Basin springparsley	*Cymopterus duchesnensis*	BLMS	Desert shrub, sagebrush, and juniper; sandy clay and clay soils (4,700-6,800 feet)				X		
Ute ladies'-tresses orchid	*Spiranthes diluvialis*	FT	Moist meadows, alluvial banks, oxbows and floodplains of perennial streams (720-7,000 feet)			X	X	X	
Weber's monkey flower	*Mimulus gemmiparus*	FSS	Granitic seeps, slopes, and alluvium in open sites within spruce-fir and aspen forests (8,500-10,500 feet)			X			X
Weber's scarlet-gilia	*Ipomopsis aggregata* ssp. *weberi*	FSS	Forb or shrub dominated montane meadows (6,560-10,500 feet); a narrow endemic known from the Park Range			X			X
Western prairie fringed orchid	*Platanthera praeclara*	FT	Associated with sedge meadows in the Great Plains, primarily within tall grass prairie in fire- and grazing-adapted grassland communities			X			

Table 3.7
Special Status Plant Species in the Planning Area

Common Name	Scientific Name	Status[1]	General Habitat	CRVFO	GJFO	KFO	LSFO	WRFO	Routt National Forest
White River beardtongue	*Penstemon scariosus var. albifluvis*	FC, FSS	Sparsely vegetated shale slopes of the Green River Formation Desert in shrub and pinyon-juniper communities (5,000-7,200 feet)					X	
Woodside buckwheat	*Eriogonum tumulosum*	BLMS	Gravelly to clayey soils, saltbush sagebrush, and pinyon-juniper woodlands (5,000-7,500 feet)				X		
Yellow lady's slipper	*Cypripedium parviflorum*		Moist forests and aspen groves (7,400-8,500 feet)						X

[1]Status Codes:
FE Federally listed as endangered
FT Federally listed as threatened
FC Federally listed as a candidate species
FP Federally proposed for listing as endangered
SE State listed as endangered
ST State listed as threatened
SC State listed as species of special concern (no legal status)
BLMS Colorado BLM Sensitive
FSS Forest Service Sensitive
[2] These species do not occur in the KFO planning area, but water depletions may affect the species and/or critical habitat in downstream reaches.
[3] These species are relatively uncommon species in the BLM planning area.
[4] These species are unlikely to occur in the BLM planning area.

Greater Sage-Grouse

GRSG is one of the most important, if not the most important, wildlife species that depends upon the sagebrush vegetative type. The downward trend of GRSG and its sagebrush-dominated habitat throughout its historical range have become a focus of wildlife and land managers in recent years. With the recent interest in the long-term well-being of GRSG and the sagebrush ecosystem, the CPW, BLM, and Forest Service have committed to ensuring that this species remains a high priority for management (BLM 2004b).

The GRSG is a federal candidate species for listing under the ESA, a Colorado BLM Sensitive species, Forest Service Sensitive species, and a Colorado species of concern.

GRSG are considered a sagebrush ecosystem obligate species. Obligate species are those species that are restricted to certain habitats or to limited conditions during one or more seasons of the year to fulfill their life requirements. GRSG are only found where species of sagebrush exist. Sagebrush species provide nesting, brooding, and fall and winter cover, as well as forage throughout the year (Colorado Greater Sage-Grouse Steering Committee 2008).

Each year, male GRSG congregate in late winter through spring on leks to display their breeding plumage, and to attract hens for mating. An active lek is a traditional display area attended by two or more male GRSG in two or more of the previous 5 years. Normally, the area is located in a very open site in, or adjacent to, sagebrush-dominated habitats. Generally, lek sites are traditional, with the same lek sites used year after year. Taller sagebrush on the outskirts of the leks is necessary as a food source, escape cover, nesting cover for females, and loafing cover during the day (Colorado Greater Sage-Grouse Steering Committee 2008). Typically, leks are positioned within proximity of nesting and brood-rearing habitat; therefore, they are often considered an excellent reference point for monitoring and habitat protection measures.

Nesting habitat is primarily characterized by sagebrush communities that have 15 percent to 30 percent canopy cover, and a grass and forb understory. Residual cover of grasses is also important for nesting cover. Most nesting occurs within 4 miles of leks (Colorado Greater Sage-Grouse Steering Committee 2008). Nesting and early brood-rearing habitats are similar, and include appropriate sagebrush canopy cover of 10 to 25 percent with greater than 15 percent herbaceous ground cover. Young birds eat insects for their first 3 weeks and mostly forbs until they are 3 months old. As the sagebrush habitat stands begin to dry out in mid-summer, GRSG move to more mesic areas, including higher elevations, wet meadows, and riparian areas where succulent forbs are present. From mid-September into November, GRSG prefer areas with relatively dense canopy cover and late green forbs. Winter habitat comprises sagebrush greater than 12 to 16 inches tall and greater than 25 percent canopy cover in drainages with tall sagebrush and on ridges and south

and west-facing slopes. Winter habitat is used by segregated flocks of males and females (Beck 1977). See **Figure 3-4** for habitat distribution in the planning area.

Habitat loss and fragmentation from agricultural encroachment, urbanization, lack of fire (which rejuvenates native habitat), and overgrazing are the primary threats to the GRSG. Considerable attention has been given to this species since the 1980s, as evidenced by the National Sage-Grouse Habitat Conservation Strategy (BLM 2004). This conservation strategy provides national GRSG habitat conservation guidance for the BLM. The plan identifies potential conservation actions that might be implemented in order to maintain and enhance GRSG populations and habitat (CPW 2004).

Several factors related to GRSG habitat and the way it is used by this species have been considered causes of the decline in GRSG distribution and abundance. These factors include habitat loss, alteration, and degradation (Braun 1995). Historically, sagebrush-dominated vegetation was one of the most widespread habitats in the country and still covers much of the Great Basin and Wyoming Basin, reaching into the Snake River Plain, Columbia Basin, the Colorado Plateau, Montana, southwestern Colorado, northern Arizona, and New Mexico. Across this area, big sagebrush predominates and has five known subspecies (West 1988; Kartesz 1994).

The sagebrush mosaic was historically subject to impacts from natural components of the environment, such as small and patchy fires, and periodic population explosions of jackrabbits, grasshoppers, and crickets. Big sagebrush does not resprout after a fire, but is replenished by wind-dispersed seed from adjacent unburned stands or seeds in the soil. Depending on the species and the size of a burn, sagebrush can reestablish itself within 5 years of a burn, but a return to a full pre-burn community (density and cover of sagebrush) cover can take 15 to 30 years (Bunting 1984; Miller and Rose 1999).

Since settlement of the West began, the amount, distribution, and quality of sagebrush habitats and populations of the GRSG that depend on them have declined as a result of activities such as large-scale conversions to cultivated croplands or pastures, altered fire frequencies resulting in conifer invasion at higher elevations, and annual grass invasion at lower elevations, livestock grazing, herbicide use, mineral and energy development, and recreational activities related to urban growth and increased human populations. As a result, the 156 million acres of sagebrush that existed historically were reduced to 119 million acres by 2004 (Connelly et al. 2004). Currently, sagebrush communities and GRSG are at risk from multiple sources across multiple scales (BLM 2004b). About 56 percent of the potential pre-settlement distribution of habitat is currently occupied by GRSG (Connelly et al. 2004).

GRSG use different components of their sagebrush habitat for breeding, nesting, brood rearing, and wintering. Key habitat components include adequate canopy

cover of tall grasses and medium height shrubs for nesting, abundant forbs and insects for brood rearing, and availability of herbaceous riparian species for late growing-season foraging (BLM 2004c). Understory, height, density, cover, and patchiness of the sagebrush-dominated ecosystem are important to GRSG.

The negative impacts of habitat fragmentation on GRSG include reductions in courtship site persistence, courtship site attendance, winter habitat use, recruitment, yearling annual survival, and female nest site choice (USFWS 2010a). Invasive plants are also a serious range-wide threat to GRSG habitat. Once established, invasive plants reduce and eliminate vegetation essential for GRSG food and cover. Invasive species can out-compete sagebrush, and increase wildfire frequencies, further contributing to direct loss of habitat. Sagebrush restoration techniques are limited and have generally been ineffective (USFWS 2010a).

GRSG have declined within the past 20 years in large portions of its overall range. In March 2010, USFWS concluded that the GRSG warranted protection under the ESA; however, USFWS determined that proposing the species for protection is precluded by the need to take action on other species facing more immediate and severe extinction threats. As a result, the GRSG will be added to the list of species that are candidates for ESA protection. Habitat loss and fragmentation resulting from wildfire, energy development, urbanization, agricultural conversion, conversion of sagebrush to other vegetation types (such as pinyon-juniper woodlands) and infrastructure development are the primary threats to the species (USFWS 2010a).

For a complete description of acreages in the 21 Colorado MZs, see **Table 3.8** and **Table 3.9**.

Table 3.8
Acres of Land Ownership and ADH within Colorado Management Zones

Colorado Management Zone	BLM Field Office or National Forest	Surface Acres (all ownership)	Surface Acres (BLM-administered lands)	Split-Estate Acres (ADH)
1	LSFO	15,200	8,400	12,700
2	LSFO	172,900	120,000	137,800
3	LSFO	547,400	461,800	487,800
4	LSFO	244,400	111,100	155,500
5	LSFO	258,300	123,100	162,400
6	LSFO	307,900	50,600	99,400
7	LSFO	83,300	18,000	47,800
7	Routt National Forest	11,700	0	9,300
8	LSFO	252,300	4,700	40,400
9	LSFO	372,400	150,000	236,100
9	WRFO	50,800	21,800	32,000

Table 3.8
Acres of Land Ownership and ADH within Colorado Management Zones

Colorado Management Zone	BLM Field Office or National Forest	Surface Acres (all ownership)	Surface Acres (BLM-administered lands)	Split-Estate Acres (ADH)
10	LSFO	3,700	100	1,500
10	WRFO	282,000	190,300	239,200
11	KFO	413,200	138,600	214,400
12	KFO	18,300	6,800	11,800
11	Routt National Forest	800	0	800
13	KFO	272,400	72,900	123,100
13	Routt National Forest	1,000	0	1,000
14	CRVFO	97,300	41,000	69,000
14	Routt National Forest	38,600	0	900
14	LSFO	51,000	2,300	9,900
15	WRFO	47,600	3,000	12,100
16	WRFO	11,300	11,300	11,300
17	CRVFO (Roan Plateau)	37,600	23,900	29,800
17	GJFO	78,600	14,500	23,300
17	WRFO	237,500	75,900	160,300
18	WRFO	19,200	13,000	18,000
19	CRVFO	5,400	2,100	2,100
19	WRFO	219,800	62,400	1,119,000
19	LSFO	40	0	0
20	LSFO	40,600	2,200	5,900
21	KFO	10,700	2,200	4,800
Total		**4,203,240**	**1,732,000**	**3,479,400**

Source: BLM 2013

Table 3.9
Acres of Federal Mineral Estate by PH and GH

BLM or Forest Service Location	BLM-Administered Surface		National Forest System Lands		Other Surface	
	PH	GH	PH	GH	PH	GH
CRVFO	22,800	16,200	0	0	17,400	10,300
Roan Plateau	0	28,300	0	0	0	1,200
GJFO	5,500	8,900	0	0	4,100	4,500
KFO	185,200	18,300	0	0	115,900	25,500
LSFO	554,000	463,500	0	0	239,700	134,100
WRFO	121,900	175,300	0	0	75,800	81,600
Routt National Forest	0	0	1,600	10,300	0	0

Source: BLM 2013

Conditions on BLM-Administered Lands

Colorado River Valley Field Office

GRSG historically existed in the larger sagebrush habitats west of Glenwood Springs, between New Castle and Rifle, and south of Interstate 70 near Eagle. Current populations within the CRVFO planning area are north of Eagle, Gypsum, and Wolcott on scattered BLM and private lands. This habitat is where the majority of the mapped PH falls within the CRVFO boundary. Based on 2004 lek counts, this population of GRSG numbers from 304 to 489 (CPW 2004).

The CRVFO participated in the Northern Eagle/Southern Routt GRSG Workgroup. The Workgroup completed the population-specific Northern Eagle/Southern Routt GRSG Conservation Plan in September 2004 (CPW 2004). The Northern Eagle/Southern Routt GRSG population is one of the smaller populations in Colorado, and the portion of the population within the CRVFO is vulnerable to local extirpation. A significant portion of remaining GRSG habitat in the Northern Eagle portion of the population is managed by the CRVFO. Maintaining the current GRSG habitat on BLM-administered lands is critical to conserving the population (Rossi 2011) and maintaining range-wide connectivity and genetic diversity. The CRVFO performs habitat treatments to conserve and improve GRSG habitat and monitors the population in cooperation with CPW.

As is the case with the North Eagle/Southern Routt population on the east side of the CRVFO, the Roan Plateau is at the southernmost part of the range for this species. It is incorporated in the Parachute-Piceance-Roan population. Although the area is mapped as GH, it does not contain large contiguous sagebrush stands. GRSG habitat use studies are ongoing on the Roan Plateau. Currently, the BLM's only data comes from global positioning system monitoring by the CPW where some use was noted in the Anvil Points area. Overall habitat use by GRSG is most likely transitory in nature.

Grand Junction Field Office

The southern end of the Parachute-Piceance-Roan population of the GRSG is found on the northeastern side of the GJFO planning area with approximately 5,600 acres of PH and approximately 8,900 acres of GH. The Colorado GRSG Conservation Plan (Colorado Greater Sage-Grouse Steering Committee 2008) shows a larger portion of the GJFO planning area as potential pre-settlement habitat based on historic sagebrush distribution, encompassing everything above the Book Cliffs and portions of the Grand Mesa slopes (though the plan identifies this as an area where the species of GRSG is uncertain). There are 16 active and inactive GRSG leks within the GJFO planning area: 3 on BLM-administered lands and 13 on private lands. Of these 16 leks, 7 are considered active; 1 of the active leks is on BLM-administered lands on 4A ridge. In the winter of 2008, Sage-Grouse droppings were found within the GJFO just north

of the town of Mesa in an area between occupied Gunnison Sage-Grouse habitat and GRSG habitat. A follow-up study was conducted in the winter of 2009 by the Rocky Mountain Bird Observatory where numerous droppings and cecal casts were discovered, suggesting the area is an important wintering area. Genetic information could not be collected from the droppings and cecal casts, therefore, the species of Sage-Grouse (Gunnison or Greater) is still unknown (Beason 2009) but is believed to be GRSG. As a result, this area has been mapped as GH.

The local working group completed the Parachute-Piceance-Roan GRSG Conservation Plan in 2008 (Parachute-Piceance-Roan Greater Sage-Grouse Work Group 2008). The Parachute-Piceance-Roan population of GRSG covers portions of the WRFO, CRVFO, and GJFO.

Current populations within the GJFO planning area are located in upper reaches of Roan Creek and its tributaries (Kimball, Carr, Brush, and Clear creeks) north of the Town of DeBeque, primarily on private land and scattered public lands. Some birds are thought to winter in sagebrush areas west of DeBeque, and winter use has been documented in the Plateau Valley south of DeBeque in an area of mixed BLM-administered and private land known as Sunnyside. Since 2008, lek counts in the Parachute-Piceance-Roan population range from a low of 77 males in 2010 to a high of 226 males in 2008 (CPW 2012). GRSG habitat within the GJFO is primarily on relatively flat sagebrush-covered ridges with pockets of aspen in north-facing draw slopes, giving way to mountain shrub communities as one moves further south and down in elevation on the ridges. The landscape is naturally fragmented by deep canyons. Former habitats in the broad Roan Creek Valley south of the steep canyons have been lost to fragmentation from sagebrush plant community conversion to agricultural and residential uses. These activities do not threaten habitat on the remaining ridge top habitat, but natural gas exploration and production activity, lack of fire (which rejuvenates native habitat), and poor grazing management are the primary threats.

The GJFO participated in the Parachute-Piceance-Roan Greater Sage-Grouse Workgroup that developed the local plan. Only a small part of the Parachute-Piceance-Roan population is within the GJFO, and much of it lies on private lands. Nonetheless, the GRSG do use BLM lands for breeding, nesting, and wintering. Maintaining the current GRSG habitat on BLM lands is critical to conserving the population and maintaining range-wide connectivity and genetic diversity.

The current status of the population within the GJFO is better than from 2009 to 2011. Within the GJFO, there were 6 active leks in 2012, with a total of 13 males. In 2008, 14 males were counted on 5 leks. From 2009 to 2011, five to nine males used three or four leks. Only 1 of the leks was active all 5 years; that is also the only lek located on a public land parcel (Chimney Rock, on the edge

of 40 acres surrounded by private lands). Two other leks considered inactive are on GJFO public lands; one of those leks had a single male in 2011. Evidence of wintering GRSG was found in the Sunnyside area of the Plateau Valley in 2009, 5 to 10 miles south-southeast of DeBeque. The Parachute-Piceance-Roan population within the GJFO is the nearest population of GRSG to the Plateau Valley.

Based on lek counts within the GJFO boundary, the GJFO portion of the Parachute-Piceance-Roan population is nine percent of the Southside Parachute-Piceance-Roan population in 2012, and seven percent of the overall Parachute-Piceance-Roan population.

Kremmling Field Office

WAFWA Management Zone II has the largest regional extent and highest breeding density of GRSG in the western US, with several important populations in the Wyoming Basin, including Jackson and Routt Counties, Colorado. Livestock grazing is ubiquitous across these sagebrush ranges, which also have seasonal importance for native ungulates and wild horses (Manier et al. 2013). Changes in land cover and land use are contributing to population declines in this region (Manier et al. 2013).

GRSG inhabit much of the planning area. Throughout the year, GRSG will move between select habitats within the overall sagebrush habitat area. In Jackson County, there are approximately 39 active leks, 5 inactive leks, and 19 historic leks (CPW 2010). Of the active leks, 20 are on BLM-administered lands. In Grand County, there are 19 active leks, 1 inactive lek, and 41 historic leks (2010 data). Of those, 21 leks are on BLM-administered lands. In Larimer County, there is 1 historic lek (last active in the 1960s). In Summit County, there is 1 active lek and 1 historic lek (CPW 2010). In Eagle County, there are no leks within the planning area. Sagebrush habitat in Jackson County is largely intact, and there is little threat of fragmentation. Currently, oil and gas development and related infrastructure is low; however, in 2006, there was an increased interest in coalbed natural gas exploration. In Grand County, there is a high risk of habitat fragmentation and loss due to urban development and related infrastructure, especially at the east end of the county.

Three local GRSG working groups cover the planning area: Eagle/South Routt, North Park, and Middle Park. Each group developed a local conservation plan that sets forth a strategy for the long-term management of GRSG in their area. The BLM administers 27 percent (26,200 acres) of occupied habitat in the Eagle/South Routt population; 34 percent (140,000 acres) of occupied habitat in the North Park population; and 29 percent (74,100 acres) of the occupied habitat in the Middle Park population. The BLM is a partner in all three local working groups, as well as in the Colorado GRSG Plan, and has agreed to implement the plans as fully as possible.

Little Snake Field Office

GRSG use areas are all located in shrublands. Sagebrush is the primary habitat used. Areas of sagebrush along streams, where forbs and insects are abundant, are used for brood rearing. Some production areas have also been identified in areas that have been mapped as saltbush and mountain shrub.

Within the planning area, identified brood-rearing areas are in smaller drainages associated with the Vermillion Creek, Little Snake River, and Yampa River watersheds, where moist conditions in late spring and early summer produce the succulent forbs and insects on which broods feed.

Production areas, traditionally mapped as a 2-mile buffer around leks and believed to contain 80 percent of the nests associated with GRSG displaying at the lek, have recently been expanded. No more than 75 percent of GRSG nests are found within a 4-mile radius of a lek, making the previous production area size insufficient to protect most nests (Apa 2007; Petch 2009).

Data specific to Moffat and Routt Counties and to the planning area are provided by Rogers (1964), who described GRSG populations in Moffat County as having the largest population and the highest density of GRSG of any county in Colorado. The highest density of GRSG was localized in the Beaver Basin area of Cold Spring Mountain, the extreme northwest part of the county. Other areas in Moffat County with a high population density were the western portion of Blue Mountain north of Artesia near the Utah line, the Two Bar Ranch on the Snake River, Lay Creek, Bluegravel Gulch, upper Timberlake drainage, Big Gulch drainage, upper Bighole Gulch, the head of Spring Creek, and the area around the town of Great Divide. The principal GRSG population in the southwest part of the county was on top of Blue Mountain within 10 miles of the Utah line.

In Routt County, there are four distinct GRSG groups: two areas with fair population density near the towns of Toponas and Hayden and about equal numbers and range; one area in the upper Slater Creek and Snake River areas in the extreme northern part of Routt County with a light population in the summer months and a wintering area near the Wyoming line; and one area north of Steamboat Springs and west of Clark on Deep Creek with small range and numbers. The highest concentration of GRSG in the county was in the Twentymile area southeast of the town of Hayden on the upper Sage and Fish Creek drainages. The Breeze Basin-Yampa River area west of Hayden near the Moffat County line was known to contain a high density of GRSG area in 1947, but no GRSG were observed in this area in 1959 and 1960.

Today, within the planning area, essentially all of the land west of State Highway 13 (except the area on the south side of Cold Spring Mountain, and the lands closest to the Yampa and Green River drainages) is within the range of the GRSG. The central portion of this area—north, west, and southeast of Maybell—as well as a broad area along the northern boundary of the planning area from Middle Mountain near the northwest corner of Colorado to Baker

Peak east of State Highway 13 provides winter range. A number of comments in the Land Health Assessments focus on GRSG populations and habitat. The following comments characterize the attention given to this species:

- **Axial**. GRSG habitat types in the Axial Basin Landscape include strutting grounds, brood-rearing habitat, and winter range. Thirty leks have been documented within this landscape. Of these, 11 (37 percent) are active; 6 (20 percent) are inactive (no activity the last 5 years); 11 (37 percent) are historic (no activity the last 6 years or longer), and 2 (7 percent) are unknown.
- **Douglas Draw**. The watershed does have potential to support GRSG near Sheephead Basin. There has not been any documented use by GRSG in this area, but treatments of encroaching juniper may make the area more attractable to GRSG.
- **Cold Spring Mountain**. The large expanses of sagebrush steppe intermixed with wet meadows provide important GRSG nesting and brood rearing habitats. GRSG numbers are up since the early 1990s, with lek counts remaining stable over the last 3 years; however, GRSG are only at 50 to 60 percent of their historic population numbers for the area.
- **Douglas Mountain**. Sagebrush grasslands and sagebrush mixed shrub habitat types have the potential to support GRSG within this landscape. There are no known GRSG leks within the landscape; however, efforts to locate breeding GRSG in the landscape have been minimal.
- **Dry Creek**. The large expanses of sagebrush steppe intermixed with wet meadows provides important GRSG nesting and brood rearing habitats along Vermillion Creek, although there are no known GRSG leks within this watershed. Heavy historic grazing, especially in mesic areas at the higher elevations, has reduced the quality of brood rearing habitat essential for GRSG in the area.
- **Fourmile Creek**. The entire landscape is considered a GRSG production area, although the quality of GRSG brood-rearing habitat has been reduced by heavy historic grazing, especially in mesic areas at the higher elevations. The large expanses of sagebrush steppe intermixed with wet meadows provide important GRSG nesting and brood rearing habitats along Timberlake Creek. Fourteen GRSG leks have been identified and brood rearing habitats have been documented.
- **Green River**. The Green River Landscape provides habitat for GRSG and the various life cycle stages for which they are used. There are no known GRSG leks or nesting habitat within the landscape; however, hens with broods are often observed in the

Ryegrass area. GRSG are also observed near Chicken Springs and Five Springs. A small amount of winter habitat (200 acres) is located near Five Springs. Sagebrush in this area was in good condition, providing suitable winter habitat for GRSG. Overall, the Green River Watershed provides productive habitat for GRSG.

- **Lay Creek**. The majority of this watershed provides habitat for GRSG. GRSG use the watershed throughout the year for breeding, nesting, brood rearing and wintering habitat. This watershed is an important production area for GRSG in Colorado. There are seven active GRSG leks within this watershed, with two additional active leks within 1 mile of the watershed boundary. Breeding, nesting, brood-rearing, and wintering habitat are all found within the boundaries of this watershed. Some portions of the watershed are capable of providing all four habitat requirements in the same area.
- **Powder Wash**. This is an important area for GRSG breeding, nesting and brood rearing, containing 10 known leks and about 2,400 acres of GRSG winter range.
- **Sandhills**. Available habitats provide winter range, nesting, and brood rearing for GRSG.
- **Sand Wash**. This is an import production area for GRSG nesting and winter range. The numerous historic leks on Seven Mile Ridge are no longer active.
- **Williams Fork**. Sagebrush grasslands and sagebrush mixed shrub habitat types have the potential to support GRSG within this landscape. There are no identified GRSG leks or critical habitat, such as nesting or winter, located in the Williams Fork watershed.

White River Field Office

The Northwest Colorado GRSG population area (Colorado MZ 10) is composed of several distinct segments that differ widely in character for GRSG. The Blue Mountain portion of this population (higher-elevation sagebrush communities north of US 40) supports the largest and most productive population and has the largest continuous block of suitable and occupied GRSG habitat in the WRFO. Broods gradually disperse and drift to higher elevations (e.g., Moosehead Mountain), such that essentially all sagebrush habitat on Blue Mountain is considered brood range. Blue Mountain's capacity for strong production and recruitment is largely attributable to an abundance of wet meadow habitats and well-developed herbaceous understories.

The remaining segments of the Northwest Colorado population area in the WRFO consist of: (1) isolated and sporadically occupied parcels in the Douglas Creek drainage south of the White River; (2) extremely small and insular groups of birds along and probably once connected by habitats along the White River valley; (3) a sparsely populated southern extension of the larger Sagebrush

Draw population located in the adjoining LSFO; and (4) most notably, an expansive low-elevation salt-desert complex extending west from Pinyon Ridge along the US 40 corridor and south to the White River. This area supports limited year-round occupation by GRSG, but these xeric habitats, whose ground cover is often dominated by invasive annual weeds, are considered marginal in their support of nesting and brood-rearing functions. These areas have been known to support concentrated high density winter use. The breeding population in the western half of this area (west of Massadona) had begun to collapse prior to the mid-1970s, and this trend continued through the 1980s. The only remaining active lek is located on the far eastern end of the area. Suitable sagebrush stands along Highway 40 are relatively limited. These predominantly salt desert habitats are dissected by deeply incised channels that assume the role of brood habitat, although the broods along the White River probably originate from the lower Red Wash and Boise Creek areas. The origin of large numbers of wintering birds in lower Wolf Creek is unclear but likely involves much of the Highway 40 population.

The Crooked Wash complex is administratively split between the WRFO and the LSFO to the north and is composed of a high percentage of private lands. Although upland sagebrush conditions are superficially adequate for nesting in the WRFO, upper portions of the basin are likely preferred. Late season brood use has been noted, although brood habitat conditions are considered suboptimal in portions of the basin within the WRFO. Although a number of channels in the area support persistent flow, riparian expression is extremely limited. Concentrated winter use in the Crooked Wash area is assumed to represent the major fraction of this complex. The small summer population in Black's Gulch seems to be a fragment of the Crooked Wash complex. This area has also supported concentrated winter use in the past.

The Piceance Basin/Roan Plateau area, encompassing the majority of Colorado MZ 17, is comprised of roughly 152,600 acres of GRSG PH and 84,400 acres of GH. Virtually all seasonal use functions take place on relatively narrow mid-elevation ridges, with a drift toward higher elevations along the Piceance Rim and Roan Plateau through the brood and general summer use periods. Winter use appears to occur at all elevations, depending on accumulated snow depth and snow texture. Broad ridges at lower elevations may support the bulk of wintering birds during extreme conditions.

The Parachute-Piceance-Roan Plateau (PPR) sage-grouse population is considered to be at high risk due primarily to energy and mineral development (USFWS COT report 2013). Presently, there are two distinct sage-grouse population areas in the PPR: the Barnes Ridge subcomplex to the east and the Figure 4 subcomplex on its western margin (both of which are encompassed by identified PACs or Priority Areas for Conservation). The Figure 4 subpopulation hosts the largest number of birds and active leks in the PPR. Identified priority habitats that support the western Figure 4 subcomplex are composed of a large

continuous central core of fee land (30,000+ acres) currently complemented by two relatively large consolidated tracts of unleased federal minerals forming extensions of priority habitat to the north (10,950 acres) and southwest (14,700 acres).

The Magnolia area (Colorado MZ 16) has within the past decade become heavily industrialized. This area is comprised entirely of BLM-administered lands and contains roughly 7,600 of GRSG PH and 3,700 acres of GH.

The Meeker GRSG population (Colorado MZ 15) area encompasses about 47,600 acres in the area outside the Piceance Basin (13,000 acres GRSG PH, 34,600 acres GH). Federal mineral estate underlies about 15,500 acres (31 percent) of all mapped range, but federal estate associated with habitats currently supporting GRSG use (north of the White River and across the north flank of LO7 15 Hill) are limited to about 500 acres in 7 parcels (less than 4 percent). The largest parcel, about 300 acres, consists primarily of private agricultural lands, but supports consistent use by this remnant flock of birds. The BLM surface that presently supports habitat potentially suited for this population of GRSG is limited to about 300 acres.

Approximately 115 leks have been identified in the WRFO, of which about 55 are currently active. The status of about 20 leks is unknown, because of limited or irregular use. The count of males at leks in the WRFO planning area in 2012 was 290 birds (CPW 2012) (see **Table 3.12** (p. 3-76), in the **Trends** section).

Other Special Status Species

Other special status species with potential to exist on BLM-administered land are included in **Table 3.6**. Draft RMPs for each field office, which are incorporated here by reference, further describe special status species, including BLM Sensitive and USFWS federally listed species, within each field office.

Conditions on National Forest System Lands

Routt National Forest

Greater Sage-Grouse

The Routt National Forest provides habitat for the GRSG, but no active leks have been documented on the Forest in recent years. One historic lek was documented in Colorado MZ 7 in the vicinity of California Park and Slater Park, but GRSG lek activity has not been documented for several decades. Though no telemetry data has been collected on the Routt National Forest by CPW, it is inferred by CPW and Forest Service biologists that the Routt National Forest does provide GRSG nesting, brood-rearing, and some wintering habitat. GRSG experts at CPW mapped GRSG habitat across much of northwest Colorado. Approximately 17,400 acres was mapped on the Routt National Forest. Of the 17,400 acres, approximately 12,500 acres are on National Forest System lands, and 4,900 acres are within the Routt National Forest's administrative

boundaries, but land ownership is either private or state inholdings (see **Table 3.10**).

Table 3.10
GH and PH by Land Ownership on the Routt National Forest

Surface Land Ownership	Acres
GH	
National Forest System	11,100
Private Inholding	2,300
State Inholding	1,000
PH	
National Forest System	1,600
Private Inholding	1,400
State Inholding	10
Total	**17,400**

Source: Forest Service 2012

The CPW-mapped GRSG habitat on the Routt National Forest consists of PH and GH and is made up of grass, shrub, riparian, and forb cover types. In some instances, the buffering of 4 miles from leks did include tree cover types. The Routt National Forest's vegetation data (from the Forest Service' Field Sampled Vegetation Spatial database) is different from CPW's vegetation data and so the inclusion of tree cover types is an artifact of how vegetation polygons are delineated on the Routt National Forest. Though CPW has documented GRSG nesting in close proximity to aspen stands, the inclusion of aspen cover types (or other tree cover type) may occur when the dominant cover type is a treed cover type, but remaining portion is shrub or other GRSG habitat that is important for meeting life history needs. As a result, the presence of a tree cover types may be due to a mapping error that is inaccurately typed or it is a large polygon that is buffered in as GH or PH by the 4-mile buffer from a lek. The Routt National Forest biologists briefly reviewed PH and GH habitat maps before they were finalized for the Draft EIS. This review was completed through use of satellite imagery of vegetation, but not through the use of the Field Sampled Vegetation Spatial database.

Other Special Status Species

Other special status species with potential to exist on National Forest System lands are included in **Table 3.6**. Threatened, endangered and sensitive species and MIS are addressed in **Appendix M**, US Forest Service Biological Evaluation.

3.3.2 Trends

Trends on BLM-Administered Lands

Greater Sage-Grouse

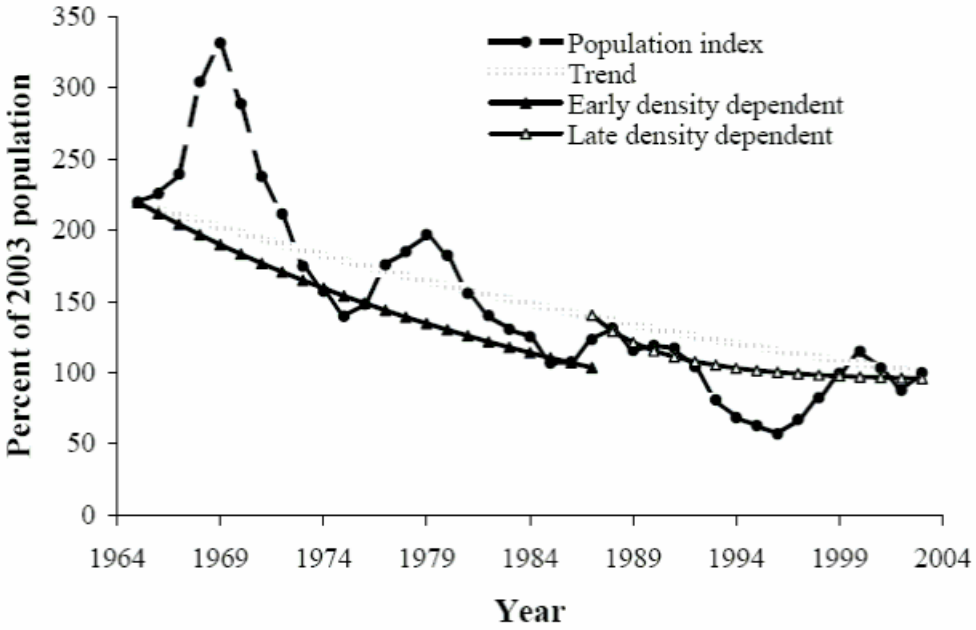
Historically, GRSG inhabited much of the sagebrush-dominated ecosystems of North America. Populations of this species have declined in both abundance and extent throughout most of their historical range. Even after taking into account the strong cyclic behavior of GRSG population dynamics, populations have declined markedly relative to both pre-settlement anecdotal numbers (BLM 2004a), and the records kept in the last 30 years where the peak in the cycle of bird numbers has declined (BLM 2004c).

Rogers (1964) interviewed numerous homesteaders present in northwest Colorado in the early years of the 20th century and reported that GRSG numbered in the "thousands." Wagon loads of harvested birds were taken near Hayden, and thousands of birds were shot for the annual Sage Hen Days held in Craig in the early 1900s. In the early 20th century, the highest densities of GRSG were found in Moffat, Routt, Rio Blanco, Garfield, and Grand counties. Populations appear to have declined substantially across Colorado in the 1920s and 1930s, resulting in the first closure of the hunting season in 1937. Hunting was again allowed in 1953 after GRSG populations had recovered during the 1950s. Populations of the birds continued to increase into the 1960s but were never so great as in the early part of the century (Rogers 1964).

Connelly et al. (2004) published a conservation assessment of GRSG and sagebrush habitats that is based on data from questionnaires completed by 11 states (California, Colorado, Idaho, Montana, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming) and two Canadian provinces (Alberta and Saskatchewan). Generally, between 1965 and 2003, there was a 729-percent increase in the number of leks inventoried—a marked increase in monitoring effort, although not all survey methods provided compatible data. In addition, not all leks were active, with the largest number of inactive leks clustered in Colorado, Utah, and Washington. During this time period, 80 percent of the States (all but California and Colorado) showed population declines. Populations in the late 1960s and early 1970s were about two to three times greater than in 2003. The range-wide trends in population index are shown in **Diagram 3-1** below.

Connelly et al. (2004) used data for Colorado from 1965 to 2003 that reflected information from 275 leks, although for 5-year periods within this timeframe averages of 44 to 171 leks were inventoried. The overall results indicated that lek size has decreased, but populations have increased in Colorado. (This discrepancy could result, in part, from the fact that data from Moffat County were collected using inconsistent methods and could not be used in the

Diagram 3-1
Range-wide Change in the Population Index for GRSG in North America, 1965–2003 (Connelly et al. 2004)



Connelly et al. analysis of changes in lek size.) Other findings for Colorado GRSG populations included the following:

- The proportion of active leks ranged from 41 to 96 percent.
- Population trends based on counts of male GRSG at leks decreased over the assessment period, regardless of the parameter used, with a significant decline in males per lek; see **Diagram 3-2** below.
- A decline in lek size was also reflected in the distribution of leks among size classes, with medium and large leks each comprising over 30 percent of the leks sampled from 1965 through 1979, but for the remainder of the period, the proportion of medium and especially small leks increased.
- Annual rates of population change standardized on 2003 populations were relatively stable to increasing (see **Diagram 3-3**). GRSG populations increased at an overall rate of 1 percent per year from 1965 to 2003, at an average rate of 2.2 percent from 1965 to 1985, and fluctuated around a level similar to the 2003 population at an average rate of 4.3 percent from 1986 to 2003, and continued to fluctuate around the 2003 population level.
- Populations in the late 1960s and early 1970s were approximately 0.7 to 1.6 times the current populations (see **Diagram 3-3**) with relatively large population fluctuations.

Diagram 3-2
Change in Lek Size for GRSG in Colorado, 1965–2003 (Connelly et al. 2004)

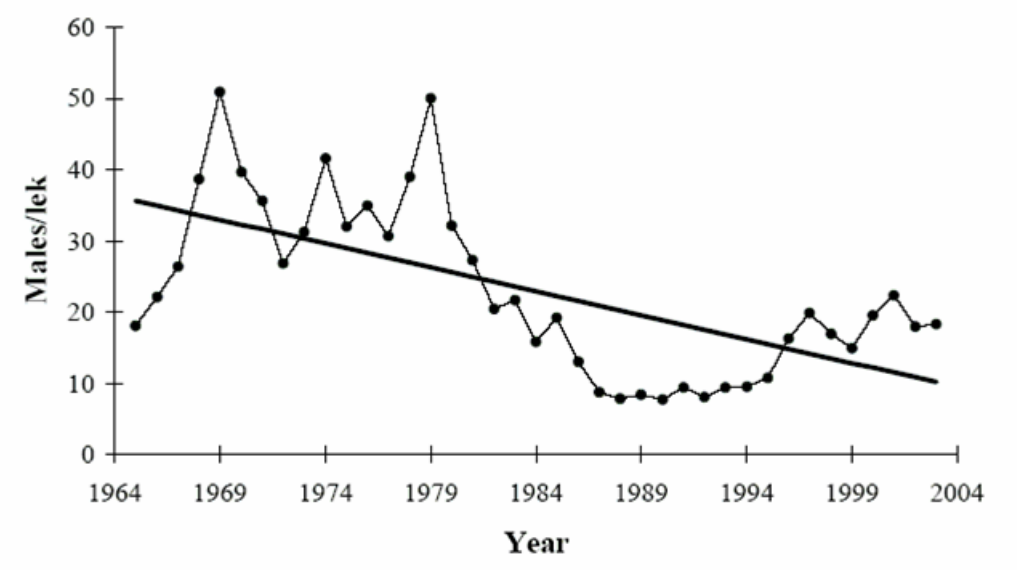
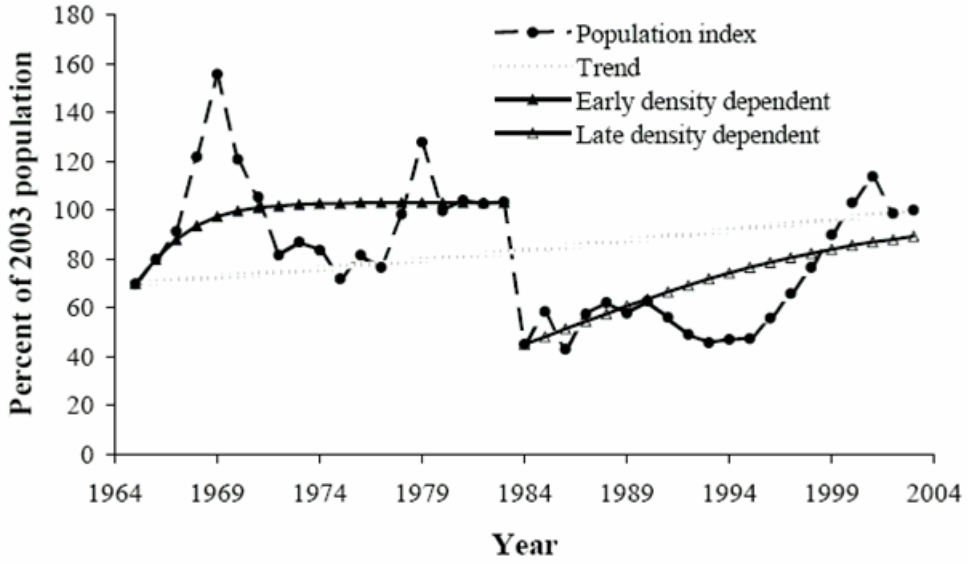


Diagram 3-3
Change in the Population Index for GRSG in Colorado, 1965-2003 (Connelly et al. 2004)



- Populations in the late 1960s and early 1970s were approximately 0.7 to 1.6 times the current populations (see **Diagram 3-3**) with relatively large population fluctuations.

  Although GRSG populations have definitely declined nationwide, the GRSG in Colorado have been increasing for about the last 17 years, and breeding populations have not declined for the last 39 years

(see **Figure 3-5** for current densities in the planning area). However, Braun (1995) reported a long-term decline in GRSG distribution and abundance. Similarly, Connelly and Braun (1997) indicated that GRSG breeding populations declined by 31 percent and production declined by 10 percent when they compared the long-term average of males/lek to the average obtained from the 1985 to 1994 data.

Colorado River Valley Field Office

The GRSG population in the Northern Eagle/Southern Routt area is small (<500 birds) and current lek count data indicate that both the high count of males and the number of active leks have decreased since lek counts began in the late 1950s. Long-term lek counts for this population show a general decline (**Diagram 3-4**); however, Colorado Division of Wildlife lek count effort prior to 1998 was inconsistent. Area and District personnel of the CPW were requested, starting in the 1950's, to document GRSG presence and general trend within specific areas of western Colorado. Thus, locations of active leks and counts of males on leks were recorded. Generally, only accessible leks were counted and intensive searches for new or relocated leks were not made because of personnel and equipment priorities. Searches and counts were sporadic, as firm procedures were not in place. Counts of male GRSG on leks were initiated in 1978 under existing protocols (three counts per spring). These counts were conducted 1983 through 1993 (though gaps exist for some years) and were intensified in 1998 (CPW 2004). The lek count results since 1998 have been more consistent with relatively little fluctuation in the population (**Diagram 3-5**).

Diagram 3-4
Historic Annual Male High Counts for the Northern Eagle/Southern Routt GRSG Population

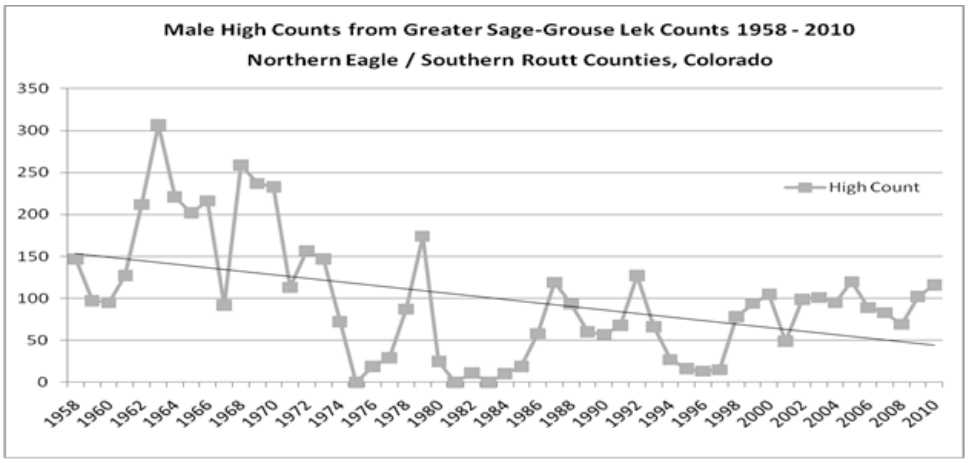
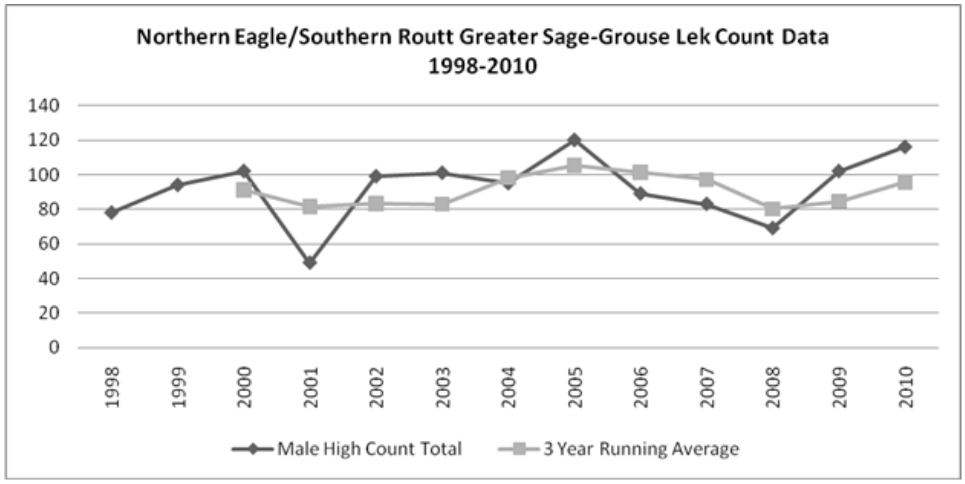


Diagram 3-5
Recent High Count and 3-year Running Average Data for Northern Eagle/Southern Routt GRSG Population



Grand Junction and White River Field Offices

The Parachute-Piceance-Roan GRSG population has been in general decline since at least 1977 when CPW (Krager 1977) documented 25 active leks. Hagen (1999) found only 9 leks active 20 years later. These historic trends are believed to have been primarily attributable to the advancing successional status of the mountain shrub and sagebrush communities used as habitat by the Parachute-Piceance-Roan birds. Current lek count data suggests an increasing population trend, but recent efforts to locate and document high bird counts have intensified over the past few years and may confound comparisons with earlier data. The present emphasis on developing natural gas reserves on these ranges has the potential to impinge heavily on GRSG habitats and behaviors and contribute substantially to declining trends.

Habitat potentially suited for occupation by GRSG in the Piceance Basin exists in physically fragmented patterns. These patterns are due not only to topographic and edaphic variability, but as a function of successional status and deciduous shrub expression in those vegetation communities. Hagen (1999) found GRSG distribution in Piceance Basin to be highly clustered, implying that the availability of suitable habitat was, therefore, also clustered.

Due to the peculiar configuration of habitat associated with the Parachute-Piceance-Roan population, these GRSG are believed to be particularly vulnerable to development and habitat-related effects. The characteristic pattern of GRSG habitats in the Parachute-Piceance-Roan are such that each parcel of ridgeline habitat (generally 400 to 1,000 feet in width) is separated from adjacent ridgeline habitats by 1,000- to 3,000-foot intervals of habitat unsuited for occupation or ground movement. Habitat potentially suited for use by Parachute-Piceance-Roan GRSG comprises only 16 percent of the mapped overall range. Although this pattern moderates at lower elevations where

ridgeline habitats broaden, bird distribution tends to be confined to higher elevations (greater than 7,400 feet in the east, greater than 7,700 feet in the west) and modeled habitat at lower elevations supports few birds.

Adding to this vulnerability, the Parachute-Piceance-Roan population is distributed in clusters across the Piceance Basin and Roan Plateau. The birds' primary distribution across the Cathedral Bluffs and Roan Plateau is divided into two relatively distinct subcomplexes: the Figure Four area to the west and the Barnes Ridge area to the east. Although CPW monitoring of telemetered birds has established that there is regular, but infrequent, interchange among these groups, the large interval of land separating these subgroups (about 9 miles) is relatively devoid of suitable habitat.

The small remnant flock of birds on Magnolia (east of Piceance Creek) has been confined to about 1,000 acres of suitable habitat for at least 3 decades and appears to be effectively isolated from other populations of birds. Although lek numbers have remained relatively constant over this time, several abrupt shifts in lek locations over the past decade suggests that this limited habitat base does not provide a stable continuum of available resources and that the birds are reacting to pronounced short-term fluctuations in habitat quality. **Table 3.11** provides lek count data for those leks within the GJFO and WRFO.

Table 3.11
High Count of Male GRSG from 2008–2012 in the GJFO and WRFO

Area	2008 Male High Count	2009 Male High Count	2010 Male High Count	2011 Male High Count	2012 Male High Count
Parachute-Piceance-Roan North	31 (6 leks)	35 (4 leks)	11 (2 leks)	15 (4 leks)	22 (7 leks)
Parachute-Piceance-Roan South	72 (24 leks)	60 (17 leks)	66 (22 leks)	91 (28 leks)	152 (39 leks)
Meeker	4 (1 lek)	9 (1 lek)	5 (1 lek)	5 (1 lek)	6 (1 lek)
Northwest Colorado population	234 (8 leks)	117 (8 leks)	96 (8 leks)	86 (8 leks)	110 (8 leks)

Source: CPW 2012

The Northwest Colorado population appears to have undergone marked decline since 2008. Large tracts of arid, low-elevation sagebrush and salt-desert habitat in the southwest corner of Moffat County (west of Massadona) became vacant prior to the 1990s. These marginal habitats supported small, widely separated groups of breeding birds. Increased prevalence of cheatgrass and other invasive annual weeds across these shrub-scrub habitats may have contributed substantially to their demise. A single remaining lek at the eastern, higher-elevation margin of this habitat belt has maintained a small but stable number of attending males. The Blue Mountain segment of this population

inhabits a relatively large contiguous block of high-elevation mountain big sagebrush. This group of birds has declined dramatically, and the trend is largely inexplicable since the area has not been subjected to new or pervasive forms or patterns of human activity and land use over the past 30 years or more. No trends can be evaluated for the birds associated with habitats associated with Sagebrush Draw and Indian Valley. These birds occupy the southern margin of the Sagebrush Draw population in the LSFO, and their abundance and distribution appears to expand and contract commensurate with core population status. Those remaining lands mapped south of the town of Rangely in western Rio Blanco County do not appear to support persistent seasonal use. Leks have never been identified, and the numbers of birds encountered over the past 30 years are few. It is possible that these birds occasionally disperse from neighboring Utah.

Kremmling Field Office

GRSG populations have fluctuated greatly since 1984 in both Middle Park and North Park. The CPW counted GRSG males on strutting grounds consistently and reliably since the 1970s in North Park and the 1990s in Middle Park. According to these counts, 1984 GRSG populations were at their lowest levels recorded between 1984 and 1997 in North Park. GRSG males counted in 1984 totaled 466. From 2000 to 2005, counts in North Park were above 1,000 male GRSG. Currently, the 3-year running average for North Park (2010 to 2012) is 755 males. Lek count effort has been fairly consistent in North Park since 1973, and the entire data set was used to generate the North Park Population MZ in the Colorado GRSG Conservation Plan (2008). **Diagram 3-6** illustrates that the annual male high count for the North Park GRSG population has fluctuated through time, but the population has remained fairly stable for the past 40 years. The 2010 to 2012 3-year average is close to the long-term median (1973 to 2012) for the population and well within the North Park Population MZ (639 to 1,214) recommended in the Colorado GRSG Conservation Plan (2008).

In Middle Park, the lowest recoded population from 1984 to 1997 was 51 males in 1985; however, this could be attributed to inconsistencies in lek counts. Lek counts have fluctuated from 238 to 313 between 2000 and 2005, with a 3-year average from 2010 to 2012 recorded at 197. **Diagram 3-7** showing the 3-year average lek counts, high male counts, the 25 percent and 75 percent quartile and the median for these years. The Middle Park plan has the optimum level of spring males counted at 250 and states that effort will be made from keeping the minimum number of males from falling below 125. The populations naturally fluctuate, so it is difficult to determine at any given time if a population is increasing, decreasing, or staying stable. The Middle Park population has fluctuated around and within the population MZ recommendations (185 to 286) provided in the Colorado GRSG Conservation Plan (2008) and could be considered stable. It is worth noting that the 5 years prior to 2012 were the lowest the population had been in the last decade, hovering at or below the low end of the recommendations.

Diagram 3-6
Annual Male High Count for the North Park GRSG Population

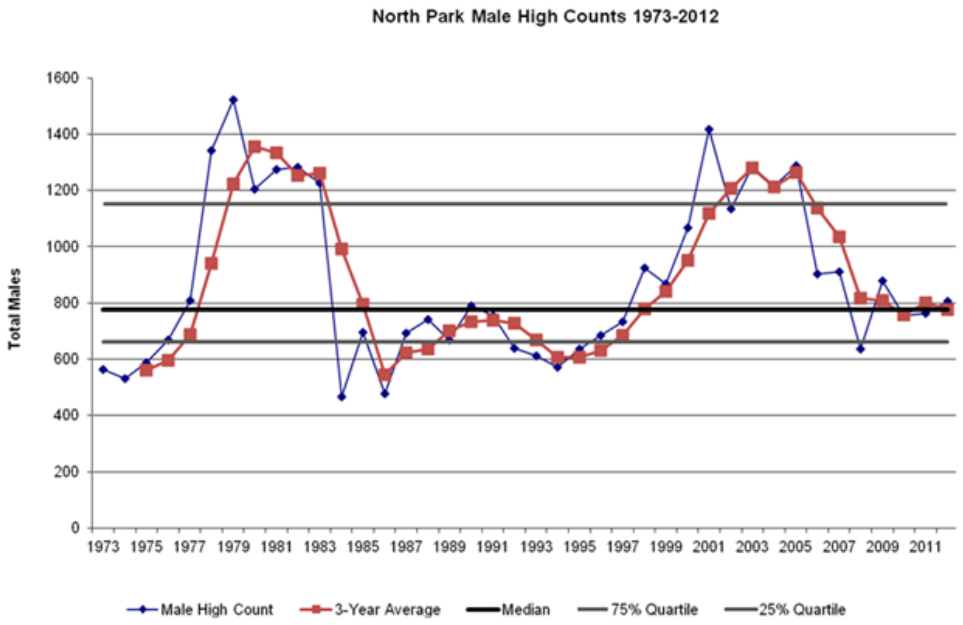
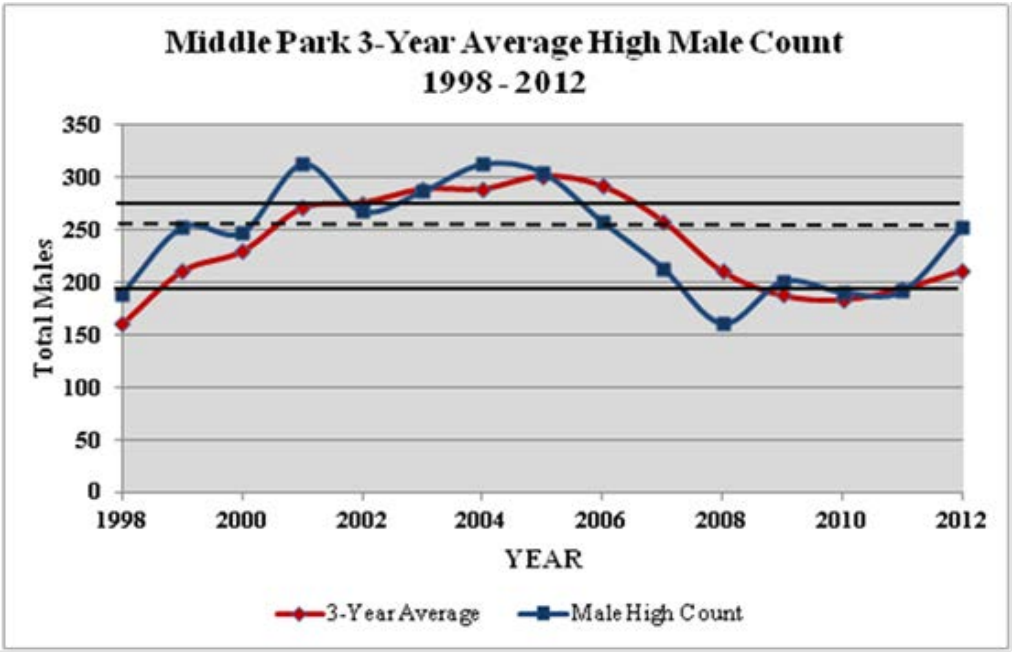


Diagram 3-7
Annual Male High Count for the Middle Park GRSG Population



Little Snake Field Office

In 2012, CPW updated GRSG habitat across the species range in Colorado. There are 138 active leks in the Northwest population (83 on BLM-administered land; 2012 data) and 7 in the Eagle/South Routt population (1 on BLM-administered land; 2011) within the LSFO. Recent data on GRSG populations within the Colorado MZs are provided in **Table 3.12**.

Table 3.12
GRSG Population Data within Colorado Management Zones

Zone	Count 2008	Count 2009	Count 2010	Count 2011	Count 2012
1	62 (2 leks)	96 (8 leks)	63 (10 leks)	55 (7 leks)	66 (10 leks)
2	205 (6 leks)	175 (7 leks)	108 (7 leks)	218 (10 leks)	268 (10 leks)
3a	495 (13 leks)	433 (18 leks)	278 (17 leks)	373 (19 leks)	406 (18 leks)
3b	459 (21 leks)	616 (25 leks)	557 (24 leks)	462 (24 leks)	410 (29 leks)
3c	44 (4 leks)	111 (6 leks)	61 (8 leks)	158 (10 leks)	255 (11 leks)
4a	43 (1 lek)	138 (5 leks)	105 (7 leks)	94 (7 leks)	101 (7 leks)
4b	85 (9 leks)	108 (11 leks)	123 (11 leks)	156 (12 leks)	111 (12 leks)
5	205 (20 leks)	159 (24 leks)	206 (32 leks)	294 (35 leks)	277 (35 leks)
6	234 (7 leks)	117 (8 leks)	96 (9 leks)	92 (9 leks)	112 (9 leks)
7	15 (2 leks)	7 (2 leks)	12 (2 leks)	11 (2 leks)	8 (1 leks)
Total	**1,847**	**1,960**	**1,609**	**1,913**	**2,014**

Source: CPW 2012

Other Special Status Species

By definition, the populations of all special status wildlife species have historically suffered downward trends. Management efforts by the BLM, Forest Service, USFWS, CPW, and others have reversed the downward trend for a number of these populations, but none of the populations are near their historic levels. Most populations remain at levels that are biologically insecure, regardless of their legal status. In addition to continued threats from habitat loss and fragmentation, variability in habitat condition is an ongoing factor in the distribution and density of special status plant, fish and wildlife species. For example, population viability for special status plant, fish, and amphibian species varies with hydrologic conditions. The recent drought has reduced the amount or quality of habitat in some areas, further stressing populations of these species.

Draft RMPs for each field office further describe special status species and describe in detail BLM Sensitive and federally listed species within each planning area in Chapter 3. These sections describe the current trends for special status species in each field office and are incorporated here by reference.

Trends on National Forest System Lands

Routt National Forest

Greater Sage-Grouse

The GRSG is associated with sagebrush habitats, though there are several types of sagebrush communities, which include the following floristic regions: Great Plains, Wyoming Basin, Southern Great Basin, Snake River Plains, Northern Great Basin, Columbia Basin, and Colorado Plateau (Stivers et al. 2006). The Routt National Forest is part of the Wyoming Basin Floristic Region (Stivers et al. 2006), and most of the sagebrush is typed as mountain big sagebrush (*Artemisia tridentata* var. *vaseyana*). Although sagebrush appears to still occupy much of the historical distribution of GRSG, sagebrush does not always provide adequate habitat due to degradation and fragmentation or a loss of important understory components within sagebrush habitats (USFWS 2010a).

Prior to 1800, GRSG existed in 13 western states across 463,509 square miles (USFWS 2010a). Currently GRSG are found in 11 western states: Washington, Oregon, California, Nevada, Idaho, Montana, Wyoming, Colorado, Utah, and North and South Dakota, and occupy approximately 56 percent of their historical range (USFWS 2010a). Recently, the CPW completed habitat mapping across northwest Colorado that is being used by the BLM and Forest Service to amend the BLM's RMPs and the Routt National Forest's Forest Plan (Forest Service 1998). The result of the mapping has identified PH and GH across much of northwest Colorado in sagebrush habitats. Of the 12,600 acres of GRSG habitat mapped by CPW on the Routt National Forest, 11,100 acres is GH and 1,600 acres is PH.

No active GRSG leks have been documented on the Routt National Forest in recent years; however one historic lek has been previously documented. Though no active leks are found on the Routt National Forest, many leks are located in close proximity (less than 4 miles) to the Forest resulting in the classification of PH. No population trend information exists for the Routt National Forest, thus this section will defer to population trend information provided at the national and state level within the following documents: USFWS's 12-month finding for petition to list the GRSG (USFWS 2010b); Colorado GRSG Conservation Strategy and Plan; GRSG Comprehensive Conservation Strategy (Stivers et al. 2006); and the GRSG NTT direction (2011).

Other Special Status Species

Other special status species are identified in **Table 3.6**. **Appendix M**, US Forest Service Biological Evaluation, addresses the existing condition for Routt National Forest special status species.

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3.4 LANDS AND REALTY

The Lands and Realty Program secures and protects the American public's rights, title, value, and interests in its public lands, and authorizes a variety of uses on those public lands in order to meet the needs of present and future generations. Lands and realty actions ensure that public lands are managed to benefit the public.

Lands and realty actions can be divided between land tenure adjustments and land use authorizations. Land tenure adjustments focus primarily on land acquisition and disposal (including easement acquisition), while land use authorizations consist of ROWs, utility corridors, communication sites, and other leases or permits. Wind and solar renewable resource production is also permitted by ROW authorizations through the Lands and Realty Program.

LUP decisions related to limitations or restrictions on land use authorizations, such as COAs or stipulations, or land tenure changes (acquisition or disposal of BLM-administered or National Forest System lands) within the planning area could affect the Lands and Realty Program.

3.4.1 Existing Conditions

Conditions of the Planning Area

The planning area includes land in Eagle, Garfield, Grand, Jackson, Larimer, Mesa, Pitkin, Rio Blanco, Moffat, and Routt Counties in central and northwestern Colorado. Lands are administered or owned by multiple federal, state, and local agencies and private landowners. The configuration of land ownerships and their proximity to each other is an important factor when considering land tenure adjustments and evaluating ROW applications. The planning area contains lands owned by the BLM, Forest Service, other federal agencies, various state agencies, counties, and private land owners. In **Chapter 1**, Introduction, **Table 1.2**, Planning Area Land Ownership and GRSG Habitat (in Acres), shows the acreage and overall percent ownership for each land owner in the planning area.

Table 3.13 through **Table 3.17** display data compiled in a baseline environmental report produced by the US Geological Survey and BLM (Manier et al. 2013). In each table, acreages and mileages are presented by surface management agency and their presence within GH and PH in the planning area. **Figure 3-6** displays those corridors listed in **Table 3.16**.

Table 3.13
Acres of GRSG Habitat within City Limits in the Planning Area

Surface Management Agency	Total Acres within City Limits	Acres within GH	Acres within PH
BLM	300	300	0
Forest Service	1,100	1,100	0
Tribal and Other Federal	0	0	0
Private	1,300	1,100	200
State	0	0	0
Other	0	0	0

Source: Manier et al. 2013

Table 3.14
Miles of Transmission Lines within GRSG Habitat in the Planning Area

Surface Management Agency	Total Miles [1]	Miles within GH	Miles within PH
BLM	17,900	7,500	10,400
Forest Service	600	500	100
Tribal and Other Federal	0	0	0
Private	29,500	13,700	15,800
State	3,000	1,200	1,800
Other	1,100	100	1,000

Source: Manier et al. 2013
[1] Includes transmission lines greater than 115 kilovolts

Table 3.15
Number of Communication Towers within GRSG Habitat in the Planning Area

Surface Management Agency	Total Number of Communication Towers [1]	Number within GH	Number within PH
BLM	100	50	40
Forest Service	0	0	0
Tribal and Other Federal	0	0	0
Private	100	80	50
State	10	2	10
Other	0	0	0

Source: Manier et al. 2013
[1] Displays the number of Federal Communication Commission communication towers

Table 3.16
Utility Corridors within GRSG Habitat in the Planning Area

Surface Management Agency	Miles of Utility Corridors			Acres of Utility Corridors		
	Total [1]	GH	PH	Total [2]	GH	PH
BLM	80	30	60	61,500	21,000	40,500
Forest Service	0	0	0	0	0	0
Tribal and Other Federal	0	0	0	0	0	0
Private	0	0	0	27,600	13,200	24,400
State	0	0	0	6,400	2,200	4,200
Other	0	0	0	2,200	0	2,200

Source: Manier et al. 2013
[1] Includes Section 368 energy corridors
[2] Acreages calculated by buffering corridor centerlines with varying widths based on the corridor width itself

Table 3.17
Acres of Vertical Obstructions within GRSG Habitat in the Planning Area

Surface Management Agency	Total Acres [1]	Acres within GH	Acres within PH
BLM	0	0	0
Forest Service	0	0	0
Tribal and Other Federal	0	0	0
Private	3,100	3,100	0
State	0	0	0
Other	0	0	0

Source: Manier et al. 2013
[1] Derived from dataset containing Federal Communication Commission communication towers and Federal Aviation Administration vertical obstructions. Assumes footprint of 56.4 square meters per obstruction

Conditions on BLM-Administered Lands

Land Tenure

Land ownership (or land tenure) adjustment refers to those actions that result in the disposal or withdrawal of public land, or the acquisition by the BLM of nonfederal lands or interests in land. The FLPMA requires that public land be retained in public ownership unless, as a result of land use planning, disposal of certain parcels is warranted. Tracts of land that are identified in BLM RMPs as potentially available for disposal could be conveyed out of federal ownership through an exchange or a sale. Land exchanges are an important tool to consolidate land ownership for more efficient management and to secure important objectives of resource management, enhancement, development, and protection; meet the needs of communities; promote multiple-use management; foster sustainable development; and fulfill other public needs. However, the BLM would evaluate and consider the full range of land disposal and acquisition tools

to be able to accomplish these objectives prior to proceeding with a land exchange.

Land exchanges are initiated in direct response to public demand or by the BLM to improve management of the public lands. Lands need to be formally determined as suitable for exchange. In addition, lands considered for acquisition would be those lands that meet specific land management goals identified in the RMP. Nonfederal lands are considered for acquisition through exchange of suitable public land, on a case-by-case basis, where the exchange is in the public interest and where acquisition of the nonfederal lands will contain higher resource or public values than the public lands being exchanged. There are no pending land exchanges within the planning area.

Acquisition of and interests in lands are important components of the BLM's land tenure adjustment strategy. Lands and interests in lands are acquired for the following purposes:

- to improve management of natural resources through consolidation of federal, state, and private lands
- to secure key property necessary to protect endangered species, promote biological diversity, increase recreational opportunities, and preserve archeological and historical resources
- to implement specific acquisitions authorized or directed by acts of Congress

Disposal

Disposal areas include tracts of land that are economically difficult to manage and parcels that could serve important public objectives such as expansion of communities and economic development. These lands are usually disposed of through exchanges or land sales with public or private partners that allow the surrounding lands to be managed more effectively.

There are approximately 1,800 acres of BLM-administered land identified for disposal in the planning area. Case-by-case determinations for disposal would be made on the remaining acres of BLM-managed federal land.

Public lands determined suitable for sale are offered on the initiative of the BLM. The lands are not sold at less than fair market value. Lands suitable for sale must be identified in an RMP. Any lands to be disposed of by sale that are not identified in the current RMP require a plan amendment before a sale can occur. There are no pending land sales within the planning area.

Acquisition

Acquisition of lands can be pursued to facilitate various resource management objectives. Acquisitions, including easements, can be completed through exchange, Land and Water Conservation Fund or other purchases,

condemnation, or donations. There are no pending land acquisitions within the planning area.

Withdrawal

Withdrawn lands are lands that are reserved and set aside from application of some, or all, of the public land laws in order to protect specific resource values such as waterpower, reservoir sites, federal reserve water rights, and SRMAs. Segregative effects of withdrawals can vary depending upon the particular resource being protected, and the withdrawal may be modified or eliminated through revocation. Withdrawals are used to preserve sensitive environmental values, protect major federal investments in facilities, support national security, and provide for public health and safety. Federal policy now restricts all withdrawals to the minimum time and acreage required to serve the public interest, maximize the use of withdrawn lands consistent with their primary purpose, and eliminate all withdrawals that are no longer needed.

In the current RMPs, over 900,000 acres are withdrawn from mineral entry in the entire planning area. Within GRSG habitat, 124,800 acres are currently withdrawn from mineral entry. There are no pending withdrawals within the planning area.

Land Use Authorizations

The most common form of authorization to permit uses of BLM-administered lands by commercial, private, or governmental entities is the ROW. A ROW grant is an authorization to use a specific piece of public land for projects such as roads, pipelines, transmission lines, or communication sites. The ROW grant authorizes rights and privileges for a specific use of the land for a specific period of time.

It is the BLM's objective to grant ROWs to any qualified individual, business, or government entity, and to direct and control the use of ROWs on public lands in a manner that:

- protects the natural resources associated with public lands and adjacent lands, whether private or administered by a government entity
- prevents unnecessary or undue degradation to public lands
- promotes the use of ROWs in common, considering engineering and technological compatibility, national security, and area RMPs
- coordinates, to the fullest extent possible, all BLM actions with local, State, Native American Tribal, and other federal agencies; interested individuals; and appropriate quasi-public entities (43 CFR 2801.2)

Some uses of BLM-administered lands are authorized through land use long-term land uses, and permits are used to authorize short-term uses. Private individuals and groups, as well as various businesses and government entities can hold these authorizations (**Table 3.18**).

Table 3.18
Acres of BLM Land Use Authorizations within the Decision Area

	Acres PH	Acres GH	Total Acres
Existing ROWs	257,600	219,800	477,500
Avoidance Areas	25,600	43,300	68,900
Exclusion Areas	17,100	15,700	32,800
Corridors	22,600	48,100	70,600

Source: BLM 2013

Rights-of-Way

To the extent possible, linear ROWs, such as roads and pipelines, are routed where impacts would be least disturbing to environmental resources, taking into account point of origin, point of destination, and purpose and need of the project. The ROWs for long-term land uses are issued with surface reclamation stipulations and other mitigation measures. Restrictions and mitigation measures are applied and may be modified on a case-by-case basis, depending upon impacts on resources. The placement of major linear facilities depends upon meeting the following location criteria:

- concentrate linear facilities within, or contiguous to, existing corridors, where possible
- avoid locations that would take intensively managed forest land out of production
- avoid locations that would harass livestock or wildlife
- avoid steep topography, poor soils, or other fragile areas (such as Threatened and Endangered habitats)
- avoid cultural sites that are listed on, or are eligible for listing on, the National Register of Historic Places (NRHP).

See **Table 3.18** for an overview of the number and acreages of ROWs within the planning area and the habitat types they cross.

Avoidance and Exclusion Areas

Areas closed to mineral leasing, having an NSO restriction, or otherwise identified as unsuitable for surface disturbance or occupancy are generally identified as avoidance or exclusion areas for ROWs. Restrictions and mitigation measures could be modified on a case-by-case basis for avoidance areas, depending on impacts on resources, while exclusion areas are strictly prohibited from ROW development. See **Table 3.18** for an overview of the ROW

avoidance or exclusion areas within the planning area and the habitat types within these areas.

Corridors

Utility corridors, developed to concentrate the effects of utility lines in manageable locations on BLM-administered lands, often provide suitable locations for utility transmission lines. The corridors may contain power lines, transcontinental fiber-optic communication cables, and trans-state gas pipelines. Identifying corridors does not necessarily mandate that transportation and transmission facilities would be located within the corridor, especially if they are not compatible with other resource uses, values, and objectives in and near the corridors, or if the corridors are already at maximum capacity with existing structures. See **Table 3.18** for an overview of the number and acreages of utility corridors within the planning area and the habitat types they cross.

Communication Sites

Communication sites contain equipment for various public and private tenants, including phone companies; local utilities; and local, state, and other federal agencies. Communication site applications are granted through a ROW communications lease.

Renewable Energy

Solar, wind, biomass (which are administered through the Forestry program), and geothermal (which is managed as a fluid leasable mineral) are considered renewable energy resources. Renewable energy resources all have different requirements related to economic development; however, some issues are common to all renewable energy resources, including distance to existing power transmission facilities and compatibility with existing federal land use.

Wind and solar resource facilities are permitted with ROWs through the Lands and Realty Program. All solar energy projects 20 megawatts and greater are excluded in all RMPs within the Northwest District, as described in the Solar Energy Development Programmatic EIS Record of Decision, dated October 2012. Geothermal resources, as mentioned above, are considered fluid leasable minerals.

There are no existing renewable energy land use authorizations within the planning area within GRSG habitat.

Conditions on National Forest System Lands

Routt National Forest

Several aspects of public land management must be considered in the Forest Planning process, including land tenure adjustments (i.e., disposals, acquisitions, and withdrawals), ROWs, and permits and leases.

Land Ownership Adjustment

National Forest System lands are exchanged to achieve a desired national forest land ownership pattern that supports forest land and resource goals and objectives, addresses fragmentation, reduces future management costs, and responds to urban and community needs. Lands are purchased through the Land and Water Conservation Fund to protect critical resource areas and provide increased public recreation opportunities. Land donations are accepted to consolidate National Forest System lands and protect critical resource areas. The legal public use of National Forest System lands are improved by acquiring ROWs for roads and trails. Opportunities for land ownership adjustments are equally distributed across the Yampa, Hahns Peak/Bears Ears, and Parks Ranger Districts.

The landowner must be willing to engage in a land ownership adjustment, and the Forest Service ensures that market value is obtained for lands or interests in lands to protect the public and private property owner's interest. The Forest Service has identified parcels that meet the criteria for land adjustment. Other parcels not presently identified are evaluated under the merits of each proposal. Nonfederal lands are considered for acquisition through exchange of suitable public land, on a case-by-case basis. The objectives of the land ownership adjustment program are to achieve the optimum land ownership pattern for the protection and management of resource uses, settle land title claims, and provide resource administrators with title information about the use of and resources on the land they administer. In all land exchanges, keeping the surface and mineral estate intact on both the disposed and acquired lands would benefit the future owners and their uses of the land.

Purchase. Land purchase can be pursued to facilitate various resource management objectives. Lands considered for purchase would be those lands that meet specific land management goals identified in the Forest Plan. Most funding for purchases comes from the Land and Water Conservation Fund. This is a competitive national fund and is not a reliable source of funding for land purchases on National Forest System lands. In the future, most land ownership adjustments will be done with land exchanges. In December 2012, the Forest Service accepted a land donation in the California Park area resulted in transferring approximately 100 acres of private lands classified as GH to Forest Service ownership and management.

Rights-of-Way. ROW acquisitions on National Forest System lands is necessary for all improvements, such as roads, trails, telephone lines, power lines, pipelines, ditches, and fences over private or other lands not administered by the Forest Service. To the extent possible, linear ROWs, such as roads and pipelines, are routed where impacts would be least disturbing to environmental resources, taking into account the point of origin, point of destination, and purpose and need of the project. Although established corridors exist, this does not preclude the location of transportation and transmission facilities in other

areas if environmental analysis indicates that the facilities are compatible with other resource values and objectives. Further identification of corridors may not necessarily mandate that transportation and transmission facilities be located within these areas if they are not compatible with other resource uses, values, and objectives in and near the corridors or if the corridors are saturated. ROWs are issued with surface reclamation stipulations and other mitigating measures. Restrictions and mitigating measures may be modified on a case-by-case basis, depending on impacts on resources. Areas closed to mineral leasing, having a NSO restriction, or otherwise identified as unsuitable for surface disturbance or occupancy are generally avoidance or exclusion areas for ROWs.

Wind energy developments on National Forest System lands have not been proposed as of this time. Although the potential in the forest area for wind energy development is high in many locations, the terrain and lack of accessibility to the grid makes it generally unsuitable for development.

Special Uses

Special use permits authorize and administer use of public lands by individuals, companies, organized groups, other federal agencies and State or local levels of government in a manner that protects natural resource values and public health and safety. For example, special use permits authorize uses that contribute to the Nation's infrastructure for generating and transmitting energy resources, such as: electric transmission facilities, oil and gas pipelines, hydropower facilities, and wind and solar facilities. They authorize uses for communications, commerce, public health and safety, and homeland security, such as fiber-optic and wireless telecommunications, water development systems, and federal, state, and local highways. Authorizations are needed by landowners to exercise statutory rights and outstanding and reserved interests in National Forest System lands. **Table 3.19** lists the number of each type of special use permit on the National Forest.

Table 3.19
Number of Special Use Permits on the Routt National Forest

Use	Number of Permits
Power lines	8
Road permits	72
Ditches	156
Communication permits	28
Dams and reservoirs	51
Recreation residences	20
Cultural Use	0
Oil and gas pipelines	1
Monument	2
Ski area	1

Table 3.19
Number of Special Use Permits on the Routt National Forest

Use	Number of Permits
Telephone	4
Snow Play	3
Wells of spring developments	6
Stream gauging stations	2
Research/education	3
Outfitters and guides	42
Recreation events	5
Organization camps	1
Fences	1
Other Improvements/permits	12
Warehouse	1
Fish ladder	1
Water Treatment	1
Totals	421

Source: Special Use Data System 2013

The 1986 amendment to FLPMA, known as the Ditch Bill, provides for permanent easement for agricultural water systems in use before 1976. Water users had 10 years from passage of the bill to apply for existing structures located on National Forest System lands. Currently, 48 easements have been issued under this law with an estimated 10 additional applications being processed.

Recreation Residence Permits. There are three summer home groups with a total of 20 cabins located on the National Forest. In many areas, this use has existed since 1925. Permits for the recreation residences are issued for 20 years. The purpose was to encourage use of the National Forests by allowing individuals to build cabins and occupy them for a portion of the year. Several thousand permits were issued nationwide. The current national policy is not to issue any additional permits but continue to acknowledge the recreational values associated with the existing Recreation Residences and to reissue existing permits when the current permit tenure expires. It is the intent of the Routt National Forest to conduct the proper environmental analysis and reissue existing permits when the current permit tenure expires.

3.4.2 Trends

Trends on BLM-Administered Lands

Land Tenure Adjustments

Field offices in Colorado have been consolidating their lands to benefit the public. To achieve this, candidates for land tenure adjustment through disposal,

sale, exchange, or acquisition include parcels that are difficult to manage or that do not have public access, parcels that are relatively small and are adjacent to other federally or state-managed lands, parcels that would increase conservation of natural resources, and parcels that increase access to and use of BLM-administered land.

The planning area currently does not have any pending land tenure adjustments and no indications of increased activity in the future. However, the BLM field offices in the planning area remain open to any suggestions by staff, members of the public, and other entities, and will process land exchanges, acquisitions, easements, and potential sales within the decision area on a case-by-case basis, as staff and priority workload allow.

Land Use Authorizations

Land use authorizations (primarily ROWs) are currently very active in the planning area across all BLM field offices. Each year, the field offices collectively process more than 300 land use authorizations per year.

ROW applications across BLM-administered lands have increased and will likely continue to increase; demand for communication site leases, for both existing and new sites on BLM-administered lands within the planning area is also increasing. Issues driving the trend to more land use authorizations include growth and urbanization issues, the interface between private landowners, and the demands on BLM-administered land to locate the facilities (e.g., access roads, communication sites, mineral development, pipelines, water tanks, and utility corridors) needed to support the fast-growing infrastructure. As communities and mineral developments continue to expand in the planning area, it is likely that requests for the use of BLM-administered land for facilities would increase.

In recent years, small-scale renewable energy facilities on private lands have been increasing in number within the planning area, and are expected to continue into the future. Private wind turbines and solar facilities are being located within the planning area, providing renewable energy to localized structures and services. Within the planning area, however, the potential for wind and solar energy is low to medium. The demand for biomass is expected to increase within the planning area.

Trends on National Forest System Lands

Routt National Forest

Proposals for land adjustments will be considered on a case-by-case basis. Land adjustments tend to be more opportunistic and do not have an apparent trend. In December 2012, the Forest Service completed a 124-acre land donation acquisition of approximately 124 acres of GH in the California Park area. No other land adjustments in GRSG habitat are currently being evaluated.

Special land use applications are increasing as more people make use of National Forest System lands. Recreational Residence permits are anticipated as a flat trend because current national policy is not to issue any additional permits, and to reissue existing permits when the current permit tenure expires. Considering that renewable energy developments have not been proposed, and the terrain and lack of grid accessibility are limiting factors, the trend is anticipated to be flat without any increase in demand for renewable energy authorizations at this time.

3.4.3 References

BLM (United States Department of the Interior, Bureau of Land Management). 2013. Geographic Information Systems Data. Unpublished data. BLM, various field offices.

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Forest Service (United States Department of Agriculture, Forest Service). 2013. Geographic Information Systems data. Unpublished data. United States Department of Agriculture, Forest Service, Routt National Forest, Steamboat Springs, CO.

3.5 VEGETATION (FOREST, RANGELANDS, RIPARIAN AND WETLANDS, AND NOXIOUS WEEDS)

Vegetation serves multiple purposes on the landscape and provides many ecosystem benefits. Vegetation stabilizes soils, prevents erosion, uses carbon dioxide, releases oxygen, increases species diversity, and provides habitat and food for animals and products for human use. Many BLM and Forest Service land management policies are directed toward maintenance of healthy vegetation communities.

The riparian community includes wetlands and is associated with and depends on the presence of water during some part of the growing season. This community provides the link between aquatic and upland (dry) habitats across all elevations. Typical riparian areas are lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers, streams, and shores of lakes and reservoirs with stable water levels. Excluded are such sites as ephemeral streams or washes that do not exhibit vegetation dependent on free water in the soil (BLM 2004a). Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions under normal circumstances. Wetlands include marshes, shallows, swamps,

lakeshores, bogs, muskegs, wet meadows, estuaries, springs, seeps, and riparian areas (BLM 2004a).

Oil and gas development, timber harvest and associated activities, fuels management, livestock grazing, recreation, travel management, and special designations can affect vegetation. In particular, activities dealing with water rights and subsequent water diversions may affect riparian areas.

Many BLM and Forest Service land management policies are directed toward the maintenance and improvement, of healthy vegetation communities. Generally, vegetation can be characterized by ecological provinces, and more specifically characterized by plant communities. The plant communities discussed below are those that provide the most important land cover across identified GRSG habitat within the planning area.

3.5.1 Existing Conditions

Conditions of the Planning Area

The planning area lies within three US EPA Level III Ecoregions: Southern Rockies, Wyoming Basin, and Colorado Plateaus (US EPA 2011). Ecoregions represent areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. They serve as a spatial framework for the research, assessment, management, and monitoring of ecosystems and ecosystem components (Chapman et al. 2006).

The planning area is characterized by high elevations and rugged mountains where vegetation is dominated by conifers of the Southern Rockies Ecoregion (Chapman et al. 2006). Vegetation types within this ecoregion are organized by elevation zones, with grass and shrublands found in the lower elevations up to the highest elevations with coniferous forest and tundra. The Wyoming Basin ecoregion is a broad intermontane basin interrupted by hills and low mountains and dominated by grasslands and shrublands. The Colorado Plateaus ecoregion is an uplifted, eroded, and deeply dissected tableland with mesas, cliffs, and canyons. It has large low-lying areas with saltbush-greasewood, and more pinyon-juniper and Gambel oak (*Quercus gambelii*) woodlands compared to the Wyoming Basin (US EPA 2010).

A number of different vegetation communities exist within GRSG habitat in the planning area, including sagebrush steppe, agriculture/irrigated meadow, mountain shrub, desert shrub/scrub, grasslands subalpine meadow, pinyon-juniper, other forests and woodlands, riparian and wetlands, and other. **Table 3.20** shows the acreage of each of these vegetation communities across GRSG habitat in the planning area. Each vegetation community is also described below.

Table 3.20
Vegetation Communities in GRSG Habitat in the Planning Area

Vegetation Community	PH		ADH	
	Acres	Percent	Acres	Percent
Sagebrush steppe	1,651,300	69.8	2,545,400	61.4
Agriculture/Irrigated meadow	233,000	9.9	426,900	10.2
Mountain shrub	150,500	6.4	347,500	8.4
Desert shrub/scrub	82,300	3.5	227,500	5.5
Grasslands	85,900	3.6	116,900	2.8
Subalpine meadow	17,100	0.7	27,700	0.7
Pinyon-juniper	54,000	2.3	265,600	6.4
Other forest and woodland	58,700	2.5	131,000	3.2
Riparian and Wetlands	19,900	0.8	33,400	0.8
Other	12,400	0.5	26,600	0.6
Total	**2,365,100**		**4,148,500**	

Source: BLM 2013

Sagebrush Steppe

Sagebrush steppe vegetation occupies 61.4 percent of ADH and 69.8 percent of PH within the planning area. Sagebrush conditions within the planning area are generally split between upper and lower elevations, with 7,000 feet representing the approximate dividing line. The higher-elevation sagebrush communities are usually composed of mountain big sagebrush (*A. tridentata* ssp. *pauciflora*) or subalpine sagebrush (*A. tridentata* ssp. *vaseyana*), sometimes in pure stands but often with serviceberry (*Amelanchier* spp.), mountain snowberry (*Symphoricarpos rotundifolius*), green rabbitbrush (*Chrysothamnus viscidiflorus*), or antelope bitterbrush (*Purshia tridentata*). The higher-elevation sagebrush tends to be very productive, shows little evidence of decadence (mature shrubs where approximately 25 percent or more of plant is dead), and shows good recruitment of young sage. Common grass and grass-like species found in the sagebrush community include bluebunch wheatgrass (*Pseudoroegneria spicata*), thickspike wheatgrass (*Elymus lanceolatus*), Sandberg bluegrass (*Poa secunda*), muttongrass (*Poa fendleriana*), Indian ricegrass (*Achnatherum hymenoides*), needle and thread (*Hesperostipa comata*), threadleaf sedge (*Carex filifolia*), green needlegrass (*Nassella viridula*), Columbia needlegrass (*Achnatherum nelsonii*), bottlebrush squirreltail (*Elymus elymoides*), and Idaho fescue (*Festuca idahoensis*). Common forbs include phlox (*Phlox* spp.), Hooker's sandwort (*Arenaria hookeri*), buckwheat (*Eriogonum* spp.), penstemon (*Penstemon* spp.), wild onion (*Allium* spp.), Indian paintbrush (*Castilleja* spp.), globemallow (*Sphaeralcea* spp.), Oregon grape (*Mahonia* spp.), and prickly pear cactus (*Opuntia* spp.) (BLM 2007b).

Lower-elevation sagebrush communities [Wyoming big sagebrush (*A. tridentata* ssp. *wyomingensis*) and xeric mountain big sagebrush] consist of older stands of sagebrush that show more signs of decadence (mature shrubs where approximately 25 percent or more of plant is dead) and little recruitment. These communities often have less herbaceous cover and diversity, especially forbs, and are highly susceptible to cheatgrass (*Bromus tectorum*) invasion. The

forb component may vary considerably with recent precipitation amounts and timing. Nearly 100 years of fire suppression have allowed pinyon pine (*Pinus edulis*) and juniper trees (*Juniperus utahensis*) to encroach into sagebrush habitat. **Table 3.21** displays data compiled in a baseline environmental report produced by the US Geological Survey and the BLM (Manier et al. 2013). In this table, acres are presented by surface management agency and their presence within GH and PH in the planning area.

Table 3.21
Acres of Sagebrush and Pinyon-Juniper Interface within GRSG Habitat in the Planning Area

Surface Management Agency	Total Acres of Interface [1]	Acres within GH	Acres within PH
BLM	163,300	97,300	66,000
Forest Service	1,000	500	500
Tribal and Other Federal	3,600	2,500	1,100
Private	83,900	43,100	40,800
State	21,100	7,100	14,000
Other	2,400	700	1,700

Source: Manier et al. 2013
[1] Includes the number of acres where sagebrush land cover occurs within 120 meters of pinyon-juniper land cover

Lower-elevation sagebrush also comprises the bulk of big game winter range and, as such, the sagebrush is often moderately to heavily hedged. Repeated heavy hedging eventually leads to more decadence (mature shrubs where approximately 25 percent or more of plant is dead) throughout sagebrush stands and even mortality of individual sagebrush shrubs.

Agriculture/Irrigated Meadows

Agricultural lands within GRSG habitat in the planning area largely consist of irrigated meadows. Irrigated meadows are mostly found on private lands not administered by the BLM or Forest Service. These agricultural lands occupy 10.2 percent of ADH and 9.9 percent of PH in the planning area. Irrigated meadows primarily consist of lower-elevation flat areas, including river bottoms, terraces, and benches that are mainly used for hay production in the summer and winter feeding areas for livestock. The major grasses used for hay production on the irrigated meadows include timothy (*Phleum* spp.), smooth brome (*Bromus inermis*), orchardgrass (*Dactylis glomerata*), American sloughgrass (*Beckmannia syzigachne*), meadow foxtail (*Alopecurus pratensis*), and redtop (*Agrostis gigantea*). Grass-like plants, such as sedges and rushes, are also found in these meadows, often on the bog-like sites.

Mountain Shrub

Mountain shrub vegetation occupies 8.4 percent of ADH and 6.4 percent of PH in the planning area. Mountain shrubland includes large stands of Gambel oak

and other more diverse associations with Gambel oak, mountain mahogany (*Cercocarpus* spp.), mountain snowberry (*Symphoricarpos* spp.), and serviceberry (*Amelanchier* spp.), with scattered sagebrush, rabbitbrush, bitterbrush, kinnikinnick (*Arctostaphylos* spp.), currant (*Ribes* spp.), shrubby cinquefoil (*Dasiphora fruticosa*), and skunkbush sumac (*Rhus trilobata*). The most common areas where mountain shrub vegetation communities are found are on northern exposures in snow pockets and along drainages where moisture is not a limiting factor. These areas are frequently located about mid-slope and may be associated with steep topography. Although thinly scattered, mountain shrub vegetation communities provide vital forage and habitat for wildlife and livestock. Grasses found in the community include needle and thread, basin wildrye (*Leymus cinereus*), Indian ricegrass, green needlegrass, Columbia needlegrass, thickspike wheatgrass, Idaho fescue, Thurber's fescue (*Festuca thurberi*), mountain muhly (*Muhlenbergia montana*), prairie junegrass (*Koeleria macrantha*), slender wheatgrass (*Elymus trachycaulus*), Sandberg bluegrass, Kentucky bluegrass (*Poa pratensis*), letterman's needlegrass (*Achnatherum lettermanii*), bottlebrush squirreltail, western wheatgrass (*Pascopyrum smithii*), beardless bluebunch wheatgrass, brome (*Bromus* spp.), and muttongrass. Common forbs include arrowleaf balsamroot (*Balsamorhiza sagittata*), buckwheat, Indian paintbrush, lupine (*Lupinus* spp.), penstemon, sego lily (*Calochortus nuttallii*), wild onion, larkspur (*Delphinium* spp.), violet (*Viola* spp.), bluebells (*Mertensia* spp.), and prickly pear cactus (BLM 2007b).

Desert Shrub/Scrub

Desert shrub/scrub vegetation occupies 5.5 percent of ADH and 3.5 percent of PH in the planning area, and only on BLM-administered lands. This system is comprised of arid to semi-arid shrublands on lowland and upland sites usually at elevations between 5,000 and 7,000 feet. Sites can be found on all aspects. Slopes are typically gentle to moderately steep but are sometimes unstable and prone to surface movement. Many areas within this system are degraded due to erosion and may resemble "badlands." Soil surface is often very barren in occurrences of this system. The interspaces between the characteristic plant clusters are commonly covered by a microphytic crust. Dominant shrubs found in this community are drought tolerant and include Gardner's saltbush (*Atriplex gardneri*), fourwing saltbush (*Atriplex canescens*), birdfoot sagebrush (*Artemisia pedatifida*), bud sagebrush (*Picrothamnus desertorum*), spiny hopsage (*Grayia spinosa*), greasewood (*Sarcobatus vermiculatus*), broom snakeweed (*Gutierrezia sarothrae*), Basin big sagebrush, rabbitbrush, and winterfat (*Krascheninnikovia lanata*) (BLM 2007b). Grasses associated with these sites are Indian ricegrass, bottlebrush squirreltail, Sandberg bluegrass, bluebunch wheatgrass, needle and thread, and western wheatgrass (BLM 2007b). Forbs include wild onion, biscuitroot (*Lomatium* spp.), woody aster (*Xylorhiza* spp.), globemallow, and prickly pear cactus (BLM 2007b).

Grasslands

Grasslands vegetation occupies 2.8 percent of ADH and 3.6 percent of PH in the planning area. Native grasslands within the planning area generally consist of two distinct types: dry and moist/wet. The dry grasslands are found in small isolated areas, often on exposed ridges or hilltops, where winds reduce available moisture and prevent shrub growth. Soils at these sites are generally very shallow and include a high percentage of rocks or cobbles. Most of these areas are actively grazed by livestock and wildlife and are dominated by grasses like Colorado wildrye (*Leymus ambiguus*), saline wildrye (*Leymus salinus*), Indian ricegrass, bottlebrush squirreltail, western wheatgrass, beardless bluebunch wheatgrass, Sandberg bluegrass, brome, arrowleaf balsamroot, buckwheat, and penstemon (BLM 1994). Many lower-elevation grasslands are degraded and are dominated by cheatgrass.

Moist/wet grasslands exist primarily as high-mountain meadows. Plant communities here are typically productive and diverse. These grasslands can be found in areas with ample moisture and gentle topography, such as mountain valleys, swales, parks, and around pot holes. Numerous grass, grass-like, and forb species produce a lush variety of vegetation that provides significant amounts of summer feed for wildlife and livestock. Common grasses include Idaho fescue, Thurber's fescue, mountain muhly, needle and thread, prairie junegrass, slender wheatgrass, Sandberg bluegrass, Kentucky bluegrass, and letterman's needlegrass (BLM 1994). Lowland grassland species that are also found at these elevations include Indian ricegrass, bottlebrush squirreltail, western wheatgrass, beardless bluebunch wheatgrass, brome, arrowleaf balsamroot, buckwheat, muttongrass, and penstemon.

Forest and Woodlands

The forest and woodland cover type found at the lowest elevation in the planning area is pinyon-juniper woodlands, and the highest is spruce-fir forest. Other forest types are found at various elevations in between, and include quaking aspen (*Populus tremuloides*), Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), and lodgepole pine (*Pinus contorta*) communities. Herbaceous cover within woodlands is generally very low, although some areas with openings could have a substantial understory (including shrubs).

Pinyon-juniper woodlands vegetation occupies 6.4 percent of ADH and 2.3 percent of PH in the planning area. Pinyon-juniper woodlands are mostly found between 5,200 and 8,000 feet on somewhat xeric ridgetops (BLM 1994). These woodlands vary from an open to closed canopy with a highly variable understory of shrubs and herbaceous plants. Old growth pinyon-juniper and areas with a greater dominance of juniper generally have less understory vegetation (BLM 2007b). Dominant plants in this community include pinyon pine, Utah juniper, Gambel oak, sagebrush, mountain mahogany, and many of the herbaceous species listed under the sagebrush steppe community.

Other forests and woodland vegetation occupies 3.2 percent of ADH and 2.5 percent of PH in the planning area. Ponderosa pine forests are generally found between 6,000 and 8,000 feet (BLM 2007b). They are generally found on higher mesas and mountain slopes, and could contain substantial amounts of Douglas-fir, aspen, or pinyon-juniper woodlands. Healthy ponderosa pine forests have somewhat open canopies and contain a substantial understory of shrubs and grasses. This type of structure provides more year-round forage for wildlife than most other coniferous forest types. Herbaceous plants found in this community typically include many of those listed for mountain shrubland.

Lodgepole pine forests exist between 8,000 and 10,000 feet (Kingery 1998). This community represents an early successional stage and is the result of past stand-replacing fires. In these stands, the community is usually dominated by dense monocultures of trees of similar age, but understory species such as kinnikinnick and others from the mountain shrubland community could be found in more open areas.

Spruce-fir forests are usually found between 7,000 and 11,000 feet. These areas typically have shallow soils and contain dense stands of Engelmann spruce (*Picea englemanni*), Douglas-fir, and subalpine fir (*Abies lasiocarpa*) with a closed canopy. Openings in the forest support many herbaceous and woody plants that are found in the mountain shrublands and grassland communities.

Aspen forest communities are usually found between 7,000 and 10,000 feet. This community is early successional and consists of open to dense stands of aspen in sometimes isolated pockets in higher elevations (BLM 1994). Understory vegetation is highly variable and depends mostly on available moisture and canopy closure. Many aspen forests are very productive and contain a lush understory, whereas others could have somewhat sparse understories. Plant species commonly found in the aspen trees in this community include those listed under the mountain shrubland community.

Subalpine Meadow

Rocky Mountain subalpine mesic meadows are restricted to sites where finely textured soils, snow deposition, and/or wind-swept dry conditions limit tree establishment. These meadows are typically found above 9,800 feet in elevation in the southern part of its range, and above approximately 5,000 feet in the northern part. Typically, this vegetation type is forb-rich, with forbs contributing more to overall herbaceous cover than grasses (BLM 2011). This vegetation type covers 0.7 percent of ADH and 0.7 percent of PH within the planning area.

Riparian and Wetland Vegetation

Riparian and wetland vegetation occupies 0.8 percent of ADH and 0.8 percent of all PH in the planning area. Riparian areas in the planning area are generally small and account for a small proportion of the total acreage, but are highly productive and provide forage and cover for nearly all wildlife species at some point in their life cycle. A variety of vegetation types containing riparian zones

and wetlands exist with the planning area, such as evergreen riparian forests and woodlands, mixed coniferous and deciduous forests and woodlands, deciduous dominated forests and woodlands, tall willow shrublands, short willow shrublands, non-willow shrublands, and herbaceous vegetation (Carsey et al. 2003). Riparian areas and wetlands are important because they improve water quality in watersheds by buffering open waterways from surface runoff that could contain sediment, toxicants, or other undesirable constituents.

The steeper-gradient riparian systems typically support aspen, willows (*Salix* sp.), red-osier dogwood (*Cornus sericea*), thinleaf alder (*Alnus incana* ssp. *tenuifolia*) and currant. Lower-gradient streams and lakes support predominantly herbaceous communities of sedges (*Carex* spp.), rushes (*Juncus* spp.), tufted hairgrass (*Deschampsia cespitosa*), and redtop with some narrowleaf cottonwood trees (*Populus angustifolia*). These riparian areas provide important brood-rearing habitat for GRSG because they support large populations of insects.

Other

Other vegetation covers in GRSG habitat within the planning area occupy 0.6 percent of ADH and 0.5 percent of PH within the planning area. This category includes developed and disturbed landscapes, non-specific barren lands, open water, and recently burned, logged, mined or quarried lands.

Noxious Weeds

A noxious weed is a plant species designated by federal or state law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or nonnative, new, or not common to the US. Invasive vegetation species, as defined in Executive Order 13112, are "nonnative plants whose introduction does, or is likely to, cause economic or environmental harm or harm to human health."

Weed invasion continues to be a primary concern in western lands. Noxious weeds pose an ever-increasing threat to native plant communities, wildlife habitat, agricultural lands, and human recreation. As populations of noxious weeds and other invasive, nonnative plants increase in size and frequency, they often displace native plants, especially on recently disturbed sites, reducing the diversity of surrounding native plant communities, altering species composition and community structure, increasing potential for soil erosion, reducing water quality and quantity, losing long-term riparian area function, reducing habitat quality for wildlife and forage for livestock, increasing control costs, and affecting the aesthetic quality of the landscape.

The Noxious Weed Control and Eradication Act of 2004 requires the Secretary of Agriculture to provide assistance to eligible weed management entities in order to control or eradicate noxious weeds on public and private land. In 2004, Colorado amended the Noxious Weed Control and Eradication Act to list 72 species in 3 categories: A, B, and C. List A includes 18 species in

Colorado that are designated by the Commissioner for eradication. List B includes 40 species for which a State Noxious Weed Management Plan is being, or will be, developed and implemented in order to stop the continued spread. List C includes 14 species that build from the goals of List B species, and for which additional education, research, and biological control will be provided to jurisdictions that chose to require management.

Of the weeds on the State of Colorado Noxious Weed List, those which are commonly found in GRSG habitat include houndstongue (*Cynoglossum officinale*), Canada thistle (*Cirsium arvense*), whitetop (*Cardaria draba*), and cheatgrass. Several other weed species have been found in small, isolated patches. Another invasive nonnative, Kentucky bluegrass is of concern. While this grass is not on the Colorado weed list, it is capable of outcompeting native, cool-season grasses under heavy grazing pressures, and is therefore an indicator of declining habitat quality in rangelands and riparian areas.

Cheatgrass is of particular concern in lower elevation and degraded areas within the planning area. Degradation into cheatgrass-dominated areas is most commonly associated with historic overgrazing, drought, and/or fire. Once established, the presence of cheatgrass increases the intensity and size of wildland fires, which leads to further vegetative degradation (BLM 2008). **Table 3.22** displays data compiled in a baseline environmental report produced by the US Geological Survey and the BLM (Manier et al. 2013). In this table, acres with cheatgrass potential are presented by surface management agency and their presence within GH and PH in the planning area.

Table 3.22
Acres of Cheatgrass Potential within GRSG Habitat in the Planning Area

Surface Management Agency	Total Acres [1]	Acres within GH	Acres within PH
BLM	1,488,200	624,100	864,100
Forest Service	9,100	4,700	4,400
Tribal and Other Federal	42,500	17,400	25,100
Private	1,783,800	612,900	1,170,900
State	244,200	62,700	181,500
Other	35,900	5,900	30,000

Source: Manier et al. 2013
[1] Acreage comprised of areas with a high potential for cheatgrass occurrence

Conditions on BLM-Administered Lands

Upland Vegetation
Acres of each vegetation community on BLM-administered lands within ADH and PH are presented in **Table 3.23**.

Table 3.23
Vegetation Communities on BLM-Administered Lands in GRSG Habitat

Vegetation Community	PH		ADH	
	Acres	Percent	Acres	Percent
Sagebrush steppe	722,300	78.4	1,143,300	66.0
Agriculture/Irrigated meadow	10,200	1.1	18,600	1.1
Mountain shrub	35,700	3.9	105,600	6.1
Desert shrub/scrub	61,800	6.7	176,800	10.2
Grasslands	29,500	3.2	43,500	2.5
Subalpine meadow	5,000	0.5	8,300	0.5
Pinyon-juniper	35,900	3.9	179,800	10.4
Other forest and woodland	13,100	1.4	40,500	2.3
Riparian and Wetlands	1,800	<1	3,300	<1
Other	6,300	<1	11,800	<1
Total	**921,600**		**1,731,500**	

Source: BLM 2013

In 1997, the BLM adopted the Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado (see **Appendix K**, BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado) (BLM 1997a). These standards and guidelines were developed to guide the BLM and public land users to maintain or achieve rangeland health. During the permit renewal process, allotments are assessed for compliance with the standards and guidelines by a BLM interdisciplinary team that visits the site and determines the health of the allotment. For livestock grazing allotments, a goal is for the vegetation to meet or be moving toward compliance with the following standard:

- Standard 3—Plant and Animal Communities: Healthy productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential. Plants and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations and ecological processes.

Only limited spatial data for land health assessments is available for BLM-administered lands throughout the planning area. Of the 581,000 acres of PH on BLM-administered lands in the planning area for which spatial land health data are available, 308,700 acres (53 percent) were found to meet land health standards. Of the 1,121,900 acres of ADH on BLM-administered lands in the planning area for which spatial land health data are available, 503,900 acres (45 percent) were found to meet land health standards. Note that these figures do not include any lands in the BLM's KFO or WRFO. In areas that were not achieving or making progress toward achieving Standard 3, historic grazing practices and weed invasion (e.g., cheatgrass [*Bromus tectorum*]) were the most common indicated causal factors for these determinations (see **Appendix K**,

BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado).

Riparian/Wetland Vegetation

Proper Functioning Condition is an inventory methodology the BLM uses to assess the physical functioning of riparian areas and wetlands. The Proper Functioning Condition assessment provides a consistent approach for assessing the physical functioning of riparian areas and wetlands through consideration of such factors as hydrology, vegetation, and soil/landform attributes. The assessment synthesizes information that is foundational to determining the overall health of riparian areas and wetlands. Proper functioning condition is a state of resiliency that will allow riparian areas and wetlands systems to hold together during a 25- to 30-year flow event, sustaining that system's ability to produce values related to both physical and biological attributes.

Proper Functioning Condition assessments have been performed on most riparian areas on BLM-administered lands within the planning area. Streams rated "Functioning at Risk" are functional, but at risk. Within the planning area, most of the "Functioning at Risk" streams are streams where the use levels place the area at risk for degradation, especially if such use levels continue. Desired plant communities that can help stabilize the stream are starting to be replaced by communities that tolerate moderate-to-heavy use. Areas rated "Non-Functioning" no longer provide the basic riparian area/wetlands values due to current on-site conditions. There is a need for better inventory of wetlands within the planning area.

Noxious Weeds

The BLM has a proactive weed management program that includes conducting education, inventorying weeds, developing partnerships, coordinating weed control efforts, and monitoring effectiveness of treatments. Some basic inventory data are available on invasive species present within on BLM-administered lands as a result of Land Health Assessments and general plant inventories; however, the location and actual number of infested acres by species and specific location is unavailable for all BLM-administered lands within the entire planning area. The BLM conducts annual weed treatments, with the exact acreage depending on funding, priorities, and available resources. Weed treatments conducted by oil and gas operators have increased markedly in the past decade, partly due to the dramatic increase in surface disturbances associated with oil and gas development (and a resulting increase in weeds becoming established).

Conditions on National Forest System Lands

Upland Vegetation

Acres of each vegetation community on National Forest System lands within PH and GH are presented in **Table 3.24**.

Table 3.24
Vegetation Communities on National Forest System Lands in GRSG Habitat

Vegetation Community	PH		ADH	
	Acres	Percent	Acres	Percent
Sagebrush steppe	4,400	84.1	15,100	75.5
Agriculture/Irrigated meadow	30	<1	900	4.5
Mountain shrub	200	3.0	600	3.0
Desert shrub/scrub	0	0	40	<1
Grasslands	0	0	200	1.0
Subalpine meadow	50	<1	200	1.0
Pinyon-juniper	20	<1	200	1.0
Other forest and woodland	200	4.5	2,100	10.5
Riparian and Wetlands	300	4.9	600	3.0
Other	80	1.5	80	<1
Total	**5,200**		**20,000**	

Some localized areas are recovering from prior management (spraying to promote grasses and intensive grazing). However, the vast majority of rangelands on the National Forest (including shrublands, riparian areas, and aspen forest) are in satisfactory condition with a stable or upward trend. Sagebrush stands within GRSG habitat vary in species composition and other characteristics among sites. On shallower soil sites, shorter species such as black sagebrush and three-tip sagebrush dominate. On the more moist sites, bitterbrush is co-dominant with big sagebrush. Canopy cover of sampled sites within GRSG habitat areas generally vary from 8 to 25 percent. Bare ground measurements on these sites range from 1 to 18 percent. The herbaceous layer on most sites is dominated by native bunchgrasses and native perennial forbs.

Riparian/Wetland Vegetation

Riparian areas, because of their high ecological value, are managed under an extensive set of standards, guidelines, and best management practices. They are managed with the objective of meeting or moving toward Proper Functioning Condition as a part of meeting allowable forage utilization guidelines. Most of the acres of rangeland found to be in unsatisfactory condition are found in riparian zones. In that category, First Creek and Elkhead Creek in California Park are the two riparian areas on the National Forest most in need of continued improvement.

Noxious Weeds and Other Invasive Plants

There are 15 species of state-listed noxious weeds documented on the Routt National Forest. Ongoing inventories indicate the presence of just over 35,000 acres infested by all noxious weed species. The most common noxious weeds found on the National Forest are leafy spurge, yellow toadflax, houndstongue, tarweed, three species of knapweeds, hoary cress (whitetop), musk thistle, Canada thistle, and cheatgrass (downy brome). In addition to the state-listed noxious weeds, numerous other invasive nonnative species are found in the

area. One of the more notable effects of the drought was the increased spread of several species, especially yellow toadflax and houndstongue, and cheatgrass stands in locations where it had not been seen before or where only scattered plants had previously been observed.

Most cheatgrass infestations are on steep south-facing slopes in drier shrublands up to 9,500 feet in elevation. They occupy relatively small areas in comparison to total shrubland acres on the National Forest, but cheatgrass readily colonizes burned areas and other disturbed sites. Patches of cheatgrass commonly infest sagebrush communities in GRSG habitat areas.

Noxious weeds are treated annually using a variety of methods, and a number of prevention measures are in place; however, weed control funding levels and available labor are not adequate to treat or inventory all weed populations. Annual treatment has averaged nearly 900 acres over the last 5 years. New weed populations become established every year. Overall, weed control efforts do not keep pace with growth of existing populations of many species or establishment of new populations.

Treatment of cheatgrass has only occurred on a limited basis in a few locations. Most of the infestations are very difficult to safely and effectively treat by ground application of herbicide because they are on steep, rocky slopes. The best herbicide for controlling cheatgrass must be applied at a very low, even rate either early in the spring or in the fall when negative effects on non-target species are avoided because they are dormant. This is only feasible via aerial application. The Routt National Forest cannot aerially apply pesticides without first completing an EIS; that effort is underway.

3.5.2 Trends

Trends on BLM-Administered Lands

Upland Vegetation

The density and cover of shrubby vegetation have consistently increased in rangelands throughout the Rocky Mountain West since the onset of wildfire control and livestock grazing in the late 19th century. This is most commonly observed in big sagebrush vegetation types (Beetle and Johnson 1982) and is apparent in much of the planning area. Trends in the percentage of desirable species present in the planning area rangeland communities are mixed, with many areas in stasis, some areas with increases in desirable species, and other areas with decreases in desirable species and increases in undesirable species.

Lower-elevation sagebrush communities in GRSG habitat within the planning area appear to be in a downward trend due to pinyon-juniper encroachment, a gradual increase in cheatgrass, and in some areas, heavy browsing pressure that has resulted in decadence (mature shrubs where 25 percent or more of plant is dead) or mortality of shrubs.

Forest and woodlands in Colorado have been affected by drought, insects, and disease. Pinyon ips beetle, mountain pine beetle, spruce bark beetle, and balsam fir beetle have all been increasing in population. Many lodgepole, Douglas-fir, and spruce-fir forest communities are mature even-aged stands with increasing density. Increased stand density magnifies competition among species and decreases tree vigor. Low-vigor stands are more susceptible to insect and disease infestation. Aspen within the planning area are in varying stages of growth, although in overall decline with many stands exhibiting signs of rot (Colorado State Forest Service 2005). Drought is also a factor in the extensive mortality of mature aspen in the Piceance Basin, although these stands continue to regenerate. Lack of regeneration in the aspen, possibly associated with livestock and big game management, is also a contributing factor to the decline observed in the planning area.

Pinyon and juniper woodlands have expanded and have increased fuel loading in much of the western US, including in GRSG habitat within the planning area (Hood and Miller 2007).

Vegetation management objectives include improving upland health and habitat for GRSG and other sagebrush-dependent species and reducing hazardous fuels, particularly in the wildland-urban interface. In order to achieve these objectives, the BLM has been implementing numerous vegetation management actions, and range improvements have been made through the grazing permit renewal process. Many recent vegetation treatments have targeted sagebrush stands within GRSG habitat. The vegetation treatments have included selective removal of pinyon pine and Utah juniper trees in sagebrush habitat, brushbeating of small patches of sagebrush, and the use of prescribed fire to create a mosaic of age-classes and improve herbaceous understory.

Because plant communities respond to many environmental influences, such as wildlife and livestock foraging, drought, disease, wildfire, and prescribed burns, it is difficult to forecast their health. Where the BLM has primary authority to manage livestock grazing and where grazing is the primary activity that is potentially diminishing vegetation health, the BLM will continue to act to restore the health of plant communities through managing for desired plant communities and adjusting the number and seasonal distribution of livestock. Where other agencies or private landowners share or have primary authority over factors causing the decline of vegetation health, the forecast is less clear because the situation is more complex. At best, resolution of landscape health issues is likely to progress slowly over the planning period.

Riparian/Wetland Vegetation

Continued population growth within the surrounding areas has increased the use of BLM-administered lands, which threatens riparian areas and wetlands. New trails, paths, and road crossings, or travelling within riparian areas and wetlands, can disrupt hydrology, introduce weeds, and compact or rut soils.

Continued population growth and land sales may result in more agricultural water rights being converted to municipal and industrial uses, or used in ways that do not offer indirect benefits to riparian areas and to wetlands. Currently, there are water rights that are leased to agricultural users until they are needed by municipal and industrial users. Changes in use may greatly affect the hydrology of streams, riparian areas, and wetlands on BLM-administered lands, as there are several acres of public wetlands that are supported or created by the current private irrigation practices.

The riparian and wetland condition in many portions of the planning area has been improved through adjustment and implementation of grazing systems. Monitoring data, such as utilization, photo-points, and general observations, along with land health assessments, indicate that riparian and wetland conditions in many areas are improving, and progress is being made in meeting land health standards; however, some issues remain in some riparian-wetland areas. Wildlife and livestock concentrations and high forage utilization rates have led to the development of small hummocks that eventually alter surface flow patterns. Increased soil compaction of moist soils increases surface runoff and damages the riparian system. Lotic riparian areas with headcuts can lead to excessive drainage out of the system, decreasing the capability of the system. Fluctuating water levels resulting from climatic conditions and water diversions contribute to these areas not meeting Standard 2 of the Colorado Standards for Public Land Health (see **Appendix K**, BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado). In arid environments, lack of perennial surface water, presence of sandy channels, and excessively salty soils limit the capability of some watersheds to support diverse and extensive riparian systems.

Noxious Weeds

Within the planning area, especially in the last 10 years, there has been an increase in noxious and invasive weeds, including salt cedar (tamarisk), halogeton, Russian thistle, Canada thistle, and cheatgrass. These problems are most evident in oil and gas production fields and other locations where native vegetation has been disturbed. Trends in rangeland health are managed by adjusting livestock, recreation, wild horse, and wildlife usage, as well as by controlled burns, brush beatings, and weed control. These actions manipulate plant composition with the goal of maintaining desirable plant species and communities that, on average, represent mid- to upper seral stages of development. Weed treatments and other efforts, such as cooperative agreements with local agencies, have helped reduce and prevent the spread of weeds in localized areas.

Trends on National Forest System Lands

Routt National Forest

Sagebrush dominated areas of GRSG habitat on the National Forest has undergone a significant transition over the last 60 years, from the targeted spraying of sagebrush to reduce its presence and promote grass production to a focus on restoration of sagebrush habitats in these historically impacted areas. Many acres of big sagebrush were sprayed from the late 1950s through the early 1980s to remove or thin sagebrush stands, intended to increase forage production for livestock. Virtually all of California Park was consistently sprayed from the early 1950s to the early 1990s to control the presence of Wyethia (mule's ears), some populations of which increased after sagebrush-control efforts of that same time. Tarweed infested and greatly increased in many areas of the California Park after the treatments for reduction of mule's ears. Tarweed has had a significant effect on amounts of native grass species there since it is an allelopathic plant that releases inhibitory chemicals that negatively affect the growth and development of neighboring plants. This resulted in areas dominated by bare ground with little value to wildlife or domestic grazing animals. The Forest Service has been involved in active restoration of these degraded areas of GH in the California Park area beginning around 2000 and continuing to present. The active restoration has mostly focused on re-seeding, planting and resting degraded areas. With an end result of an improving condition of GH in the California Park area. The rest of the GRSG habitat on the Routt National Forest has had a fairly stable vegetation condition and is in a mid to late seral condition in the sage-brush type.

3.5.3 References

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3.6 WILDLAND FIRE ECOLOGY AND MANAGEMENT

Fire is an inherent component of ecosystems and historically has had an important role in promoting plant succession and the development of plant community characteristics. Control of fires and other land use practices during the last century has changed plant communities by altering the frequency, size, and severity of wildfires.

BLM and Forest Service management practices include the control of wildfires in some areas, the use of fire through prescribed burning or the management of wildfires in order to meet land management goals, and the treatment of vegetation so that fires are more controllable in areas where values at risk are higher. Wildland fire management on BLM-administered and National Forest System lands is guided by a Fire Management Plan that considers the three elements mentioned above, as well as firefighter and public safety and cost effectiveness.

The two types of wildland fire are unplanned ignitions and planned ignitions (prescribed fire). Wildfire describes unplanned ignitions or prescribed fires that are declared wildfires (2009 Guidance for Implementation of Federal Wildland Fire Management Policy). Wildland fires occur from natural causes, such as lightning, or are caused by humans either accidentally or with the intent to cause damage. Prescribed fire is used in a controlled manner under a specific prescription and planned effort for beneficial purposes such as reducing hazardous fuel accumulation. Wildland fires are sometimes managed to achieve resource objectives.

Fire may be used to maintain or increase age class diversity within vegetation communities (e.g., big sagebrush/grassland); rejuvenate fire-dependent vegetation communities (e.g., aspen); maintain or increase vegetation productivity, nutrient content, and palatability; and maintain or improve wildlife habitat, rangeland, and watershed condition. Fire is also considered a management tool for timber slash disposal, seedbed preparation, hazardous fuel reduction, disease or insect control, grazing management, thinning, or species manipulation in support of forest management objectives. The full range of fire management activities can be used to help achieve ecosystem stability, including its interrelated ecological, economic, and social components.

3.6.1 Existing Conditions

Conditions of the Planning Area

Fire plays a critical role in shaping vegetative characteristics throughout the planning area. Fire suppression practices of the twentieth century have pushed some ecosystems outside their historic range of variability due to increased fuel accumulations, higher densities of trees and shrubs, and increased ladder fuels. As a result, these areas are prone to higher-intensity wildfires than historically experienced.

Fire regimes describe fire frequency (average number of years between fires) and fire severity (effect of the fire on the dominant overstory vegetation—low, mixed, or stand replacement). These regimes represent fire intervals prior to Euro-American settlement and are calculated and classified by analyzing natural vegetation, known fire cycles, and fire history data. Fire regime condition class (FRCC) indicates the degree of departure from the historic fire regime (Hann and Bunnell 2001) (**Table 3.25**).

Fires within the planning area are both naturally occurring and are used as a management tool. Naturally occurring fires are widely distributed in terms of frequency and severity. While regional and annual variations may occur, the fire season for GRSG habitat within the planning area normally extends from late April to early November. The most critical fire conditions are often present from mid-June until late summer, when monsoonal moisture pushes into the area, and again from late August through October, before season-ending winter weather arrives. The highest potential for human-caused wildfire is during the September to October hunting season.

Table 3.25
Fire Regime Condition Classes

FRCC	Attributes
Condition Class 1	Fire regimes are within or near an historical range. The risk of losing key ecosystem components is low. Fire frequencies have departed from historical frequencies by no more than one return interval. Vegetation attributes (species composition and structure) are intact and functioning within an historical range.
Condition Class 2	Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components has increased to moderate. Fire frequencies have departed (either increased or decreased) from historical frequencies by more than one return interval. This results in moderate changes to one or more of the following: fire size, frequency, intensity, severity, or landscape patterns. Vegetation attributes have been moderately altered from their historical range.
Condition Class 3	Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, frequency, intensity, severity, or landscape patterns. Vegetation attributes have been significantly altered from their historical range.

Source: Interagency FRCC Guidebook Version 3.0, September 2010

Table 3.26 and **Table 3.27** display data compiled in a baseline environmental report produced by the US Geological Survey and the BLM (Manier et al. 2013). This information provides a relatively coarse estimate of acres of wildland fire in GRSG habitat within the planning area. In each table, acres are presented by surface management agency and their presence within GH and PH in the planning area.

Table 3.26
Acres of Wildland Fire within GRSG Habitat in the Planning Area

Management Agency	Total Acres [1]	Acres within GH	Acres within PH
BLM	11,000	5,800	5,200
Forest Service	0	0	0
Tribal and Other Federal	2,000	1,900	100
Private	5,200	1,100	4,100
State	1,000	300	700
Other	0	0	0

Source: Manier et al. 2013
[1] Acres calculated from wildland fires occurring between 2000 and 2012

Table 3.27
Acres with High Probability for Wildland Fire within GRSG Habitat in the Planning Area

Surface Management Agency	Total Acres with High Probability for Wildland Fire [1]	Acres within GH	Acres within PH
BLM	352,600	177,300	175,300
Forest Service	200	200	0
Tribal and Other Federal	2,600	1,700	900
Private	410,900	169,300	241,600
State	31,600	12,600	19,000
Other	9,700	1,300	8,400

Source: Manier et al. 2013
[1] Derived from Forest Service Fire Simulator burn data

Conditions on BLM-Administered Lands

Fire Regime Condition Class

While the fire regime of a particular area is not likely to change except in the very long term, the condition class can be changed through fire management and other vegetation management actions. Extreme departure from the historic fire regime results in changes to one or more of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency,

severity, and pattern; and other associated disturbances (e.g., insect and disease mortality, grazing, and drought).

More recently, in some parts of the planning area (e.g., GJFO) the combination of wildfire suppression and changing land use patterns has altered the natural cycle and role of fire. Suppression actions have resulted in large, unnatural fuel loads that are continuous across the landscape. Wildland fires burn with greater intensities and spread more rapidly, consuming more acres than in the past under these altered landscape conditions.

Table 3.28 summarizes the current condition class of all BLM-administered lands within GRSG habitat in the planning area.

Table 3.28
Acres by Fire Regime Condition Class within GRSG Habitat on BLM-Administered Lands

FRCC	CRVFO	GJFO	KFO	LSFO	WRFO	Total
1	39,900	16,100	163,200	25,100	0	244,300
2	75,900	38,900	646,300	2,179,200	1,201,200	4,141,500
3	8,900	4,100	82,900	87,200	475,300	658,400

Source: BLM 2013

Fire Occurrence

Lightning fires have traditionally been an integral factor in the formation and arrangement of vegetation types in GRSG habitat. The primary fuel type within GRSG habitat in most of the planning area is sagebrush and grass, with some areas supporting a low density of pinyon-juniper and pockets of mountain shrub (see **Section 3.5**, Vegetation, for further descriptions).

Table 3.29 displays the size and number of fires by size class in GRSG habitat and within a 1-mile buffer of this habitat for that timeframe on BLM-administered lands. **Table 3.30** displays the size and number of fires by size class in the GRSG PH and within a 1-mile buffer of this habitat for that timeframe on BLM-administered lands. These tables show that the majority of large fires occur in PH. This is largely a result of greater fuel continuity in the PH that allows fires to spread unchecked by natural barriers.

Table 3.29
Fire Occurrence within GRSG Habitat on BLM-Administered Lands (1992–2011)

Size Class	Number of Fires	Acres Burned	Average Fire Size
A: 0 to 0.25 acres	1,809	200	0.1
B: 0.26 to 9.9 acres	507	1,000	1.7
C: 10 to 99 acres	151	5,200	40
D: 100 to 299 acres	52	8,800	130
E: 300 to 999 acres	40	23,700	430
F: 1,000 to 4,999 acres	23	53,400	910

Table 3.29
Fire Occurrence within GRSG Habitat on BLM-Administered Lands (1992–2011)

Size Class	Number of Fires	Acres Burned	Average Fire Size
G: 5,000+ acres	7	82,300	4,000
Total	**2,589**	**174,600**	**5,510**

Source: Wildland Fire Management Information 1992 to 2012

Table 3.30
Fire Occurrence within PH on BLM-Administered Lands (1992–2011)

Size Class	Number of Fires	Acres Burned	Average Fire Size
A: 0 to 0.25 acres	706	80	0.1
B: 0.26 to 9.9 acres	254	500	1.5
C: 10 to 99 acres	90	3,100	30
D: 100 to 299 acres	32	5,600	130
E: 300 to 999 acres	30	17,400	310
F: 1,000 to 4,999 acres	14	32,500	780
G: 5,000+ acres	7	82,300	4,000
Total	**1,133**	**141,480**	**5,250**

Source: Wildland Fire Management Information 1992 to 2012

Conditions on National Forest System Lands

Routt National Forest

The planning area encompasses three Routt National Forest Ranger Districts, including Hahns Peak/Bears Ears, Yampa, and Parks. Vegetation communities that are susceptible to fire include sagebrush, shrubland, and grassland communities at the lower elevations; mixed mountain shrub, aspen, and conifer stands at mid-elevations; and subalpine fir and Engelmann spruce and the highest elevations. In mixed conifer stands, fuel sources include dead and down, as well as standing timber with heavy fuel loading, due to past management actions, drought, insect and disease. Although aspen are not as susceptible to fire as are conifers, they will burn and carry fire during the late fall and during drought conditions.

Fuels management activity in the planning area is shown in **Table 3.31**.

Table 3.31
Acres of Harvest Activity and Fuels Reduction in GRSG Habitat on the Routt National Forest

Activity Description	Year	GRSG Habitat Type	Acres
Pile Burning	1998	General	400
Stand Clearcut	1992	General	<0.5

Table 3.31
Acres of Harvest Activity and Fuels Reduction in GRSG Habitat on the Routt National Forest

Activity Description	Year	GRSG Habitat Type	Acres
Shelterwood Preparatory Cut	1991	General	4
Shelterwood Preparatory Cut	1992	General	5

Source: Forest Service 2012 Forest Activities Database (FACTS)

Most fires on the Routt National Forest occur in July and August, after the wetter months of May and June. Some fires will occur in the early spring (pre green-up) and in the fall after curing. Green-up begins in spring (April), curing in mid-summer (July to August), and freezing temperatures may be expected in early fall (late September). Continuous snow cover is generally 5 months in duration.

The primary fire cause is lightning, and many of these fires remain small because most lighting storms are accompanied by rain. Large fires can occur during dry thunderstorm events with wind. Most of these fires are single burning period events in the sagebrush/grass fuel type, but can be longer if they occur in or burn into timber.

Fire occurrence statistics for wildland fire are included in **Table 3.32**.

Table 3.32
Fire Starts in GRSG Habitat on the Routt National Forest (1970–2012)

Ranger District	Location	Fire Year	Fire Size (Acres)	Start Date	GRSG Habitat Type
Hahns Peak/ Bears Ears	California Park	1970	181	701002	GH
Hahns Peak/ Bears Ears	California Park	1976	0.1	761031	GH
Parks	Pinkham Area (south of Snowy Range)	1980	0.1	800828	PH
Hahns Peak/ Bears Ears	California Park	1980	0.1	800821	GH
Hahns Peak/ Bears Ears	California Park	1994	1	940612	GH

Source: Routt National Forest 2013
Fire starts from the FireHistoryPoint Spatial Layer that intersects GRSG habitat on the Routt National Forest. No polygons from the FireHistoryPolygon layer intersect GRSG habitat.

3.6.2 Trends

Trends on BLM-Administered Lands

Over the past century, the combination of wildfire suppression and changing land use patterns has altered the natural cycle and role of fire. Suppression actions have resulted in large, unnatural fuel loads that are continuous across the landscape. Due to the decrease in fire-return interval, there has been an

increase in fuel loading across the landscape. Wildland fires burn with greater intensities and spread more rapidly, consuming more acres than in the past.

The main structural change in what were historically sagebrush shrub lands is the encroachment of pinyon and juniper, other conifers, and other woody shrubs into sagebrush. Over time the encroachment will increase the fuels loading, causing an upward shift in fire behavior. This leads to an increase resistance to control, thereby decreasing firefighting effectiveness.

Sagebrush within this habitat is also transitioning to older age class that is more decadent (mature shrubs where 25 percent or more of plant is dead) with high fuels loading that can support large, severe wildfires. These increased fuels loadings are leading to higher severity fires that require more post-fire rehabilitation.

Human activities and management practices have also resulted in the spread of nonnative species. Incursion of nonnative annual grasses, primarily cheatgrass, can increase wildfire risk. This is primarily an issue in the sagebrush, grass, and pinyon-juniper fuel types. Changing climate conditions may also impact the spread of these species.

Some portions of the planning area are adjacent to timber stands in poor health with mortality from bark beetle and other insects and diseases. There is high fire potential in these stands. However, only a small portion of the BLM-administered lands within GRSG habitat in the planning area is in or near these areas.

The majority of fires within the planning area over the past 20 years have been caused by lightning. Percentage of fires caused by humans has averaged 16 percent (**Table 3.33**).

Table 3.33
Causes of Fire in Planning Area GRSG Habitat

	CRVFO	GJFO	KFO	LSFO	WRFO	Planning Area Average
Human Caused	16%	8%	43%	6%	9%	16%

Source: BLM Wildland Fire Management Information Data, NPS Wildland Fire Management Information Data, KCFAST Data 1992 through 2012

It should be noted that acreage burned may not correlate with percentage of fire. For example, in the LSFO, only 6 percent of fires were human caused, but those resulted in more than 25 percent of total acres burned in the last 20 years. As human activity increases, there is more potential for human-caused fires. The location of GRSG habitat in remote areas can lead to long response times for ground-based fire response.

Trends on National Forest System Lands

Routt National Forest

In the last 43 years, there has been very little fire activity in PH or GH on the Routt National Forest with the only noticeable fire burning 200 acres in 1970. In the 42 years following, there have been occasional starts that are most often limited to less than 1 acre. The wildfire trend on the Routt National Forest is stable with no significant fires occurring for several decades.

The mountain pine beetle epidemic has resulted in a significant fire hazard on the Routt National Forest that could result in impacting adjacent GRSG habitat if a wind-driven wildfire were to start in these areas of pine mortality and spread to adjacent areas.

3.6.3 References

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3.7 MINERALS (LEASABLE)

Leasable minerals, as defined by the Mineral Leasing Act (February 1920) and 43 CFR 3000-3599 (1990), include the leasable fluid and leasable solid minerals. Leasable fluid minerals present in Northwestern Colorado include oil, natural gas (including methane, coalbed natural gas, and carbon dioxide), and geothermal resources. Leasable solid minerals in Northwestern Colorado include coal, oil shale, sodium, and uranium (which can be either a leasable or locatable mineral).

Fluid Leasable Minerals

The process of leasing and developing federal fluid mineral resources is described at 43 CFR Part 3100. Oil and gas leases are periodically made available for sale through a competitive bidding process within each BLM state office. Provisions of the lease documents in relation to surface and subsurface resources and resource uses are dictated by the RMPs in use at the time for each field office within which leases are offered. In general, these RMPs specify types of restrictions on fluid mineral leasing within each field office boundary. These include:

- Management of lands closed to leasing for fluid minerals
- Management of lands available for leasing for fluid minerals subject to differing levels of protective stipulations attached to the leases
    1. NSO—Prohibits any occupancy or other use of the surface that results in ground-disturbing activities.. Use of occupancy of the land surface for fluid mineral exploration or development would be prohibited to protect identified resource values.
    2. TL—Prohibits occupancy or other use of the surface during a specified season or other period; For oil and gas, applies to construction, drilling, and completion activities, including road travel in support of such purposes, but does not apply to production and maintenance
    3. CSU—Allows the BLM and Forest Service to apply special requirements, such as those related to location, design, and reclamation/monitoring of proposed facilities.
    4. Standard stipulations—Sets general parameters for development of a lease.

Most but not all stipulations attached to leases at the time of sale have a provision, specified in the individual RMPs, for granting exceptions, modifications, or waivers. An exception is a one-time exemption from a stipulation, such as allowing drilling through a big game winter range TL. A modification is a permanent change in the specifics of a stipulation, such as changing the dates of the big game winter range TL or changing the areas mapped as winter range based on research conducted by CPW. A waiver is a permanent dissolution of a stipulation, such as eliminating protections for a particular species when it is removed from the federal list of threatened or endangered species.

In addition to the management and stipulations described above, federal regulations give the BLM and Forest Service the authority to ensure that oil and gas activities are conducted in a manner that minimizes impacts on other resources and use and protects human health and safety. These protections are

accomplished through the BLM and Forest Service's inspection and enforcement program, as well as through the attachment of COAs to each project. This is in conjunction with the NEPA process and during review of individual applications for permit to drill and of Sundry Notices submitted in conjunction with proposed changes in well pad design and operation. These COAs typically include BMPs and other required mitigation measures, including attachment of TLs up to 60 days in duration.

Oil and Gas

Colorado is the seventh largest gas producer, has the third largest gas reserves, and has the largest reserves of coalbed natural gas in the nation. Oil production from Colorado accounts for about one percent of the annual US total. Northwest Colorado has three major oil and gas producing basins in the planning area: Piceance, Sand Wash and North Park basins. Carbon dioxide is produced in Northwest Colorado in the North Park basin.

Coalbed Natural Gas

Coalbed natural gas is methane gas that can be extracted from coal seams. Water permeates the coalbed and the pressure causes the methane to be absorbed into the grain surfaces of the coal. To produce this resource, the water must first be removed, which causes a pressure reduction that allows methane to be desorbed from the coal and flow into the well bore. Since most coalbed natural gas is associated with coals at shallow depth, exploration, well drilling, completion, and production costs are considerably lower than for conventional deep gas production.

Geothermal Resources

Geothermal resources are a source of energy that uses the natural heat of the Earth's interior, carried to the surface by steam or hot water. Geothermal resources have been used in Colorado since the early 1900s. Although geothermal potential exists in the planning area, there has been no interest in commercial development. Therefore, geothermal resources are not discussed further in this section.

Solid Leasable Minerals

Coal

The process of leasing and developing federal coal resources is described in the federal regulations at 43 CFR, Part 3400. Coal leases are made available for sale through a competitive bidding process in each BLM state office. Provisions of the lease documents in relation to surface and subsurface resources and resource uses are dictated by the then-current RMPs for each field office within which leases are offered. In general, these RMPs specify types of restrictions on coal leasing within each field office boundary as follows:

- Identification of lands with potentially developable coal resources

- Determination of lands found suitable for coal leasing using the 20 criteria listed in Section 522 of the Surface Mining Control and Reclamation Act
- For lands found suitable for coal leasing, an evaluation of whether those lands are acceptable or unacceptable for further consideration for coal leasing, including an analysis of multiple use conflicts

Coal leases are subject to readjustment of their stipulations. The first readjustment would occur 20 years after the initial date of issuance and then every 10 years thereafter. For lands found suitable for leasing, analysis of acceptability for leasing would consider the protective measures identified in the then-current RMP. Depending on the particular field office, these protections may include design, reclamation, and mitigation of proposed measures analogous to oil and gas lease stipulations, including the following or their equivalent:

- NSO—Prohibits any occupancy or other use of the surface that results in ground-disturbing activities with other than a temporary impact
- TL—Prohibits occupancy or other use of the surface during a specified season or other period
- CSU—Specifies that the BLM may require special design or reclamation standards to avoid or minimize significant adverse impacts on certain resources and resource use

Most but not all protections are attached to leases at the time of sale, and the protections may identify exception criteria for granting temporary or permanent relief from a specific measure. In addition, federal regulations give the BLM the authority to ensure that coal is developed in a manner that minimizes impacts on other resources and use and is protective of human health and safety. These protections are accomplished through the attachment of COAs to each project in conjunction with the NEPA process and during review of individual permit application.

In 2011, Colorado was ranked 9th in US coal production. There are currently three surface mines and eight underground mines located in Colorado. These mines collectively produce about 27 million tons of coal annually. Colorado coal is mostly bituminous and sub-bituminous, and characterized as a high heat content, low sulfur, low to medium ash, and low mercury coal. There are two surface mines and three underground mines in the Northwest Colorado District Planning area, Trapper, Colowyo, Deserado, and Foidel Creek (Twentymile), and Sage Creek.

BLM-administered lands are acceptable for coal leasing only after the lands have been evaluated through the BLM's multiple-use planning process (CFR 3420.1-4). In areas where development of coal resources may conflict with the

protection and management of other resources or land uses, the BLM may identify mitigating measures which may appear on leases as either stipulations or operational restrictions.

Oil Shale
Oil shale is an organic-rich sedimentary rock consisting of calcareous shale with a large amount of organic material consisting of shale with a large amount of mixed organic compounds known as kerogen. Oil shale is prevalent in the western states of Colorado, Utah and Wyoming. The resource potential of these shales is estimated to be the equivalent of 1.5 to 1.8 trillion barrels of oil in place (Bartis et al. 2005 [from WRFO RMPA]). Resource potential within the Piceance Basin totals approximately 1.0 trillion barrels of oil in place (Smith 1980 [from WRFO RMPA]). Oil shale resources in the planning area are fully analyzed in the Oil Shale and Tar Sands Programmatic EIS (BLM 2013b).

Sodium
The Piceance Basin contains the world's largest and most economically significant nahcolite resource (naturally occurring sodium bicarbonate).

3.7.1 Existing Conditions

Conditions of the Planning Area

Fluid Leasable Minerals

Oil and Gas
Major Oil- and Gas-Producing Basins and Formations. There are three major oil and gas producing basins within the planning area, the Piceance, Sand Wash and the North Park Basins.

Piceance Basin – The Piceance Basin is a part of the greater Uinta-Piceance Basin, which extends into northwestern Colorado from northeastern Utah and southwestern Wyoming and currently has production in conventional gas, tight sands, shale gas and oil. The Piceance Basin is an elongated structural depression trending northwest - southeast located in western Colorado. The basin is more than 100 miles long and has an average width of over 60 miles, encompassing an area of approximately 7,110 square miles. The Piceance structural basin encompasses varying portions of Moffat, Rio Blanco, Garfield, Mesa, Pitkin, Delta, Gunnison, and Montrose counties. The Piceance basin contains six of the top one hundred natural gas reserves in the US one of the top one hundred oil reserves (Colorado Geological Survey – online).

Sand Wash Basin – The Sand Wash Basin is part of the Greater Green River Basin which extends into northwestern Colorado. The Sand Wash Basin covers approximately 5,600 square miles, primarily in Moffat and Routt counties. Coalbed natural gas resources in the Sand Wash Basin have been estimated at 101 trillion cubic feet, approximately 90 percent within the Williams Fork

formation. The economic viability of recovery of the gas is limited by the presence of large volumes of water in most coalbeds.

North Park Basin – The North Park Basin occupies approximately 2,250 square miles in north-central Colorado and includes oil and natural gas resources primarily in the form of coalbed natural gas, carbon dioxide, and recent interest in the resource potential of the Niobrara shale formation. See **Figure 3-7** in **Appendix A**, Figures.

Oil and Gas Potential. Potential for oil and gas development exists across the planning area and is described in detail in individual RFDS for each field office (BLM 2006a, 2007, 2008a, 2008b, 2008c, 2010b, 2012a).

Table 3.34 shows oil and gas potential in the range-wide planning area and where that potential exists compared to GRSG habitat.

Table 3.35 and **Table 3.36** display data compiled in a baseline environmental report produced by the US Geological Survey and BLM (Manier et al. 2013). In each table, acres are presented by surface management agency and their presence within GH and PH in the planning area. Also see **Figure 3-8** in **Appendix A**, Figures.

Table 3.34
Acres of Oil and Gas Potential on Planning Area GRSG Habitat

Habitat Type	Oil and Gas Development Potential (Acres)			
	High	Medium	Low	Total
Total Planning Area (All minerals)	7,168,400	1,609,200	5,113,800	13,891,400
Total Planning area (federal minerals) includes federal surface/federal minerals and fee surface/federal minerals	4,865,700	1,100,800	3,847,700	9,814,200
PH all minerals	1,649,800	231,900	396,000	2,277,700
PH federal minerals	937,100	115,400	237,500	1,290,000
ADH all minerals	2,918,100	417,800	584,700	3,920,600
ADH federal minerals	1,726,200	224,200	347,500	2,297,900

Source: BLM 2013a

Table 3.35
Acres Open and Closed to Oil and Gas Leasing within GRSG Habitat in the Planning Area

Surface Management Agency	Acres Closed to Oil and Gas Leasing			Acres Open to Oil and Gas Leasing		
	Total	GH	PH	Total	GH	PH
BLM	96,100	65,300	30,800	1,500,300	641,600	858,700
Forest Service	0	0	0	19,400	14,200	5,200
Tribal and Other Federal	1,300	0	1,300	39,700	16,400	23,300
Private	200	0	200	600,900	222,500	378,400

Table 3.35
Acres Open and Closed to Oil and Gas Leasing within GRSG Habitat in the Planning Area

Surface Management Agency	Acres Closed to Oil and Gas Leasing			Acres Open to Oil and Gas Leasing		
	Total	GH	PH	Total	GH	PH
State	300	0	300	50,100	13,300	36,800
Other	0	0	0	17,000	4,200	12,800

Source: Manier et al. 2013

Table 3.36
Acres of Oil and Gas Leases within GRSG Habitat in the Planning Area

Surface Management Agency	Total Acres	Acres within GH	Acres within PH
BLM	552,600	221,100	331,500
Forest Service	300	300	0
Tribal and Other Federal	200	0	200
Private	221,700	81,800	139,900
State	25,500	5,600	19,900
Other	1,500	700	800

Source: Manier et al. 2013

Carbon Dioxide

Currently within the planning area, a small amount of carbon dioxide (with condensate oil) is produced in the North and South McCallum fields within the KFO. A liquid carbon dioxide plant near the North McCallum headquarters facility buys carbon dioxide produced from the oil and gas lessee and ships it by truck to markets. The presence of recoverable CO2 is coincident with existing oil and gas in the KFO.

Solid Leasable Minerals

Oil Shale

Oil shale is found in the Green River Formation in Colorado, Wyoming and Utah including the planning area. The ROD for Oil Shale would make nearly 700,000 acres available in Colorado, Utah and Wyoming available for research and development of oil shale. In the planning area, there are currently two leases for research design and development within the WRFO. Neither of the oil shale research, development, and demonstration leases overlap PH.

Sodium

The Piceance Basin of northwestern Colorado and adjacent states contains the world's largest and most economically significant deposit of a nahcolite, an evaporite mineral consisting of naturally occurring sodium bicarbonate. Within the planning area, all of the sodium resources are found in the Parachute Creek Member of the Green River Formation. The sodium resource in the basin was estimated at 32 billion short tons (Dyni 1974) and 29 billion tons (Beard et al.

1974) The sodium resource exists solely within the WRFO within the planning area. See **Figure 3-9** in **Appendix A**, Figures.

Coal

Along with oil and gas, coal is an important energy resource being actively developed in the planning area. Colorado coal has the second highest quality (low impurity content) in the nation. Most of the Colorado coals are bituminous and subbituminous.

The largest coal resources and active mining in the range-wide planning area are in the LSFO, followed by the WRFO and GJFO. Although the in-place coal resources in the CRVFO area are estimated at approximately 1.6 billion tons, the potential for commercial development of this resource is very low. The Green River Coal Region, which occupies most of Moffat County and the western portion of Routt County, is the largest coal-producing region in the planning area. Coal production in Routt and Moffat Counties accounts for more than 30 percent (16.5 million tons) of the total coal produced in the State (Carroll 2004).

Table 3.37 shows active coal mines in the Northwest Colorado District.

Table 3.37
Active Coal Mines on BLM-Administered Lands

Mine Name	BLM Field Office	County	Coal Field	Formation	Mine Type	Annual Production (tons)
Colowyo	LSFO	Moffat	Danforth Hills	Williams Fork	Surface	2.3 million
Trapper	LSFO	Moffat	Yampa	Williams Fork	Surface	2 million
Twentymile	LSFO	Routt	Yampa	Williams Fork	Underground, Longwall	7.6 million
Sage Creek	LSFO	Routt	Yampa	Williams Fork	Underground, Longwall	N/A
Deserado Mine	WRFO	Rio Blanco	White River Field	Williams Fork	Underground	4.9 million

Source: BLM Mineral Potential Reports for WRFO and LSFO

Conditions on BLM-Administered Lands

The following subsections describe existing conditions on BLM-administered lands within the range-wide planning area and provide information on acres within the decision area that are open or closed to leasing and, if open, the acres of various lease stipulations that would apply. The descriptions address existing conditions relative to leasable fluid and solid minerals in relation to mapped PH and ADH for the GRSG. Detailed information on existing conditions of leasable minerals and coal are provided in Chapter 3 and supporting appendices in each BLM field office's RMP.

The BLM manages 2,472,900 acres of federal mineral estate (1,744,100 acres of BLM-administered land with federal minerals and 728,800 acres of private or state surface with federal minerals, also known as "split-estate") in the range-wide planning area. Within PH, the BLM manages 1,290,000 acres of federal minerals identified as having potential (56 percent). **Table 3.38** breaks down federal mineral estate by surface ownership.

Table 3.38
Mineral Status in the Planning Area

Land Status	Acres
BLM/Federal Minerals	4,828,700
Private Surface/Federal Minerals	2,068,200
Forest Service/Federal Minerals	4,533,900
State/Federal Minerals	44,400
National Park Service/Federal Minerals	271,300
National Recreation Area/Federal Minerals	72,800
National Wildlife Refuge/Federal Minerals	32,100
State Forest/Federal Minerals	5,500
Department of Defense	200
Total	**11,857,100**

Source: BLM 2013a

Fluid Leasable Minerals

Oil and Gas

Oil and gas resources on BLM-administered or National Forest System lands in the planning area by GRSG habitat are described in the tables.

Table 3.39 summarizes this information for the five BLM field offices within the planning area. Approximately 1,094,000 acres of federal mineral estate are leased within the decision area (**Table 3.40**). The table also provides information on the amount of each category within PH and GH for the GRSG. Note that GH does not include habitat connectors. ADH areas, including PH and GH plus habitat connectors, total nearly 1.1 million acres of leased and 764,200 acres of unleased lands with high potential for oil and gas.

Table 3.41 breaks down the acres within the decision area by whether they are open or closed to leasing and what stipulations are applied to leases.

Table 3.39
Acres of Federal Mineral Estate by PH and GH—Fluid Leasable Minerals

Field Office	BLM Surface		Other Surface		Leased		Unleased—High Potential for Oil and Gas	
	PH	GH	PH	GH	PH	GH	PH	GH
CRVFO	22,800	16,200	17,400	10,300	0	29,800	0	0
GJFO	5,500	8,900	4,100	4,500	3,900	8,400	1,600	500
KFO	185,200	18,300	115,900	25,500	118,100	6,200	52,200	800

Table 3.39
Acres of Federal Mineral Estate by PH and GH—Fluid Leasable Minerals

Field Office	BLM Surface		Other Surface		Leased		Unleased—High Potential for Oil and Gas	
	PH	GH	PH	GH	PH	GH	PH	GH
LSFO	554,000	239,700	463,900	134,100	358,900	197,700	333,700	187,400
WRFO	121,900	175,300	75,800	81,600	135,100	154,400	59,500	73,200
TOTAL	**889,400**	**458,400**	**677,100**	**256,000**	**616,000**	**396,500**	**447,000**	**261,900**

Table 3.40
Acres of Leased and Unleased Federal Mineral Estate in GRSG Habitat—Fluid Leasable Minerals

Colorado Management Zone	Currently Leased		Unleased - High Potential - Federal Minerals		Unleased - Medium Potential - Federal Minerals	
	PH	GH	PH	GH	PH	GH
1	0	0	0	0	0	0
2	34,300	10,200	6,800	1,300	4,700	1,400
3	78,700	94,500	83,000	74,400	1,000	34,200
4	48,000	8,300	66,600	32,800	200	0
5	80,700	4,100	73,700	4,400	0	0
6	20,600	23,600	30,800	21,800	0	3,000
7	26,200	2,300	8,000	20,200	0	500
8	10,700	5,100	16,300	7,400	0	900
9	67,800	63,000	42,900	25,500	53,200	11,800
10	55,100	65,000	1,400	51,200	0	1,500
11	108,500	1,700	52,200	800	5,600	200
12	0	0			0	0
13	9,700	4,500			200	5,100
14	0	1,000	6,100	300	34,500	15,900
15	0	0	400	1,400	400	5,900
16	7,600	3,700	70	0	0	0
17	69,800	102,400	28,500	10,400	2,400	2,000
Colorado MZs 18-21 represent linkage/connectivity habitat and do not contain PH but would be managed as GH. linkage/connectivity habitat are represented in ADH						
	Currently Leased		Unleased – High Potential Federal Minerals		Unleased – Medium Potential Federal Minerals	
18	11,400		6,700		0	
19	69,300		44,600		300	
20	1,700		3,900		200	
21	4,800		0		0	

Table 3.41
Acres of Oil and Gas Leasing Categories in Decision Area PH and GH

Colorado Management Zone	Field Office or National Forest	Federal Minerals	Unleased Federal Minerals	Closed to Leasing	NSO	CSU	ROW Exclusion BLM Surface	ROW Avoidance BLM Surface	TL	Total Acres in Zone
1	LSFO	12,700	9,000	3,700	400	2,600	1,100	0	1,100	15,200
2	LSFO	137,800	62,900	30,800	9,100	39,500	9,600	15,900	88,600	172,800
3	LSFO	487,800	270,700	51,900	5,900	130,200	600	20,700	266,400	547,400
4	LSFO	155,500	99,600	0	6,000	28,700	0	0	118,000	244,400
5	LSFO	162,400	78,100	0	5,600	20,100	0	0	75,200	258,300
6	LSFO	99,400	55,600	1,200	11,000	64,200	0	0	95,400	307,900
7	LSFO	47,800	19,500	0	2,400	10,500	0	0	27,400	71,600
7	Routt National Forest	9,300	9,300	0	500	3,700	0	0	7,100	11,700
8	LSFO	40,400	24,700	0	4,400	30,900	0	0	23,300	252,300
9	WRFO	32,000	9,500	0	1,000	6,900	50	300	24,500	50,800
9	LSFO	236,100	125,500	4,500	36,100	106,700	1,400	1,700	181,900	372,400
10	WRFO	239,200	116,000	4,700	46,100	160,700	11,000	24,800	217,600	282,000
10	LSFO	1,500	300	0	0	30	0	0	300	3,700
11	KFO	214,400	107,300	60	25,800	62,900	0	0	142,400	412,000
11	Routt National Forest	800	800	0	200	200	0	0	800	800
12	KFO	11,800	11,800	0	0	2,600	0	0	11,700	18,300
13	Routt National Forest	1,000	1,000	0	100	100	0	0	400	1,000
13	KFO	123,100	109,000	0	11,100	30,000	0	0	110,000	268,700
14	CRVFO	69,000	65,400	2,600	38,000	64,600	0	0	40,400	97,300
14	Routt National Forest	900	800	0	200	60	0	0	200	800
14	LSFO	9,900	9,900	0	500	2,900	0	0	3,300	50,200

Table 3.41
Acres of Oil and Gas Leasing Categories in Decision Area PH and GH

Colorado Management Zone	Field Office or National Forest	Federal Minerals	Unleased Federal Minerals	Closed to Leasing	NSO	CSU	ROW Exclusion BLM Surface	ROW Avoidance BLM Surface	TL	Total Acres in Zone
15	WRFO	12,100	12,100	0	5,700	5,400	0	1,000	12,000	47,600
16	WRFO	11,300	70	0	1,100	5,800	0	600	6,900	11,300
17	Roan Plateau	29,500	200	0	17,800	24,100	0	60	7,700	36,200
17	WRFO	160,300	30,100	0	12,000	74,900	300	6,300	86,200	228,000
17	GJFO	23,300	11,000	0	3,800	1,400	60	4,100	4,200	78,600
17	CRVFO	300	0	0	200	300	0	20	300	10,800
18	WRFO	18,000	6,700	0	12,400	14,400	0	7,600	9,600	19,200
19	Roan Plateau	2,100	1,500	0	1,900	1,900	0	10	1,100	3,900
19	WRFO	111,900	42,900	800	36,700	72,800	50	7,500	98,800	219,700
19	CRVFO	700	500	0	900	700	0	0	80	1,600
19	LSFO	10	10	0	0	0	0	0	0	50
20	LSFO	5,900	4,200	0	1,200	5,100	0	0	2,900	40,600
21	KFO	4,800	20	0	0	1,400	0	0	3,400	10,700
	Total	**2,473,010**	**1,296,000**	**100,260**	**298,100**	**976,290**	**24,160**	**90,590**	**1,669,180**	**4,147,850**

Carbon Dioxide

Carbon Dioxide is produced in the KFO from the McCallum and McCallum South Fields. Both fields are currently producing and lie entirely within PH.

Solid Leasable Minerals

Oil Shale

Existing research, development and demonstration leases exist within the planning area in the WRFO but do not overlap with mapped GRSG habitat. For additional information, see the Oil Shale and Tar Sands Programmatic EIS (BLM 2013b).

Sodium

The WRFO is the only area of the planning area currently producing commercial quantities of sodium. There are presently eight sodium leases comprising approximately 16,600 acres on BLM-administered land in northwestern Colorado (BLM 2006b). Solution mining operations have been constructed on two of these leases in Rio Blanco County. One solution mining operation was closed in 2004 due to market issues. The other mine has been operating since 1991 and produces approximately 90,000 to 100,000 tons of sodium bicarbonate annually. None of the existing operations or any existing undeveloped leases are present within mapped PH or GH for the GRSG. However, a total of 500 acres of PH and 600 acres of GH are open to non-energy mineral leasing, including sodium.

Coal

Federal coal resources are administered by the BLM, regardless of surface estate ownership, through lease sales under the Mineral Leasing Act.

A total of 2,473,000 acres of federal mineral estate underlie federal, state, and private lands within the decision area's GRSG habitat. Of this area, 1,744,100 acres are associated with BLM-administered surface lands. Current federal coal leases comprise 11,000 acres of GRSG habitat, or 4 percent of the total federal mineral estate in the planning area. Unleased areas of federal mineral estate found to be suitable for coal leasing or managed as open for leasing comprise 518,600 acres of GRSG habitat, or 21 percent of the total federal mineral estate within the planning area.

There are existing coal mines in the LSFO and WRFO within GRSG habitat. **Table 3.42** displays data compiled in a baseline environmental report produced by the US Geological Survey and the BLM (Manier et al. 2013). Acres are presented by surface management agency and their presence within GH and PH in the planning area.

Table 3.43 shows acres of existing and leases and acres acceptable for coal leasing in relation to PH and GH.

Table 3.42
Coal Potential within GRSG Habitat in the Planning Area

Surface Management Agency	Total Acres	Acres within GH	Acres within PH
BLM	1,067,900	434,600	633,300
Forest Service	10,500	10,400	100
Tribal and Other Federal	22,800	0	22,800
Private	1,186,400	400,500	785,900
State	162,200	43,300	118,900
Other	17,300	4,000	13,300

Source: Manier et al. 2013

Table 3.43
Acres of Federal Mineral Estate in GRSG Habitat—Coal

Field Office	BLM Surface		Other Surface		Currently Leased for Coal		Unleased—Suitable or Open for Coal Leasing	
	PH	GH	PH	GH	PH	GH	PH	GH
CRVFO	22,800	16,200	17,400	10,300	0	0	0	0
GJFO	5,500	8,900	4,100	4,500	0	0	0	700
KFO	185,200	18,300	115,900	25,500	0	0	45,000	0
LSFO	554,000	239,700	463,900	134,100	1,600	4,100	219,200	225,600
WRFO	121,900	175,300	75,800	81,600	0	5,300	10	28,100
Total	**889,400**	**458,400**	**677,100**	**256,000**	**1,600**	**9,400**	**264,210**	**254,400**

Conditions on National Forest System Lands

Limited development of leasable minerals, primarily oil and gas, has occurred on National Forest System lands within the planning area. Mineral resource use on the Routt National Forest has historically been widespread but sporadic. Mineral activity is presently concentrated in a few scattered areas. Activity has fluctuated with demand, and current low prices for many minerals make exploration and development uneconomical.

The principal leasable minerals in the areas that include GRSG habitat on the Routt National Forest are oil and gas, coalbed natural gas, and coal.

Fluid Leasable Minerals

Oil and Gas

Three large areas in the Routt National Forest have moderate potential, and five large areas have low potential for further conventional discoveries of oil and gas.

There are currently three oil and gas wells in the Routt National Forest, all of which are located on Yampa District. None of the wells are located in or near PH or GH. Also, there are three existing non-producing leases on the Routt National Forest, but they are entirely covered with an NSO stipulation.

Coalbed Natural Gas

One small area in the northwest part of the Routt National Forest where there is some GH in the Elkhead Mountains has moderate potential for coalbed natural gas.

Solid Leasable Minerals

Coal

There are no existing leases for coal on the Routt National Forest within GRSG habitat.

3.7.2 Trends

Trends on BLM-Administered Lands

Fluid Leasable Minerals

Oil and Gas

CRVFO. Drilling on federal mineral estate in the CRVFO is expected to continue and expand as industry continues to define reservoir boundaries and spacing limitations. Infill drilling and stepout drilling are anticipated to be the major portion of future activity. However, other technically recoverable resources are of interest to industry. These interests include coalbed natural gas plays, the Niobrara play, and the Mancos Shale resources, the latter two at greater depths than the primary Mesaverde and Wasatch plays and largely developable with horizontal drilling. It is estimated that 99 percent of the drilling will take place in the area identified as high potential for the presence of oil and gas resources. Approximately 1 percent of future drilling will occur in areas of medium and low potential, and no drilling is predicted in the areas identified as no known potential (BLM 2008a). The areas within the CRVFO which contain GRSG habitat are identified as low potential.

GJFO. Recently there has been an increasing interest in horizontal drilling in the Mancos/Mowry shale play. Approximately 50 percent of the drilling proposals received by the GJFO since 2010 have been for horizontal wells targeting the shale formation. GRSG habitat in the GJFO has moderate to high potential identified for shale gas. Mineral lessees indicate there will be little interest in development of conventional or shale gas at current prices. However, exploration is expected to continue.

KFO. According to oil and gas operators, exploratory drilling in the Niobrara shales could continue for the next 5 to 20 years if commercial production is realized. All of the high potential areas identified within the KFO overlap PH for GRSG.

LSFO. Recent trends in the LSFO toward increased numbers of wells per well pad, made possible by advances in directional drilling, are expected to continue.

The majority of the LSFO is identified as high potential for oil and gas and more than 1 million acres of federal mineral estate managed by the LSFO is identified as PH or GH for GRSG.

WRFO. The majority of the future wells would be constructed for gas production from the low permeability Mesaverde Group. New development would likely occur based on exploratory drilling programs now being implemented within the WRFO. A majority of the WRFO is identified as high potential for oil and gas and more than 300,000 acres of federal mineral estate managed by the WRFO is identified as PH or GH for GRSG.

Coalbed Natural Gas

Future leasing trends in the KFO will likely include blocking up producing area extensions and all of the area underlain by coalbeds with coalbed natural gas potential. Further coalbed natural gas development is likely in the KFO based upon the continued testing of the existing and permitted wells; the availability of the existing limited pipeline; and the construction of new, and increased, pipeline capacity. If positive results continue, and methods for allowable disposal of excess water are developed, considerable coalbed natural gas activity may occur over the 250,000 acres of subsurface coal in northeast North Park.

Based on current conditions, coalbed natural gas well spacing in the LSFO would be 80 acres during the dewatering stage and 160 acres during production phase. The spacing requirements might change as additional data become available to evaluate the appropriate spacing requirement to capture the maximum efficiency in gas production.

Carbon Dioxide

Carbon dioxide production occurs exclusively in the KFO. Existing carbon dioxide fields (McCallum and South McCallum) in the KFO have been fully developed. Additional gas pipelines out of the North Park Basin, enhanced carbon dioxide processing capability, or an increased market would be needed for significant future activity. The remaining fields in the decision area are on the decline, and most are reaching their ultimate life (BLM 2008b).

Solid Leasable Minerals

Oil Shale

In addition to the existing research, development, and demonstration leases in the WRFO, the BLM is in the process of identifying lands which would be made available for commercial leasing. Those lands would be identified through the Oil Shale and Tar Sands Programmatic EIS, which was released in November 2012. The technology for commercial production of oil shale is yet to be fully developed.

Sodium

The only potential development of sodium exists in the WRFO. Future development of sodium resources is likely to continue in the WRFO depending on the results of continued improvement of solution mining technology, and market-driven prices of sodium bicarbonate. The existing sodium mines do not overlap GRSG habitat.

Coal

The most important factors relating to coal development, other than its presence, include ease of access, development and production costs, and market demand. Coal production is expected to continue in the LSFO and WRFO. Future coal mining activities are likely in within GRSG habitat based on market-driven prices of coal and transportation.

No mining activity is likely in Middle Park or in the Coalmont area of North Park in the KFO in the foreseeable future. A considerable volume of mineable and marketable coal remains on federal lands in the McCallum area of North Park, but the lack of reasonable-cost transportation in the area hinders the use of this resource.

Trends on National Forest System Lands

Fluid Leasable Minerals

Oil and Gas/Coalbed Natural Gas

Market conditions will dictate interest in oil and gas exploration, but it is anticipated that future interest will be minimal; therefore, there would be little to no impacts on current mapped PH or GH. Additionally, there is a small amount of overlap with mapped GH and no overlap with mapped PH on the Routt National Forest.

3.7.3 References

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3.8 MINERALS (LOCATABLE)

Locatable minerals are minerals for which the right to explore or develop the mineral resource on federal land is established by the location (or staking) of lode or placer mining claims and is authorized under the General Mining Law of 1872. Locatable minerals include metallic minerals such as gold, silver, copper, lead, zinc, molybdenum, uranium, and non-metallic minerals such as fluorspar, asbestos, talc, and mica.

Acquisition of locatable minerals is executed by staking a mining claim over the deposit and acquiring the necessary permits to explore or mine. Within a mining claim, the surface lands remain open to the public for other multiple uses. Placer claims, which are for minerals found in geologic sediments rather than in veins, are also managed under the General Mining Law of 1872. Miners locate claims in order to acquire the right to develop the mineral values in a specified area. For operations other than casual use, the claimant is required to submit a Notice of Intent or a Plan of Operations. Regulations require the claimant to prevent unnecessary or undue degradation of the land. The BLM and the Forest Service may recommend closures to mineral entry (a land use planning decision) by petitioning the Secretary of the Interior to withdraw areas from further location of mining claims or sites. The Forest Service may also request that the BLM recommend closures to mineral entry.

The amount of area that would fall under restrictions outlined in **Chapter 2**, Alternatives, and the impact of those restrictions on locatable mineral development are considered in **Chapter 4**, **Section 4.9**, Minerals – Locatable, in the analysis of each alternative.

3.8.1 Existing Conditions

Gold and uranium are the primary mineral resources found in the planning area, and are therefore the focus of discussion for this section.

Conditions of the Planning Area

Table 3.44 displays data compiled in a baseline environmental report produced by the US Geological Survey and the BLM (Manier et al. 2013). Acres are presented by surface management agency and their presence within GH and PH in the planning area.

Table 3.44
Acres of Locatable Mineral Claims within GRSG Habitat in the Planning Area

Surface Management Agency	Total Acres	Acres within GH	Acres within PH
BLM	32,900	13,500	19,400
Forest Service	0	0	0
Tribal and Other Federal	0	0	0
Private	17,500	6,900	10,600
State	1,700	1,500	200
Other	100	100	0

Source: Manier et al. 2013

Conditions on BLM-Administered Lands

The BLM manages 2,472,900 acres of federal mineral estate (1,744,100 acres of BLM-administered land with federal minerals and 728,800 acres of private or state surface with federal minerals, also known as "split-estate") in the range-wide planning area. Within PH, the BLM manages 1,290,000 acres (56 percent) of the surface.

Approximately 124,800 acres of the total federal mineral estate for locatable minerals are withdrawn from location of mining claims in GRSG habitat. (**Table 3.45**). A total of 2,148,100 acres of the total federal mineral estate for locatable minerals are open to locatable mineral exploration and development.

Table 3.45
Locatable Minerals in the Planning Area

	Planning Area	PH	ADH
Withdrawn from locatable mineral entry (BLM surface/federal minerals)	917,300	40,600	124,800
Open to locatable mineral exploration or development (BLM surface/federal minerals)	2,148,100	1,125,500	2,148,100

Source: BLM 2013a

Gold

In the eastern portion of the CRVFO, there is one active claim within GRSG habitat. This placer claim is directly along the Colorado River and is less than 10 acres in size. The activity level of this claim is described as casual use, in which non-mechanized gold prospecting (panning) is carried out.

In the KFO, Independence Mountain in Jackson County includes two small individual gold placer claims. The Mitchell Placer Mine (including four small historic log cabins) is a small, early 20th century area of placer disturbances where no economic resources were found. Some casual use hand shoveling and panning/prospecting may continue to occur each year.

In the LSFO, the Eagle Mine (14 acres), operated by Jubilee Ventures, is a low potential, intermittent gold mine primarily producing gold ore. The production data for this mine is not available.

Uranium

In the KFO, there is a group of recently staked uranium mining claims on BLM-administered lands. These include claims in Jackson and Grand counties, and on National Forest System lands in Summit County.

The Troublesome area in Grand County included 502 uranium lode mining claims that were located as a group in 2005 on the Troublesome Formation (approximately 6 miles east/northeast of Kremmling). No mining or economic resources, and only trace mineralization, was discovered. These claims have since expired.

There is one notice for uranium exploration in the LSFO.

To date there has not been any development of potential uranium reserves within the WRFO. However, uranium mining claims have been staked recently in the northwestern portion of the WRFO, north of Rangely near US 40. Several claims have been staked encompassing approximately 44 square miles within two separate blocks of claims south of US 40.

Hard Rock

In 2003, 23 hard rock lode claims were located at the north end of Independence Mountain (the old Caprock claims) in Jackson County. This area was previously prospected and drilled for hard rock minerals (including molybdenum) in the late 1970s and early 1980s. Original claims by the Caprock Corporation lapsed in the late 1980s. The CeeArco Company has since filed claims at the same location as some of the previous claims.

Conditions on National Forest System Lands

Through an MOU with the BLM, the Forest Service manages most aspects of operation on National Forest System lands under the Mining Law of 1872 (as amended).

Gold

Placer gold was purported to be found in the eastern part of the planning area near the town of Steamboat Springs, at Hahn's Peak on National Forest System lands. The deposits are not within habitat for GRSG.

Uranium

Currently, there is one small mining operation on the Routt National Forest covered by a plan of operations.

The Routt National Forest has some areas with high-to-moderate potential for locatable minerals (Hausel and Sutherland 1999). The potential commercial production of these minerals is concentrated in a few areas. Much of the surface within the Routt National Forest was prospected during the late 1800s and early 1900s. Many areas show an almost continuous coverage by historic prospects and mines. Most mines and prospects were not developed to any great extent. A few mines yielded attractive base and precious metal assays and were developed into commercial ventures.

The Forest Service would work with the claimant to assure that standards and guidelines in the forest plan are met. The operation plan requires an environmental analysis and decision before the plan is approved.

3.8.2 Trends

Trends on BLM-Administered Lands

Although the price of gold and uranium has risen in recent years, the current trend is downward, and there is little current interest in developing any ore deposits for these minerals in GRSG habitat within the decision area.

Trends on National Forest System Lands

While most of the non-wilderness lands on the Routt National Forest are available under the 1872 mining law, little to no interest in mineral activities has been shown. Historically, there has not been any interest in locatable minerals in GH or PH.

3.8.3 References

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3.9 MINERALS (SALABLE)

Salable minerals, also referred to as mineral materials, include common varieties of construction materials and aggregates, such as, sand, gravel, limestone aggregate, building stone, cinders (clinker), moss-covered rock (moss rock), roadbed, decorative rock, clay, and ballast material. Mineral materials are sold or permitted under the Mineral Materials Sale Act of 1947, as amended and regulated under 43 CFR 3600. The sale of mineral materials is discretionary.

Sand and gravel, as construction aggregate, is an extremely important resource. The extraction of the resource varies directly with the amount of development nearby – road building and maintenance, and urban development – as sand and gravel is necessary for that infrastructure development. Even more so than other resources, however, the proximity of both transportation and markets are key elements in the development of a deposit.

3.9.1 Existing Conditions

Mineral materials are sold at a fair market value or made available through free use permits to governmental agencies. Local government agencies and nonprofit organizations may obtain these materials free of cost for community purposes. County and State road construction divisions are the significant users of gravel and sand resources.

Conditions of the Planning Area

Sand and gravel are the primary mineral materials found in the planning area, and are therefore the focus of discussion for this section. **Table 3.46** displays data compiled in a baseline environmental report produced by the US Geological Survey and BLM (Manier et al. 2013). Acres are presented by surface management agency and their presence within GH and PH in the planning area.

Table 3.46
Acres of Mineral Material Disposal Sites within GRSG Habitat in the Planning Area

Surface Management Agency	Total Acres	Acres within GH	Acres within PH
BLM	35,900	14,600	21,300
Forest Service	0	0	0
Tribal and Other Federal	0	0	0
Private	17,900	6,900	11,000
State	1,700	200	1,500
Other	100	0	100

Source: Manier et al. 2013

Conditions on BLM-Administered Lands

Approximately104,200 acres of the total federal mineral estate for mineral materials are closed to mineral material disposal (**Table 3.47**). Approximately 26,100 acres (25 percent) are within PH, and 40,400 acres (38 percent) are within GH. The balance of the federal mineral estate is open for consideration of mineral material disposal.

Table 3.47
Mineral Materials in the Planning Area

	Planning Area	PH	GH	Other Areas (Linkage/ Connectivity Habitat)
Closed for consideration for mineral material disposal	104,200	26,100	40,400	37,652

Source: BLM 2013

There is no commercial development in the CRVFO within GRSG habitat, and there is low potential for salable minerals in the GJFO within GRSG habitat.

A small-to-moderate market for decorative stone and moss rock exists in the KFO, driven by primary and secondary home construction in the high value resort communities. High-quality decorative stone is not common in the planning area, but three separate rock collection areas are permitted for small sales.

Salable mineral development includes seven active free-use permits, mostly in Moffat County, the limestone quarry that produces road base on Juniper Mountain, and two common use areas for moss rock. In the LSFO, a small limestone quarry, operated by Moffat Limestone Company, is present on Juniper Mountain. The quarry supplies scrubbing materials to the power plants near Craig, Colorado. In 2011, the quarry produced 40,000 tons of mineral grade limestone and 31,000 tons of non-mineral grade limestone.

Sand and gravel are the only salable minerals found within the WRFO. Sand and gravel deposits are located along the White River and major tributary valleys. Other sources of sand and gravel in the WRFO include widespread colluvial deposits at the base of rock outcrops, and alluvial fans. There are large sand and gravel reserves near Meeker in the vicinity of Agency Park, and in the Little Beaver area.

Within the GRSG planning area, there are a total of 1,500 acres of mineral material sales locations in PH, and 500 acres of mineral material sales locations within GH.

Conditions on National Forest System Lands

On National Forest System lands, salable or mineral materials are processed by the Forest Service on an annual basis.

The Forest Service is responsible for administering mineral materials on The Routt National Forest. Salable minerals in the Routt National Forest include crushed aggregate, dimension stone, sand, and gravel.

Crushed Aggregate

Numerous sources of crushed aggregate are present in the Routt National Forest in the Elkhead Mountains, the Park and Medicine Bow Ranges, and the Flat Tops. Aggregate includes sandstone, volcanic rock, granite, basalt, landslide material, and glacial drift, which is typically used for roadway building, concrete, railroad ballast, rip rap, and fill. There is one historic gravel pit in the California Park area that is within GH. This pit is less than 5 acres in size and has been reclaimed and is currently closed. It is unlikely that development would ever expand beyond the current footprint of the existing pit and there are no current requests to extraction from this site.

Dimension Stone

Some decorative dimension stone is produced and sold locally in the Routt National Forest in the Park Range, Elkhead Mountains, and Flat Tops. Moss or lichen-covered granite and sandstone are used for interior or exterior facing in homes or buildings.

Sand and Gravel

Numerous deposits of sand and gravel are located along the Elk and Colorado Rivers and their major tributaries within the Routt National Forest. Uses include concrete work and products, fill material, plastering sands, and snow and ice control.

Moss rock and gravel have been the primary products sold from the Routt National Forest. The sale of mineral materials is specifically discretionary by the line officer (District Ranger). Any new pits must have a Pit Development Plan that covers all phases of development, including reclamation. The Pit Development Plan must also be prepared pursuant to the NEPA and receive a decision prior to being authorized.

3.9.2 Trends

Trends on BLM-Administered Lands

In some areas, such as GJFO and CRVFO, it is unlikely there would be future mining for salable minerals in areas identified as PH or GH.

In the KFO, continuing trends of urbanization in eastern and southern Grand County and the concentration of ownership in agricultural lands into single large ranches in Grand and Jackson counties yield long-term concerns regarding the

availability of sand and gravel in future decades. Some of the Grand County Free Use Permit pits are in their last years of material supply. Closures and reclamation of the old pits and replacement with new permitting of federal sources for the Grand County Road and Bridge Department is anticipated. Jackson County, with its low population base and long and expensive haulage from the limited gravel operations, is handicapped by limited budget. The Jackson County Road Department continues to search for new federal sources of gravel on BLM-administered lands in Jackson County. Demands are expected to increase on BLM-administered lands for sand and gravel resources. Continuing demand for decorative stone will likely drive additional sales, and the permitting of new areas (as they are discovered or requested).

With the projected increase in oil and gas activities in the WRFO over the next 20 years, the need for additional sand and gravel resources for road improvements and other construction-related activities would likely increase.

In areas of high potential for sand and gravel, which are located near major highways (Hwy 40 between Craig and Steamboat Springs and Hwy 2 south of Steamboat Springs) and along the Little Snake River, it is likely that sand and gravel resources would be developed over the next 20 years.

Limestone

Production of limestone is expected to continue while the market for the product exists including Tri State Generation and Transmission Association, Craig Station, Craig, Colorado.

Trends on National Forest System Lands

Within GH and PH there has been a declining trend in the need for mineral materials on the Routt National Forest. There is only one development site within the GRSG habitat that was last used then closed and restored approximately 10 years ago.

3.9.3 References

BLM (United States Department of the Interior, Bureau of Land Management). 2013. Geographic Information Systems Data. Unpublished data. BLM, various field offices.

Manier, D. J., D. J. A. Wood, Z. H. Bowen, R. Donovan, M. J. Holloran, L. M. Juliusson, K. S. Mayne, S. J. Oyler-McCance, F. R. Quamen, D. J. Saher, and A. J. Titolo. 2013. Summary of Science, Activities, Programs and Policies that Influence the Rangewide Conservation of Greater Sage-Grouse (*Centrocerus urophasianus*). US Geological Survey Open-File Report 2013-1098. Ft. Collins, CO.

3.10 TRAVEL MANAGEMENT

Travel management is integral to many activities taking place on public lands. Consideration of a comprehensive travel and transportation network involves

all aspects of road and trail system planning and management taking into account road and trail locations, system users, and other natural resource management objectives.

The transportation system in the planning area consists of federal and state highways, paved and unpaved local roads, as well as unpaved primitive roads and trails.

3.10.1 Existing Conditions

Conditions of the Planning Area

The largest contiguous concentrations of GRSG habitat are located in Moffat, Jackson, and Grand Counties. GRSG habitat areas in the remainder of the planning area are generally smaller and less contiguous. Transportation routes are mainly concentrated around urban areas or where surface activities, such as mineral extraction, require access. Portions of the planning area are remote and rugged, limiting motorized travel on roads and trails in those areas.

Table 3.48 and **Table 3.49** display data compiled in a baseline environmental report produced by the US Geological Survey and the BLM (Manier et al. 2013). This information provides a relatively coarse estimate of road/railroad mileage and acreage within the planning area. Each table presents miles and acres of roads by surface management agency and the presence of these roads within GH and PH in the planning area.

Table 3.48
Roads within GRSG Habitat in the Decision Area

Surface Management Agency	Miles of Roads			Acres of Roads		
	Total [1]	GH	PH	Total [1]	GH	PH
BLM	3,500	1,400	2,100	34,900	13,800	21,100
Forest Service	23	19.4	3.6	120	100	20
Tribal and Other Federal	200	100	100	1,400	500	900
Private	5,000	1,800	3,200	51,900	19,200	32,700
State	500	100	400	6,500	1,600	4,900
Other	100	0	100	1,100	200	900

Source: Manier et al. 2013
[1] Assumes footprint of 73.2 meters for interstate highways, 25.6 meters for primary and secondary highways, and 12.4 meters for other roads

Table 3.49
Railroads within GRSG Habitat in the Decision Area

Surface Management Agency	Miles of Railroads			Acres of Railroads [1]		
	Total [1]	GH	PH	Total [1]	GH	PH
BLM	18	9	9	70	30	30
Forest Service	0	0	0	0	0	0
Tribal and Other Federal	0	0	0	0	0	0

Table 3.49
Railroads within GRSG Habitat in the Decision Area

Surface Management Agency	Miles of Railroads			Acres of Railroads [1]		
	Total [1]	GH	PH	Total [1]	GH	PH
Private	82	24	58	300	90	200
State	2	2	0	7	7	0
Other	0	0	0	0	0	0

Source: Manier et al. 2013
[1] Assumes footprint of 9.4 meters

Table 3.48 and **Table 3.49** were compiled from data provided by the US Geological Survey using Tele Atlas ESRI StreetMap Premium data to provide an estimate of the distribution and acres of existing Interstates, major highways, primary and secondary routes, and railroads that are within GRSG habitat within WAFWA Management Zones II and VII. The data provides information that can extrapolate assumptive footprints and the potential indirect disturbance associated with each class of roadway and railroad. The footprint and intensity of use of each class of road may provide additional information that is useful in identifying indirect impacts. Data provided by the US Geological Survey was then used to estimate mileage and acres of existing Interstates, major highways, primary and secondary routes, and railroads that are within the Colorado MZs decision area. Approximately 53 percent of roads within the decision area are on private lands.

Railroad mileage within the decision area is considerably less than roadways and also has less of an assumptive footprint. The majority of the railroad mileage is within private property, accounting for approximately 80 percent of the total miles and footprint.

Conditions on BLM-Administered Lands

GRSG habitat is generally accessible on BLM-administered lands via an extensive network of roads and trails. Travel surfaces range from paved roads to primitive dirt roads only accessible by high clearance four-wheel drive vehicles and OHVs to single-track routes accessible by motorcycles, foot, mountain bike, and/or horseback.

OHV Designations

Executive Order 11644 and CFR (43 CFR Part 8340) both require the BLM to designate all BLM lands nationally as open, closed, or limited for OHV use. Per the BLM's regulations for OHV management, all BLM lands within the planning area have been designated in one of three OHV designation categories, open, limited or closed. Open areas are those where cross-country travel by OHVs is allowed. Limited areas are those where the BLM limits motorized use to existing roads and trails, designated roads and trails, particular types of vehicles, specific seasons of use, or other types of limitations. Closed areas are those where OHV use is prohibited.

Table 3.50 summarizes the acreage of open, limited, and closed OHV areas in GRSG habitat for each of the five field offices. As can be seen in this table, the vast majority of BLM-administered lands with GRSG habitat in the planning area are available for OHV use under either an open or limited designation. Only a small portion of the BLM-administered lands with GRSG habitat in the planning area is closed to OHV use.

Table 3.50
Travel Area Designations on BLM-Administered Lands within the Decision Area

Designation	Total Size (Acres)	Area in PH (Acres)	Area in GH (Acres)
CRVFO			
Open	5,800	2,800	3,000
Limited	61,100	21,600	39,500
Closed	2,600	200	2,300
GJFO			
Open	11,800	5,500	6,300
Limited	2,500	0	2,500
Closed	0	0	0
KFO			
Open	162,900	152,200	10,700
Limited	54,600	46,300	8,300
Closed	500	500	0
LSFO			
Open	805,600	413,600	392,000
Limited	224,500	138,500	86,000
Closed	20,000	18,400	1,600
WRFO			
Open	0	0	0
Limited	610,300	288,000	322,300
Closed	10,800	7,500	3,300
Total			
Open	986,100	574,100	412,000
Limited	953,000	494,400	458,600
Closed	33,900	26,600	7,200

Source: BLM 2013

Travel Management Planning

Within the BLM, travel management planning can be considered to take place in three phases: inventory, designation, and implementation. During the inventory phase, the BLM completes an inventory of all routes within a planning area. During the designation phase, the BLM designates a route system within a planning area through a NEPA process. The implementation phase includes route rehabilitation, signing, and enforcement. Within the planning area, two BLM field offices (LSFO and WRFO) are currently engaged in inventory and three BLM field offices (CRVFO, GJFO, and KFO) are currently engaged in

designation. Some specific areas within these BLM offices (e.g., SRMAs) are already in the implementation phase.

Travel Management by Field Office
Current travel management by field office is described below.

Colorado River Valley Field Office
Current management identifies 2,800 acres of PH as open to OHV travel, 200 acres as closed, and 21,600 acres as limited. Within GH, 3,000 acres are inventoried as open, 2,300 as closed, and 11,200 as limited. The area closed to OHV travel is extremely small in respect to PH lands available for fluid mineral leasing, representing only 0.1 percent of 22,800 total acres. Furthermore, most of these lands are mapped as low potential for oil and gas development. In relation to GH, the area closed to OHV travel represents 14 percent of 16,200 total acres. Closures would not apply to authorized oil and gas exploration and development.

Grand Junction Field Office
The mapped GRSG habitat is largely accessible via an extensive network of roads and trails in the area. Travel surfaces range from paved roads to primitive dirt roads accessible only by high-clearance four-wheel-drive vehicles, OHVs, on foot, or horseback. Currently, all of the BLM-administered lands within PH are managed as open to cross-country travel for all modes of transportation. Within PH, 17 miles of travel routes have been inventoried on BLM-managed lands. In GH, some 6,300 acres of BLM-administered lands are managed as open to cross-country travel, and 2,500 acres are managed with a seasonal closure (December 1 to May 1) to motorized use to protect wintering big game. During the rest of the year, motorized travel in that area is limited to existing routes. Within GH, 32 miles of existing travel routes have been inventoried. Vehicular traffic within the mapped GRSG habitat is generally very light. Traffic temporarily increases during oil and gas drilling and completion operations. Slight seasonal increases in traffic also result during fall hunting seasons.

Kremmling Field Office
Under Alternative A, a small portion of PH in Zone 11 and Zone 13 would be closed to OHV travel. Areas closed to OHV travel total 8,700 acres, or 0.02 percent of total BLM-administered surface estate within the KFO; a vast majority of these lands is outside of PH and GH. Any potential impacts on leasing and development of fluid minerals from travel management closures are negligible. Overall, most areas are open (307,300 acres; approximately 81 percent of BLM land within the KFO) to OHV travel, or limited to existing routes (7,300 acres, 0.019 percent) or designated routes (54,500 acres, 14.4 percent).

Exception criteria also apply that would allow administrative access with BLM authorization when travel is approved in areas closed or limited to existing or designated travel. For instance, exceptions may be granted when OHV travel is

necessary for valid existing rights or to access mineral and energy sites in areas where travel is not designated as open. Travel restrictions would primarily have an objective other than reducing adverse impacts on GRSG and their habitats. Routes could be constructed in PH and GH. A 3-percent disturbance cap would not be applied or affect construction of new roads.

Little Snake Field Office

Current management under the 2011 RMP includes designating areas as open, limited, or closed to vehicle use, consistent with the following guidelines:

- Enable access where needed
- Limits points of access to reduce the number of redundant roads and trails
- Reroutes, rehabilitates, or eliminates existing roads and trails that are damaging cultural or natural resources
- Reroutes roads and trails that are landlocked by private parcels
- Restricts access to meet resource objectives, such as seasonal road closures and installing gates
- Concentrates stream and riparian crossings
- Reduces habitat fragmentation
- Considers new construction and reconstruction of roads and trails
- Actively pursues access to specific parcels to improve access to BLM-administered lands for land management purposes

As an outcome of that process, the LSFO has made travel management designations for Colorado MZs within its boundaries. For both PH and GH, most lands are designated as limited (552,000 acres in PH, 451,200 acres in GH). Closed areas include 18,400 acres in PH and 8,700 acres in GH, while open areas comprise 30 acres of PH and 19,700 acres of GH.

White River Field Office

Under current management, no restrictions on travel in PH are proposed. BLM roads within the WRFO are open to public travel at all times, subject to any limitations or restrictions outlined in the 1997 White River RMP. Travel restrictions would primarily have an objective other than reducing adverse impacts on GRSG and their habitats. Existing routes in PH could be upgraded to a higher use category (e.g., from trail to primitive road or from primitive road to road). Routes could be constructed in PH. Restrictions on public vehicle access could be applied as outlined in the 1997 White River RMP. Methods restricting access include installing lockable gates, barricades, and other deterrents, installing signs, and reclaiming and abandoning roads or trails.

Within the WRFO, 1,100 miles of routes are designated as limited and 20 miles designated as closed in mapped PH. This translates to 288,000 acres of BLM-administered lands designated as limited and 7,500 acres designated as closed to motorized use in the PH. Within mapped GH, 1,300 miles are designated as limited and 10 miles designated as closed. This translates to approximately 322,300 acres of BLM-administered land designated as limited and 3,300 acres as closed to motorized use in GH. No areas within the WRFO are designated as open.

Conditions on National Forest System Lands

The 1997 Routt National Forest Land and Resources Management Plan (Forest Plan) provides guidance on the overall transportation management philosophy and objectives. The plan identifies trails as the major component of the Routt National Forest transportation system. Motor vehicle use off of the designated system is prohibited. Off-road and off-trail travel by snowmobiles is allowed in areas not otherwise closed provided there is sufficient snow cover.

Maps showing the designated motor-vehicle transportation system are referred to as Motor Vehicle Use Maps. Each of the three districts on the Routt National Forest has Motor Vehicle Use Maps.

There are approximately 1,600 miles of roads within the Routt National Forest, not including State or US highways that may pass through the Forest. About 450 miles are maintained to a standard suitable for passenger cars, the rest require a high-clearance vehicle or an OHV. All open Forest Service roads can be used by OHVs with proper licensing and adherence to state laws.

There are approximately 1,500 miles of trails identified in the Routt National Forest inventory. Note that a portion of these trail miles are overlays on existing routes, such as forest roads that become winter trails when they are groomed for snowmobiling, so the actual number of unique trail miles is closer to 850. Of the 1,500 inventoried miles, 862 miles are designated for nonmotorized uses only.

Snowmobilers and skiers may travel on and off trail in areas that are not otherwise restricted. A portion of the Forest around Rabbit Ears Pass, adjacent to Highway 40, has been zoned into winter motorized and nonmotorized areas to mitigate potential conflicts between skiers and snowmobile users (Forest Service 2005).

GRSG habitat exists in four Colorado MZs in the Routt National Forest. Transportation networks in the zones vary and are described below:

<u>California Park and Slater Park area (Zone 7)</u>

This zone contains the largest contiguous segment of GH on the Forest—about 6,700 acres within the California Park Special Interest Area. There is no PH in the area. California Park is bisected by State Route 80. The only other

motorized routes in the area are trails 1144 and 1147, which are open annually to vehicles 50 inches or less in width during the period July 1 to October 1. Non-motorized travel is permitted on these trails year-round. This area is used by snowmobiles and includes groomed snowmobile trails during the winter season.

Lower Camp Creek area (Zone 11)
This zone contains 800 acres of PH. Most of the habitat is located within an area bounded by the Platte River to the north and east, and by the Forest boundary to the south and west. The identified GRSG habitat is traversed by forest road 939, which is open to vehicles of all types from July 1 to December 1 each year. Most of the area within and adjacent to the identified habitat has seasonal access restrictions in place to protect deer and elk winter range. At the southern edge of the habitat area is a small developed recreation site with a parking lot, toilet, boat ramp, and information kiosk. This area is used most frequently in May and June for access to the Platte River for rafting.

South Hunt/Watson Creek and Western Gore Pass area (Zone 14)
This zone contains small areas of both GH and PH. A short section of road accesses private land in the South Hunt/Watson Creek area. The western Gore Pass area contains several short road segments that are open to all vehicle types from approximately June 15 to December 15 each year. No nonmotorized trails intersect or provide access to the habitat areas.

Lake Agnes and Pete Gulch/West Carter Creek/Diamond Creek areas (Zone 13)
This zone contains small areas of both GH and PH. A section of GH to the west is bordered by Highway 40 on the eastern side, and crossed by a short segment of road that accesses private land at Lake Agnes. No Forest roads or trails intersect or provide access to the small segments of habitat in the eastern portion of this area.

3.10.2 Trends

Trends on BLM-Administered Lands
The overall trends in travel management on BLM-administered lands within the planning area include an increase in OHV use, hiking, and mountain biking as populations increase within and adjacent to the planning area, and throughout Colorado. In years to come, it is expected that many areas currently designated as open to cross-country travel will need to be changed to limited or closed designations to minimize resource impacts.

Construction of new routes for oil and gas development is also expected to increase as demand for oil and gas resources increases. New oil and gas facilities will require new roads. Previously constructed roads may also require upgrading in width and ROW as drilling operations are converted to collection and production facilities. Recreationists will use these routes even though they are not designed to optimize recreation experiences.

Private property adjacent to BLM-administered lands will likely continue to be subdivided. Subdivision of private property has dramatically increased the number of adjacent property owners, and increased the number of new access routes to public lands within the planning area. The result is expected to be continued unauthorized creation of unmanaged user-created routes that impact other resources.

However, because of the remoteness of many areas within GRSG habitat, these areas have not yet experienced significant changes in travel routes and are not expected to in the near future.

Trends on National Forest System Lands

In the Routt National Forest, the overall extent (measured in terms of miles) of the transportation network has shrunk over the last decade. This is partially due to a purposeful effort to abandon and reclaim roads that have served their purpose and are no longer needed, and partially due to the persistent challenge of maintaining a large system of roads and trails with limited resources. The road system is likely to continue to shrink moderately due to aging drainage structures and bridges and shifting Forest priorities. The number and extent of Forest trails is likely to remain stable or increase moderately over the next 10 years. Snowmobiling as a winter recreational activity has increased considerably over the past 15 years on the Routt National Forest. This is most relevant to GRSG in the California and Slater Parks areas identified as GH. These areas, however, are seasonal GRSG habitat and do not provide winter habitat for GRSG.

3.10.3 References

BLM (United States Department of the Interior, Bureau of Land Management). 2013. Geographic Information Systems Data. Unpublished data. BLM, various field offices.

Manier, D. J., D. J. A. Wood, Z. H. Bowen, R. Donovan, M. J. Holloran, L. M. Juliusson, K. S. Mayne, S. J. Oyler-McCance, F. R. Quamen, D. J. Saher, and A. J. Titolo. 2013. Summary of Science, Activities, Programs and Policies that Influence the Rangewide Conservation of Greater Sage-Grouse (*Centrocerus urophasianus*). US Geological Survey Open-File Report 2013-1098. Ft. Collins, CO.

Forest Service (United States Department of Agriculture, Forest Service). 2005. Final Environmental Assessment, Winter Recreation Management and Routt Forest Plan Amendment.

3.11 RECREATION

Conditions on BLM-Administered Lands

BLM recreation management focuses on three basic components of recreation opportunities on public lands: 1) types of recreation opportunities and

experiences that are provided, 2) the character of recreation setting within which they occur and retaining that character, and 3) services that can be provided by the BLM and its collaborating partners.

Recreation Management Areas

Recreation Management Areas are land units where recreation and visitor service objectives are recognized as a primary resource management consideration and specific management is required to protect the recreation opportunities. The Recreation Management Area identification is based on recreation demand and issues, recreation setting characteristics, resolving use/user conflicts, compatibility with other resource uses, and resource protection needs. The Recreation Management Areas are classified as either SRMAs or extensive recreation management areas (ERMAs).

SRMAs are administrative units where the existing or proposed recreation opportunities and recreation setting characteristics are recognized for their unique value, importance, and distinctiveness, especially compared with other areas used for recreation.

ERMAs are managed to support and sustain the principal recreation activities and the associated qualities and conditions of the ERMA. Management of ERMA is commensurate with the management of other resources and resource uses.

Special Recreation Permits

Under the authority of the Federal Lands Recreation Enhancement Act of 2004, the BLM uses the Recreation Permitting System to satisfy recreational demand within allowable use levels in an equitable, safe, and enjoyable manner while, at the same time, minimizing adverse resource impacts and user conflicts.

Heritage Tourism

Many organizations regularly conduct GRSG viewing tours in Colorado, including:

- GRSG viewing tours in Moffat County (https://conservationco.org/2013/02/sage-grouse-tours/)
- The Birding Wire SG Tour Promotion in Craig (http://www.birdingwire.com/releases/281996/)
- GRSG Initiative tours in Colorado (http://sagegrouseinitiative.com/) (http://sagegrouseinitiative.com/events/11)
- Extreme Birding GRSG Tour Promotion (http://www.facebook.com/events/338755516170497/)
- Yampa Valley Sustainability Council GRSG Tour promotion (http://www.yvsc.org/have-you-seen-the-greater-sage-grouse-do-its-thing/)

- CPW GRSG touring promotion (http://dnr.state.co.us/newsapp/press.asp?PressId=8199)
- Summit County GRSG Tours (http://summitcountyvoice.com/2013/03/17/colorado-greater-sage-grouse-viewing-tours-offered/)
- Wings Birding Tours in several FOs (http://wingsbirds.com/tours/colorado-lekking-grouse/)

Conditions on National Forest System Lands

The Multiple Use Sustained Yield Act of 1960 (16 USC 528, Public Law 86-517) directs the Forest Service to manage recreation as a resource on par with timber, water, and wildlife resources. As the science of outdoor recreation management has evolved, managers have placed more emphasis on providing for experience opportunities rather than specific recreation activities. Accordingly, a primary objective of National Forest recreation management is to provide and secure an environment for visitors to achieve desired experiences while balancing other social, economic and environmental factors.

The Recreation Opportunity Spectrum is a widely used planning and management tool used to delineate and define outdoor recreation settings and related experience opportunities. The Recreation Opportunity Spectrum arrays recreation settings on a spectrum from primitive to urban. A given Recreation Opportunity Spectrum class or category describes the level of development, use, and management that exists or is desired for the area where that class is prescribed.

There are seven Recreation Opportunity Spectrum classes described in the Forest Plan: Primitive, Semi-Primitive Nonmotorized, Semi-Primitive Motorized, Roaded Natural, Roaded Modified, Rural, and Urban. For each of these classes, the Forest Plan also describes maximum use level guidelines, defined in terms of People At One Time per trail mile and per acre. For winter recreation (activities that require snow cover) two general Recreation Opportunity Spectrum classes are used: motorized and nonmotorized.

3.11.1 Existing Conditions

Conditions of the Planning Area

Typical recreational activities within the planning area include camping, hiking, horseback riding, mountain biking, OHV use, and cross-country skiing. Migrating and resident wildlife provide plentiful opportunities for hunting, photography, and observation. Renowned local rivers, streams, and lakes offer boating and cold-water fishing opportunities.

Recreation visitors to the planning area come from national and international locations, the Denver metropolitan area and Colorado's Front Range, and other local communities. For Colorado visitors, the region is an easily accessible weekend getaway with a diversity of outdoor activity offerings and recreation

settings. Increased visitation to small towns and destination resorts contribute to the increased use of public lands within the planning area.

Hunting

Hunting, a popular activity throughout the planning area, is regulated in the planning area by CPW. Much of the hunting within the planning area takes place on BLM-administered and National Forest System lands. Elk hunting, in particular, attracts large numbers of hunters during the fall big game hunting season, which begins in late August and lasts into December. Hunting of GRSG is allowed during a fall hunting season, which lasts from September through January (according to regulations for the 2012-2013 hunting season). Possession of a small game permit allows hunters a possession limit of two to four birds, depending on the game unit in which the hunting occurs (CPW 2012). Game units where hunting of GRSG is permitted cover large portions of GRSG habitat in Moffat, Jackson, Grand, Routt, Summit, and Rio Blanco Counties (CPW 2012).

Conditions on BLM-Administered Lands

On BLM-administered lands in GRSG habitat within the planning area, recreational activities include camping, hiking, horseback riding, mountain biking, OHV use, and cross-country skiing. Migrating and resident wildlife provide plentiful opportunities for hunting, photography, and observation. Renowned local rivers, streams, and lakes offer boating and cold-water fishing opportunities.

Motorized recreation is an increasingly popular activity within the planning area. Of the 12 SRMAs that overlap with GRSG habitat, four are designated for OHV-related opportunities. Popular OHV recreation areas within GRSG habitat in the planning area include North Sand Hills SRMA and South Sandwash SRMA. Outside of SRMAs, OHV recreation is also a popular activity and is commonly associated with hunting.

Boating and camping are other popular activities within the planning area. Particularly high levels of visitation area are reported in the Upper Colorado River SRMA, which overlaps GRSG habitat in the BLM's KFO and CRVFO.

Recreation Management Areas

As mentioned above, SRMAs are administrative units where the existing or proposed recreation opportunities and recreation setting characteristics are recognized for their unique value, importance, and distinctiveness, especially compared with other areas used for recreation. There are 12 SRMAs in the planning area that overlap portions of GRSG habitat (**Table 3.51**):

- Bocco Mountain: provides motorized single-track opportunities
- Bull Gulch: provides primitive recreation opportunities
- Gypsum Hills: provides motorized recreation opportunities

Table 3.51
Special Recreation Management Areas on BLM-Administered Lands within GRSG Habitat

SRMA	Total Size (Acres)	Area in GRSG Habitat (Acres)
Bocco Mountain (CRVFO)	1,400	300
Bull Gulch (CRVFO)	8,300	200
Gypsum Hills (CRVFO)	16,900	1,900
North Sand Hills (KFO)	1,500	800
Upper Colorado River (CRVFO)	20,700	2,000
Upper Colorado River (KFO)	12,200	2,100
Fly Creek (LSFO)	12,100	9,200
Serviceberry (LSFO)	12,400	6,600
Cedar Mountain (LSFO)	900	900
Little Yampa Canyon (LSFO)	27,900	27,900
Juniper Mountain (LSFO)	1,800	1,800
South Sandwash (LSFO)	35,600	33,400
Total	**151,700**	**87,100**

Source: BLM 2013

- North Sand Hills: provides OHV riding opportunities and dispersed camping
- Upper Colorado River (managed as two separate SRMAs in the CRVFO and KFO): provides fishing, float boating, tubing, kayaking, canoeing, and camping opportunities
- Fly Creek: provides backcountry nonmotorized hunting opportunities
- Serviceberry: provides backcountry, nonmotorized hunting, and heritage interpretation/education opportunities
- Cedar Mountain: provides hiking, nature interpretation, and picnicking opportunities
- Little Yampa Canyon: provides river boating, big game hunting, camping, wildlife viewing, and interpretation/education opportunities
- Juniper Mountain: provides boating, hunting, camping, and hiking opportunities
- South Sandwash: provides OHV riding opportunities

Within the planning area, there are 711,900 acres of ERMAs within PH and 686,300 acres of ERMAs in general habitat (**Table 3.52**). ERMAs are managed to support and sustain the principal recreation activities and the associated qualities and conditions of the ERMA. Management of ERMA is commensurate with the management of other resources and resource uses.

Table 3.52
Extensive Recreation Management Areas on BLM-Administered Lands within GRSG Habitat

Field Office	Area in PH (Acres)	Area in GH (Acres)
CRVFO	23,300	41,900
GJFO	0	0
KFO	0	0
LSFO	566,600	464,200
WRFO	122,000	180,200
Total	**711,900**	**686,300**

Source: BLM 2013

In areas outside of Recreation Management Areas within the planning area, recreational visitation is low when compared to other parts of the planning area. Recreational activities in these areas include hunting, fishing, OHV use, and a small amount of foot, equestrian, and mountain bike use.

Developed Recreation Facilities

Within GRSG habitat in the planning area, developed recreation sites and facilities have been constructed in order to enhance recreational opportunities, protect resources, manage activities, and reduce recreation use conflicts. These infrastructure developments range from campgrounds to trailheads with simple bulletin boards to developed river access sites. Many of these developments are located within SRMAs, where the BLM has made a commitment to the unique values, importance, and distinctiveness of the recreational opportunities in these areas.

Special Recreation Permits

Within the planning area, Special Recreation Permits are issued for a variety of activities, including fund-raising, outfitters and guides, off-road vehicle tours, horse trail and wagon train rides, cattle drives, OHV races, horse endurance rides, mountain bike races, rodeos, poker runs, orienteering, land speed records, Eco-Challenge events, vendor permits, river outfitting, and upland hunting. The most common Special Recreation Permits in GRSG habitat within the planning area include river outfitting (particularly in the Upper Colorado River SRMA) and upland hunting. These Special Recreation Permits often support the achievement of recreation objectives, and help BLM Colorado achieve its commitment to offering outstanding recreation opportunities to the public while ensuring good stewardship of public lands.

Conditions on National Forest System Lands

Routt National Forest

The Routt National Forest is located less than 150 miles from the Denver metropolitan area and is a popular destination for area residents and visitors

from around the world. Attractions on the Forest include 30 campgrounds, 10 picnic grounds, a destination ski area and resort, approximately 850 miles of trails, and abundant dispersed (not associated with a specific developed site) recreation opportunities.

According to the National Visitor Use Monitoring Program, during fiscal year 2007 (October 2007-September 2008) the Routt National Forest supported an estimated 1,632,000 recreation visits (Forest Service 2012). About 1,000,000 of those visits were associated with downhill skiing, primarily at Steamboat Ski Resort. Spending associated with all recreation visits was estimated at $219,399,000 (expressed in 2007 dollars). In addition to downhill skiing, the most popular recreation activities on the Forest include viewing natural features, viewing wildlife, hiking, and walking. Other popular activities include, but are not limited to, driving for pleasure, fishing, developed camping, OHV use, horseback riding, backcountry skiing, and snowmobiling.

Recreation use patterns vary substantially across the different geographic areas of the Forest. In general, the only areas of GRSG PH or GH that support recreation use are the California Park and Slater Park area (Zone 7) and the Lower Camp Creek area (Zone 11). The other areas of the National Forest with GRSG habitat are not functional recreation areas because they are very small areas, they lack specific recreation attractions, or they are on private lands or have other factors that limit public access. More details are provided in the specific area discussion below.

California Park and Slater Park area (Zone 7)

This zone contains the largest contiguous segment (6,700 acres) of GRSG GH on the Forest. There is no PH in the area. The California Park Special Interest Area is identified in the Forest Plan as an area of 23,000 acres, which is managed to protect its unique geological, zoological, historical, paleontological, and scenic values. Forest Plan management direction for the special interest area calls for allowing recreation use that emphasizes interpretation and education when it does not threaten the values for which the area was identified.

The general recreation management direction for this zone is to provide for relatively low-density motorized and nonmotorized activities in a natural setting. The predominant Recreation Opportunity Spectrum classes are semi-primitive nonmotorized, semi-primitive motorized, and roaded natural. There is a campground and a youth camp in the western portion of the area, but there are no developed recreation facilities within or near identified GRSG habitat. Summer motorized use is limited to trails 1144 and 1147 and open roads, as depicted on the Hahns Peak/Bears Ears District Motor Vehicle Use Map (Forest Service 2011). Winter motorized use occurs on groomed snowmobile trails as dispersed recreation across this area.

The general recreation use pattern in this area is one of light to moderate summer activity, including sightseeing, fishing and dispersed camping along

National Forest Roads 110, 116, and 118, with much higher levels of big-game hunting-related use occurring from late August through late October. Eight outfitter/guides, operating under special use permits issued by the Forest, facilitate public hunting activities in the area.

Lower Camp Creek area (Zone 11)

This area contains 800 acres of GRSG PH. Most of the habitat is located within an area bounded by the Platte River to the north and east, and by the Forest boundary to the south and west. Most recreation activity within and near the area of PH is concentrated in the Platte River corridor, and specifically at the Routt Access developed recreation site, which functions as a put-in for Platte River float trips and access to the Platte River Wilderness.

The Routt Access site includes a parking lot, toilet, and kiosk/information board. The estimated People At One Time capacity at this site is 300 people, although peak use does not approach that number. Visitors who begin their river trips here must navigate a narrow canyon with technical rapids. In most years, the rapids are only navigable for a short period from late May through June when flow levels are optimal. Most use of this site occurs during that period. Visitor activity is generally limited to the immediate vicinity of the river put-in.

Recreation activity in the broader area is restricted in the winter and spring to protect deer and elk winter range. In the summer, the most popular recreation activity outside the river corridor is motorized travel on the designated system of forest roads. Motorized uses are restricted to open roads and trail segments identified in the Parks District Motor Vehicle Use Map (Forest Service 2011).

3.11.2 Trends

Trends on BLM-Administered Lands

Colorado's population grew significantly (56 percent) between 1990 and 2010 (Colorado State Demography Office 2012), and an increasing number of people are living near, or seeking out, BLM-administered lands for a diversity of recreational opportunities characterized by the "mountain resort or outdoor lifestyle." The planning area is a year-round place to live and work; as a result BLM-administered lands are absorbing the increasing recreational demand and use.

Visitation and use near local communities is expected to continue to grow. Many local communities have public lands bordering them that are used as "backyard" recreation areas by local residents. Outside of the fall big game hunting seasons, when visitation is high everywhere, the greatest number of visitors to the planning area is near communities. This use continues to grow, accompanied by rapid growth in the communities themselves. OHV use, in particular, continues to increase across the planning area.

In more remote portions of the planning area, recreation use is not expected to change as dramatically as in more accessible areas. Hunting has been, and continues to be, the predominant recreational activity in these remote and less-developed areas. Interest in hunting these areas has generally remained steady and impacts on hunting opportunities in the planning area have been primarily from oil and gas development, which have caused changes to wildlife habitat and animal behavior patterns. Additionally, hunting opportunities for private hunters have been impacted by changes in land ownership, which have sometimes resulted in more difficult access to public lands. Some landowners in the area have implemented management strategies to improve and enhance wildlife habitat, which results in improved hunting opportunities. These trends are expected to continue.

River use has also been fairly consistent, with decreases in use during years of low river flows as a result of drought. This trend is expected to continue.

It is unlikely the demand for Special Recreation Permits in the planning area will change over the planning period. Permitted outfitter and guide use has remained consistent for the past 5 years.

Trends on National Forest System Lands

Routt National Forest

National trends in outdoor recreation suggest the likely direction of change for recreation use on the Routt National Forest. A comprehensive Forest Service publication (Cordell 2012), prepared in support of the 2010 Renewable Resources Planning Act Assessment, identifies the following national trends:

- Between 2000 and 2009, the number of people that participated in nature-based, outdoor recreation grew by 7.1 percent.
- In the West, the majority of outdoor recreation activity takes place on public lands.
- Participation in activities related to "viewing and photographing nature" grew substantially over the last decade, while participation in hunting and fishing declined.
- Participation in summer and winter motorized activities grew during the first half of the decade and then declined to about the same level as in 2000.
- The five activities expected to grow the fastest in per capita participation over the next 50 years are developed and undeveloped skiing, challenge activities, equestrian activities, and motorized water activities.

- Activities expected to decline in per capita participation are visiting primitive areas, motorized off-road activities, motorized snow activities, hunting, and fishing.

It is important to note that even activities with declining per capita participation can show growth in the number of participants due to population increases. For the Routt National Forest, located in the growing Rocky Mountain West, participation in outdoor recreation activities is likely to continue to increase at or slightly above the national rate. Most evidence suggests that the Forest can continue to support modest increases in recreation use without unacceptable impacts on natural resources or experience opportunities. Maintaining deteriorating recreation infrastructure with limited resources is likely to be the biggest challenge over the next 10 years.

3.11.3 References

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3.12 RANGE MANAGEMENT

The BLM administers public land grazing in accordance with the Taylor Grazing Act of 1934, while the Forest Service administers livestock grazing allotments according to the Multiple Use and Sustained Yield Act of 1960. Both agencies also administer livestock grazing allotments in accordance with the Wilderness Act of 1964, the NEPA, the Wild Free-Roaming Horse and Burro Act of 1971, the Clean Water Act of 1972, the ESA, and the Public Rangelands Improvement Act of 1976.

Both the BLM and the Forest Service issue livestock grazing permits for a period of up to 10 years that are generally renewable if it is determined that the terms and conditions of the permit are being met and the ecological condition of the rangelands are meeting the fundamentals of rangeland health. Forage is allocated on the basis of AUMs, which is the amount of forage necessary for the sustenance of one cow and its calf or its equivalent for a period of 1 month.

BLM Grazing Standards and Guidelines

In response to public concern about the management of livestock grazing on western public lands, the BLM began developing new regulations for livestock grazing administration. This process, which was characterized by the preparation of an EIS and extensive public involvement, resulted in new livestock grazing regulations which became effective August 21, 1995. One of the requirements of the regulations was that each BLM State Director would, in consultation with a Resource Advisory Council in the state, develop standards for public land health and guidelines for livestock grazing management. The BLM Colorado's Standards and Guidelines were approved by the Secretary of the Interior on February 3, 1997 (see **Appendix K**, BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado).

Standards describe conditions needed in order to sustain public land health, and relate to all uses of the public lands. Standards, based upon their associated indicators, are applied on a landscape scale and relate to the potential of the landscape. These include:

- *Standard 1*. Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes. Adequate soil infiltration and permeability allows for the accumulation of soil moisture necessary for optimal plant growth and vigor and minimized surface run-off.
- *Standard 2*. Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbance (such as fire, severe grazing, or 100-year floods). Riparian vegetation captures sediment, and provides forage, habitat and bio-diversity. Water quality is improved or maintained. Stable soils store and release water slowly.

- *Standard 3*. Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species' and the habitats' potential. Plants and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations and ecological processes.
- *Standard 4*. Special Status, Threatened, and Endangered Species (state and federal), and other plants and animals (and their habitats) officially designated by the BLM are maintained or enhanced by sustaining healthy, native plant and animal communities.
- *Standard 5*. The water quality of all water bodies, including groundwater where applicable, located on or influenced by BLM-administered lands achieves or exceeds the Water Quality Standards established by the State of Colorado. Water Quality Standards for surface and ground waters include the designated beneficial uses, numeric criteria, narrative criteria, and anti-degradation requirements set forth under state law as found in (5 CCR 1002-8), as required by Section 303(c) of the Clean Water Act.

Guidelines are the management tools, methods, strategies, and techniques, such as best management practices, designed to maintain or achieve healthy public lands as defined by the standards. Grazing management practices must promote plant health by providing for one or more of the following:

- Periodic rest or deferment from grazing during critical growth periods
- Adequate recovery and regrowth periods
- Opportunity for seed dissemination and seedling establishment

The Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado (BLM Standards) are directed at improving resource conditions for soils, riparian systems, upland vegetation, wildlife habitat, Threatened and Endangered Species, and water quality (see **Appendix K**, BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado). The Standards are implemented through land health assessments, determination documents, environmental analysis documents, permit renewals, and other permit changes.

Management practices for livestock grazing have been focused on achieving BLM standards and meeting objectives for other resources (such as those associated with vegetation and soils) established for allotments. This has been accomplished by improving conformance with the guidelines for livestock management, such as changing the duration of grazing use and season of use, reducing AUMs, and improving grazing distribution. Generally, reducing the duration of grazing use, including rest or deferment grazing plans, and improving

livestock distribution are the key to meeting rangeland objectives, especially those associated with riparian areas and wetlands. Grazing management has been improved by a variety of actions, such as adjustments in grazing permits (including adding terms and conditions designed to maintain or improve riparian zones and wetlands, utilization, herding and riding requirements, and placing salt and supplemental feed away from riparian zones), constructing water developments and pasture fencing, and ensuring compliance with maintenance of range improvements and grazing permits.

The BLM also administers the Wild Horse and Burro Program. Existing conditions for wild horses and burros in the planning area are discussed in **Section 3.13**, Wild Horse Management.

3.12.1 Existing Conditions

Conditions of the Planning Area

Management practices for livestock grazing on public lands in the planning area are focused on achieving standards and meeting objectives for other resources (such as those associated with vegetation and soils) established for allotments. Generally, reducing the duration of grazing use, including rest or deferment grazing plans, and improving livestock distribution are the key to meeting rangeland objectives, especially those associated with riparian areas and wetlands. Grazing management has been improved by a variety of actions, such as adjustments in grazing permits (including adding terms and conditions designed to maintain or improve riparian zones and wetlands, utilization, herding and riding requirements, and placing salt and supplemental feed away from riparian zones), constructing water developments and pasture fencing, and ensuring compliance with maintenance of range improvements and grazing permits.

Table 3.53 through **Table 3.55** display data compiled in a baseline environmental report produced by the US Geological Survey and the BLM (Manier et al. 2013). This data provides a rough estimate across GRSG habitat in the planning area. More accurate data are provided below for BLM-administered and National Forest System lands within GRSG habitat in the planning area. In each table, acres and miles are presented by surface management agency and their presence within GH and PH in the planning area.

Table 3.53
BLM Grazing Allotments Not Meeting Land Health Standards within GRSG Habitat

Surface Management Agency	Total Acres of Allotments Not Meeting Land Health Standards [1]	Acres within GH	Acres within PH
BLM	390,200	224,100	166,100
Tribal and Other Federal	1,100	1,100	0

Table 3.53
BLM Grazing Allotments Not Meeting Land Health Standards within GRSG Habitat

Surface Management Agency	Total Acres of Allotments Not Meeting Land Health Standards [1]	Acres within GH	Acres within PH
State	29,900	5,800	24,100
Other	700	700	0

Source: Manier et al. 2013
[1] Only includes allotments not meeting Land Health Standards with grazing as the causal factor. Land health assessments are not a requirement of the Forest Service.

Table 3.54
Cropland within GRSG Habitat in the Planning Area

Surface Management Agency	Total Acres [1]	Acres within GH	Acres within PH
BLM	2,100	1,000	1,100
Forest Service	0	0	0
Tribal and Other Federal	0	0	0
Private	67,700	34,900	32,800
State	4,300	2,400	1,900
Other	100	0	100

Source: Manier et al. 2013
[1] Based on data provided by the National Agricultural Statistics Service

Table 3.55
Fences within GRSG Habitat in the Planning Area

Surface Management Agency	Total Miles [1]	Miles within GH	Miles within PH
BLM	2,300	800	1,500
Forest Service [2]	N/A	N/A	N/A
Tribal and Other Federal	0	0	0
Private	2,400	800	1,600
State	300	100	200
Other	0	0	0

Source: Manier et al. 2013
[1] Derived from a dataset that identifies pasture and allotment borders on BLM and Forest Service land as potential fences.
[2] Data not available.

Conditions on BLM-Administered Lands

The BLM manages livestock grazing on 997 allotments comprising approximately 4,205,600 acres on BLM-administered land in the planning area (**Table 3.56**). Of the 997 allotments managed in the planning area, 792 include some lands within GRSG habitat. A total of 317,469 AUMs are currently permitted on these 792 allotments, with a total of 757 leases/permits.

Table 3.56
BLM-Administered Grazing Allotments within GRSG Habitat

Field Office	Number of Allotments	Acres			Permitted AUMs
		Non-habitat	PH	ADH	
GJFO	33	253,200	5,400	31,200	10,919
WRFO	139	1,159,900	121,500	695,700	111,516
CRVFO	61	150,900	24,300	31,200	21,631
LSFO	277	382,600	552,400	1,716,500	141,661
KFO	232	205,600	189,600	393,800	31,742
Total	**792**	**2,152,200**	**893,200**	**2,868,400**	**317,469**

Source: BLM 2013

The livestock that graze on BLM-administered lands in GRSG habitat in the planning area are primarily cattle but also include sheep, bison, and some domestic horses. The season of use within the planning area is generally from May through October, with much of the use in spring (May and early June). Spring use occurs on the lower benches and is designed to coordinate with the end of calving on private lands and transitions from private land to Forest Service permits. Summer and fall use (late June through October) generally occurs at higher elevations.

In addition to the presence of livestock on BLM-administered land is the presence of range improvements. Range improvements include fences (and associated gates and cattle guards), corrals, and water developments. Fences are typically three- to four-strand barbed wire, one-strand barbed wire with net, or "sheep" wire. Fence posts are either wood or metal, typically spaced 12 to 16 feet apart and may include one to two metal or wooden stays between the posts. In some areas, high-tensile smooth wire fences have replaced barbed wire. Water developments vary widely, consisting of earthen ponds that fill by catching precipitation runoff, developed springs, and wells. Developed springs and wells commonly include short (tens or hundreds of feet) or long (thousands of feet) pipeline systems that distribute water to one or more metal, fiberglass, or rubber-tire tanks. Earthen ponds and developed springs are typically located in drainages and depressions while wells and their associated delivery tanks are typically located on uplands.

Active grazing use authorization, management actions, and long term rangeland health in each allotment are monitored and evaluated, based on existing data. Adjustments are made by agreement or decision in accordance with legislation, regulations, and policy to ensure that public land resources are maintained or improved for future commodity and non-commodity values. Resource specialists use a variety of tools to monitor rangeland health including a series of rangeland health indicators that help them make determinations regarding the relationship between livestock grazing and the Colorado Standards for Public Land Health (see **Appendix K**, BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado).

In 1982, the BLM developed three selective Management Categories to prioritize grazing allotments according to management needs:

- *Improve (I)*. Managed in order to improve current unsatisfactory resource conditions or resolve potential resource conflicts and receive the highest priority for funding and management actions
- *Maintain (M)*. Managed in order to maintain current satisfactory resource conditions and actively managed in order to ensure that resource values do not decline
- *Custodial (C)*. Managed custodially while, at the same time, protecting existing resource values

These categories are designed to concentrate public funds and management efforts on allotments with the most significant resource conflicts, and the greatest potential improvement. The grazing allotments within the planning area were prioritized for management according to one of the three levels. The criteria used for placing allotments in a Management Category were the presence of resource conflicts or problems and the potential for improvement, as outlined in the BLM's Selective Management Policy. Allotment management plans provide greater detail in terms of livestock management objectives than the terms and conditions in the general grazing permit or lease. The allotment management plans are generally prioritized for those allotments designated for improvement but can also be developed for allotments in the maintenance or custodial categories

Conditions on National Forest System Lands

Routt National Forest

The Hahns Peak/Bears Ears, Parks, and Yampa Ranger Districts of the Routt National Forest manage grazing allotments in six counties of northwest Colorado (Garfield, Grand, Jackson, Moffat, Rio Blanco, and Routt). There are 159 grazing allotments on the Forest. Types of domestic livestock under permit include cattle, sheep, and horses. GRSG habitat (both PH and GH) falls within 24 different allotments as shown in **Table 3.57**. The total amount of GRSG habitat on the Routt National Forest adds to 17,400 acres; a total of 13,500 acres are located within the 24 grazing allotments.

All allotments on the Routt National Forest are managed under allotment management plans and annual operation instructions that implement livestock grazing standards and guidelines of the Routt National Forest Revised Forest Plan ROD (Forest Service 1998).

Maximum allowable use guidelines in the Forest Plan are moderate. This means that no more than 50 percent use of forage under a deferred rotation system and no more than 55 percent use of forage under a rest rotation system are

Table 3.57
National Forest System Grazing Allotments within GRSG Habitat

Ranger District	Number of Allotments	Acres			Permitted AUMs
		Non Habitat	PH	ADH	
Yampa	5	31,000	600	800	3,329
Hahns Peak/Bears Ears	13	49,900	0	9,900	11,762
Hahns Peak/Bears Ears and Parks	5	23,200	200	1,000	3,245
Parks	1	16,600	800	800	1,146
Total	**24**	**120,600**	**1,600**	**12,500**	**19,482**

Source: Forest Service INFRA database 2012
Acres may not always add up due to database rounding errors in individual land ownership categories.

permitted. Lower allowable use guidelines (40 to 45 percent) are applied to rangelands in unsatisfactory condition. Additional guidelines for riparian areas include leaving four to 6 inches of residual stubble in riparian areas at the end of the grazing season.

Of the 24 allotments within GRSG habitat, 10 of the allotments are sheep allotments, 11 are cattle allotments, and 2 are dual use (available to be used by both). The Clover Valley sheep allotment is presently vacant. Two of the cattle allotments currently under permit are stocked with yearling cattle, while the others are stocked with cow/calf pairs.

All of the cattle grazing allotments overlapping with GRSG habitat are managed under rotational grazing systems, and managed by riders, fenced pastures, or both. With the exceptions of South Hunt Creek and California Park, season-long grazing management systems include rotational grazing, deferred rotation between two to four pastures, deferred grazing, and rest rotation grazing (Long Park). All have grazing seasons that fall between the last week of May and early October.

Removal of livestock from grazing allotments is required when maximum allowable use is reached on key areas within the allotments. A key area is a portion of rangeland selected because of its location, grazing or browsing value or use. It serves as a monitoring and evaluation point for degree of grazing use and therefore guides the general management of the entire area of which it is a part. On cattle allotments, key areas are generally riparian areas and wet meadows because they are preferred by cattle, of high ecological value, and most susceptible to reaching allowable use soonest. In general, when key areas in a pasture reach maximum allowable use and cattle are removed, upland shrublands, including sagebrush habitats, are grazed well below allowable use levels. In most shrub sites on slopes greater than 15 to 20 percent or more than 0.25-mile from water sources, forage utilization by livestock is light to very light, averaging 25 percent or less. Localized heavy use of mountain shrublands and, occasionally, sagebrush stands can occur in areas where salt blocks are placed around water developments and at some fence corners to achieve needed

livestock distribution. These sites are generally extremely small in extent relative to total acreage of greater sagebrush habitat.

There are 68 small stock water ponds and spring developments within GRSG habitat (67 in GH and 1 in PH), mostly on the cattle allotments. In addition, there are 13 other small ponds and spring developments near (within 0.25 to 0.5-mile) of GRSG habitat, including 7 in GH and 6 in PH. Stock water ponds are not fenced and are generally less than 0.25-acre in size. Spring developments consist of a fenced spring with collection box and a pipeline to a watering tank. Water tanks are equipped with devices to allow for escape of small mammals and birds, though they vary in design, and not all would be considered suitable for large birds such as GRSG.

GRSG habitat on the Routt National Forest, with the exception of the GH area in California Park, is located at the lower elevation margins of the allotments and is therefore all adjacent to National Forest Boundary fence and sometimes also interior pasture fences. Much of the Forest boundary was fenced between the late 1930s and the 1960s. Most of the fence is four-strand barbed wire with wood posts, steel posts, or a mix of wood and steel. There are also some segments of wood buck and pole fence.

3.12.2 Trends

Trends on BLM-Administered Lands

In general, livestock grazing has decreased in the planning area. Trends in livestock grazing reflect changes in livestock species, in permittees and their perspectives, and in permitted use and/or season of use.

Absentee ownership of base property associated with many of the allotments has increased, as has the number of permittees that do not rely on livestock grazing for their primary source of income. Changes in the types of permittees that run livestock in the planning area have resulted in diversification of perspectives. Some permittees have shifted the focus of their management to habitat improvement for wildlife and recreation as an alternative source of income. Trends in livestock grazing have also resulted from competition for forage by wildlife, increased gas development, and increased recreation demand. Of these trends, increased gas development and wildlife competition for forage have been the most important trends impacting livestock grazing operations and rangeland management in GRSG habitat on BLM-administered lands in the planning area.

Trends on National Forest System Lands

Routt National Forest

Trends in livestock use of areas with GRSG habitat have been declining over the last several years, with voluntary reductions in AUM's on many allotments. These reductions were mostly as a result of the range condition resulting from

drought and additional pressure from elk. However, there has been little change in permitted use and when range conditions improve, AUMs may increase in these areas.

3.12.3 References

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3.13 WILD HORSE MANAGEMENT

The BLM protects, manages, and controls wild horses in accordance with the Wild Free-Roaming Horses and Burros Act of 1971 (PL 92-195, as amended by Congress in 1976, 1978, 1996, and 2004). The FLPMA directs the BLM to manage wild horses and burros as one of numerous multiple uses including mining, recreation, domestic grazing, and fish and wildlife. Wild horse and burro management is governed by 43 CFR subpart 4700. One of the BLM's top priorities is to ensure the health of the public lands so that the species depending on them, including the nation's wild horses and burros, can thrive. The BLM policies and regulations also direct that wild horses and burros are to be managed as self-sustaining populations of healthy animals.

Following passage of the Wild Free-Roaming Horses and Burros Act, herd areas were identified in the planning area as displayed on **Figure 3-10** in **Appendix A**, Figures.

Herd areas are locations where wild horse and burro populations were found when the Act was passed. HMAs are areas within the herd areas where it was decided through LUPs that there was enough forage, water, cover, and space to support a healthy wild horse or burro population.

3.13.1 Existing Conditions

Conditions of the Planning Area

Table 3.58 displays data compiled in a baseline environmental report produced by the US Geological Survey and the BLM (Manier et al. 2013). Acres are presented by surface management agency and their presence within GH and PH in the planning area. There are no wild burros in the planning area.

Table 3.58
Acres of Wild Horse Areas within GRSG Habitat in the Planning Area

Surface Management Agency	Total Acres [1]	Acres within GH	Acres within PH
BLM	161,300	68,200	93,100
Forest Service	0	0	0
Tribal and Other Federal	0	0	0
Private	18,300	11,900	6,400
State	3,200	1,800	1,400
Other	0	0	0

Source: Manier et al. 2013
[1] Includes Herd Areas and Herd Management Areas

Conditions on BLM-Administered Lands

Three herd areas fall within the planning area: North Piceance, West Douglas, and Douglas Mountain. The Douglas Mountain Herd Area contains no wild horses. As outlined in **Table 3.59** both occupied herd areas contain GH totaling 21,000 acres. There is no PH in the two occupied herd areas.

Table 3.59
Herd Areas within GRSG Habitat on BLM-administered Lands

Herd Area	BLM Field Office	Acres		
		Total	GH	PH
North Piceance	WRFO	76,300	13,600	0
West Douglas	WRFO	123,400	7,500	0
Douglas Mountain	LSFO	65,800	9,700	60

Source: BLM 2013

The BLM manages two HMAs in the planning area, the Piceance-East Douglas HMA and the Sand Wash Basin Wild Horse HMA, both of which contain GH and PH. The third HMA is Little Book Cliffs Wild Horse Range. Little Book Cliffs does not have any of the GRSG habitat. Wild horse and burro populations in HMAs are managed within appropriate management levels and corresponding forage allocations (AUMs). The appropriate management level for each HMA is expressed as an acceptable range. Forage allocations for horses in the HMA are based on the maximum number of the appropriate management level range. Appropriate management levels, as well as the boundaries of each HMA, were established through previous LUPs to ensure that public land resources, including wild horse habitat, are maintained in satisfactory, healthy condition and

that unacceptable impacts on these resources are minimized. Appropriate management levels are based on best available science and rangeland monitoring studies. HMA acreages by habitat type along with current appropriate management levels are shown in **Table 3.60**.

Table 3.60
Herd Management Areas within GRSG Habitat on BLM-Administered Lands

Herd Management Area	BLM Field Office	Acres			Appropriate Management Level
		Total	GH	PH	
Piceance-East Douglas	WRFO	158,200	6,900	31,800	135-235
Sand Wash Basin HMA	LSFO	153,100	62,035	91,100	163-362

Source: BLM 2013

Piceance-East Douglas Herd Management Area

The 1975 White River Resource Area Management Framework Plan identified two wild horse units: the Piceance Basin and the Douglas Herd Unit. The Douglas Herd Unit included what is now the East Douglas portion of the Piceance-East Douglas HMA and the West Douglas Herd Area. The East and West Douglas areas were physically separated by completion of a State Highway 139 ROW fence in 1983. In 2007, the BLM completed the West Douglas Herd Area Plan Amendment to the 1997 White River RMP to discontinue maintaining the wild horse population in the West Douglas Herd Area. The wild horses are presently distributed among the Piceance-East Douglas HMA, the West Douglas Herd Area, and the North Piceance Herd Area. A wild horse management plan for the Piceance-East Douglas HMA was approved in June 1981 (BLM 1981).

The wild horse population within the Piceance-East Douglas HMA is managed with an appropriate management level of 135 to 235 adult wild horses. The estimated population of wild horses within the HMA was 183 in the spring of 2012 based on a helicopter inventory. Various factors including drought conditions, historic grazing, wildfires, and wild horse population growth may adversely affect habitat and in some instances herd health. The appropriate management level, objectives, and management actions may be modified in future multiple use decisions for the grazing allotments contained within an HMA. Wild horses that establish home ranges outside of HMA or Herd Area boundaries are removed during gathers. Wild horses are removed from private lands at the request of the landowner and after reasonable efforts to keep the animals off private lands have failed.

Sand Wash Basin Herd Management Area

The wild horse population within the Sand Wash HMA is managed with an appropriate management level of 163 to 362 adult wild horses. The most recent count of the HMA showed 327 adult horses. The HMA is gathered when the high end of the appropriate management level is exceeded and the population is reduced to 163 adult animals.

Conditions on National Forest System Lands

Routt National Forest

There are no wild horse and burro management areas or populations present in the Routt National Forest planning area.

3.13.2 Trends

Trends on BLM-Administered Lands

Current conditions within the planning area show that wild horse populations continue to grow, often exceeding appropriate management levels. Wild horses will continue to be removed to maintain appropriate management levels and rangeland health.

3.13.3 References

BLM (United States Department of the Interior, Bureau of Land Management). 1981. BLM-Little Snake Field Office, Piceance-East Douglas HMA Herd Management Plan. June 1981.

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3.14 SPECIAL DESIGNATIONS

Special designations on BLM-administered and National Forest System lands identify locations of unique value that require special management attention. Designations such as ACECs are specific to the BLM. Others, including Wilderness Areas, WSAs, Wild and Scenic Rivers, National Scenic and Historic Trails, Scenic Byways, and Watchable Wildlife Areas, are common designations used by both the BLM and Forest Service. Special designation areas are found throughout the planning area and have the potential to influence BLM and Forest Service management decisions relative to GRSG on those lands.

Areas of Critical Environmental Concern

The BLM uses the ACEC designation to highlight areas where special management attention is necessary to protect and prevent irreparable damage to important historic, cultural, and scenic values; fish or wildlife resources; or other natural systems or processes [43 CFR 1610.7-2(b)]. The ACEC designation may also be used to protect human life and safety from natural hazards.

Wilderness, Wilderness Study Areas, and Inventoried Roadless Areas

The Wilderness Act of 1964 (Public Law 88-577) established the National Wilderness Preservation System. Wilderness areas are natural environments that have not been significantly modified by human activity; provide opportunities for solitude and/or primitive and unconfined recreational experiences; and are important for maintenance of species diversity, protection of threatened and endangered species, protection of watersheds, scientific research, and various social values. Wilderness areas are protected from development, timber cutting, and the operation of motorized vehicles and equipment.

On BLM-administered land, the FLPMA directs the BLM to inventory, study, and recommend which lands under its administration should be designated as wilderness. The result is an inventory of WSAs. A WSA is a roadless area greater than 5,000 acres designated by the BLM as having wilderness characteristics, thus making it worthy of consideration by Congress for designation as a National Wilderness Area. During the time Congress considers whether to designate a WSA as permanent wilderness, the BLM is required to manage the WSA in a manner designed to prevent the impairment of the area's suitability for wilderness designation. The BLM's authority to conduct wilderness reviews, including the establishment of new WSAs, expired on October 21, 1993, pursuant to Section 603 of the FLPMA.

Inventoried Roadless Areas are undeveloped areas of National Forest System land typically exceeding 5,000 acres that meet the minimum criteria for wilderness consideration under the Wilderness Act. Inventoried Roadless Areas may contain improvements such as motorized trails, fences, outfitter camps, and evidence of historical logging activities. As required by 36 CFR 219.17, Inventoried Roadless Areas are identified during Forest Plan development or revision and are qualified for study if they are 5,000 acres in size or larger or, if less than 5,000 acres, contiguous to an existing Wilderness Area and contain no classified roads, which are roads intended for long-term highway vehicle use.

Wild and Scenic Rivers

In order to accomplish the goal of protecting wild and scenic waterways, Congress established the National Wild and Scenic Rivers System (National System) through the Wild and Scenic Rivers Act of 1968.). To qualify for nomination to the National System, a waterway, waterway segment, or tributary must be in a free-flowing condition and must be deemed to have one or more outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values.

The Wild and Scenic Rivers Act directs all federal agencies to give consideration to potential national wild, scenic, and recreational river areas in all planning for use and development of water and related land resources and that each waterway in the National System be administered in a manner that protects and

enhances its outstandingly remarkable value. The existing uses of a waterway are allowed to continue, and future uses may be considered so long as existing or proposed uses do not conflict with the goal of protecting waterway values.

National Scenic and Historic Trails

The National Trails System Act of 1968 (Public Law 90-543, as amended) authorized the creation of a National Trail System composed of National Scenic Trails, National Historic Trails, and National Recreation Trails. Only Congress can designate National Scenic Trails and National Historic Trails. National Recreation Trails are designated by the Secretary of the Interior or the Secretary of Agriculture.

Scenic Byways

Scenic Byways include All-American Roads, National Scenic Byways, Colorado State Scenic and Historic Byways, and BLM-designated Backcountry Byways. The program seeks to recognize, preserve, and enhance selected roads throughout the US.

Watchable Wildlife Areas

The federal Watchable Wildlife Program is a cooperative nationwide effort among 13 organizations, including the BLM and Forest Service, designed to foster the conservation of wildlife and wildlife habitats. There are 201 Watchable Wildlife Areas in the State of Colorado, and approximately 60 are found within the planning area.

Special Interest Areas

The Forest Service uses the special interest area designation to identify areas of National Forest System land with unusual characteristics, such as scenic, historical, geological, botanical, zoological, or paleontological characteristics. Management emphasis is on protecting or enhancing, and where appropriate, developing and interpreting for public education and recreation. Many uses are allowed in special interest areas, including recreation, livestock grazing, mineral leasing, and road construction, as long as the uses do not degrade the characteristics for which the areas are designated. The California Park Special Interest Area, which includes Slater park, was designated in large part due to the zoological values of the area, specifically including GRSG and Columbian Sharp-Tailed Grouse. A management plan for the California Park Special Interest Area was prepared in 2003 and it includes management goals for GRSG within the Special Interest Area (Forest Service 2003).

Research Natural Areas

Research Natural Areas provide a spectrum of relatively undisturbed areas representing a wide range of natural variability within important natural ecosystems and environments. Research Natural Areas can also be areas with special or unique characteristics or scientific importance. Research Natural Areas are also selected to:

- Serve as reference areas for evaluating the range of natural variability and the impacts of management in similar environments
- Maintain representative and key elements of biological diversity at the genetic, species, population, community, and landscape levels
- Serve as areas for the study of ecosystems and ecological processes including succession
- Provide on-site and extension educational activities
- Serve as baseline areas for measuring ecological change

3.14.1 Existing Conditions

Conditions of the Planning Area

GRSG habitat is widely distributed throughout the planning area. The highest concentrations of PH and GH are found in the Wyoming Basin Management Zone, with particularly large and contiguous habitat areas in Moffat, Jackson, and Grand counties. Habitat areas in the remainder of the field offices and National Forest are generally smaller and less contiguous. See **Table 3.61** and **Figure 3-11**.

Table 3.61
Special Designations in ADH

Designation	Agency	Total	Area within ADH
ACECs	BLM	16	33,200 acres
WSAs	BLM	12	13,600 acres
Wild and scenic river segments (eligible and suitable segments only)	BLM/Forest Service	27	52 miles
Special Interest Areas	Forest Service	2	24,200 acres
Inventoried Roadless Areas	Forest Service	4	62,400 acres
National Scenic and Historic Trails	BLM/Forest Service	1	1.7 miles
Watchable Wildlife Areas	BLM/Forest Service	0	0

Source: BLM 2013

Conditions on BLM-Administered Lands

ACECs

There are 16 ACECs on BLM-administered lands in the planning area (the Forest Service equivalent designation of an ACEC is a Zoological Area). Each BLM ACEC is designated for the purpose of protecting unique values in that area. **Table 3.62** summarizes the size and values unique to each ACEC.

Table 3.62
ACECs within GRSG Habitat on BLM-Administered Lands

ACEC	BLM Field Office	Total Acres	Acres within PH	Acres within ADH	Relevant and Important Values
Anvil Points	CRVFO	5,000	0	200	Scenic, botanical, wildlife values, and natural processes
Blacks Gulch	WRFO	800	0	50	Paleontology
Blue Hill	CRVFO	3,700	300	900	Cultural resources, erosive soils
Bull Gulch	CRVFO	10,400	0	200	Scenic qualities and botanical values
Deer Gulch	WRFO	1,800	0	1,700	Sensitive plants and remnant vegetation associations
East Douglas Creek	WRFO	47,600	800	1,900	Important biologically diverse plant communities, riparian habitats, and Colorado River cutthroat trout habitat
East Fork Parachute Creek	CRVFO	6,600	0	5,000	Scenic qualities, fish and botanical resources, and natural processes
Irish Canyon	LSFO	5,700	2,800	6,500	Endangered plant species, cultural resources, scenic qualities
Kremmling Cretaceous Ammonite ACEC/Research Natural Area	KFO	200	200	200	Significant marine invertebrate fossils
Moosehead Mountain	WRFO	8,900	6,200	8,600	Important biologically diverse plant communities, riparian habitats, and cultural resources
North Park Natural Area ACEC/Research Natural Area	KFO	300	300	300	Endangered plant species
Raven Ridge [1]	WRFO	5,000	0	300	Threatened, endangered, and sensitive plants, remnant vegetation associations, fragile soils, and paleontology
South Cathedral Bluffs [1]	WRFO	1,300	300	300	Sensitive plants and remnant vegetation associations
Trapper/Northwater Creek [2]	CRVFO/ WRFO	4,800	0	4,600	Fish resources and natural processes

Table 3.62
ACECs within GRSG Habitat on BLM-Administered Lands

ACEC	BLM Field Office	Total Acres	Acres within PH	Acres within ADH	Relevant and Important Values
White River Riparian	WRFO	1,000	0	100	Important biologically diverse communities and critical habitat
Yanks Gulch/Upper Greasewood Creek	WRFO	2,700	0	2,500	Threatened, endangered, and sensitive plants, and remnant vegetation associations
Total		**105,800**	**10,900**	**33,350**	

Source: BLM 2013
[1] Includes additions designated in the 1997 White River ROD and Approved RMP.
[2] Approximately 1,066 acres of ADH within the Trapper/Northwater Creek ACEC are managed by the WRFO. The remaining 3,526 acres of ADH are managed by the CRVFO.

Anvil Points ACEC

This ACEC was designated in the 2007 Roan Plateau ROD/RMP for its scenic, geologic, wildlife, and botanical values (BLM 2007a). The qualities and character of the area's scenic viewshed are both locally and regionally important. Wildlife and botanical values within the ACEC include crucial habitat for peregrine falcons, golden eagles, and Townsend's big-eared bat, as well as two Candidate and two BLM sensitive plant species that are globally and regionally rare.

Blacks Gulch ACEC

This ACEC was designated in the 1997 White River ROD/RMP (BLM 1997) for paleontological values and is coincident with Colorado's Black's Gulch Natural Area. It is within the Wasatch Formation, which is characterized as a Potential Fossil Yield Class 5, meaning that it is a highly fossiliferous geologic unit that consistently and predictably produces either vertebrate or scientifically significant invertebrate or plant fossils. The area is the best fossil vertebrate locality of Lysite age (middle early Eocene) in Colorado and has produced hundreds of good specimens.

Blue Hill ACEC

This ACEC was designated in the Glenwood Springs 1984 ROD/RMP (BLM 1984). This ACEC is a sensitive area for cultural and Native American resources with the potential to yield information important to the understanding of prehistory and history. The area is also classified as a critical watershed because of the severe erosion hazard of the area's soils and the negative impact they could have on cultural resources and water quality.

Bull Gulch ACEC

This ACEC was designated in the Glenwood Springs 1984 ROD/RMP for its scenic qualities due to its unique and diverse topography, unique geological

forms, and sharp contrasting colors (BLM 1984). This ACEC also supports several sub-occurrences of Harrington's penstemon (*Penstemon harringtonii*), a BLM sensitive plant.

Deer Gulch ACEC

This ACEC was designated in the 1997 White River ROD/RMP to protect the area's sensitive plants and remnant vegetation associations (BLM 1997).

East Douglas Creek ACEC

This ACEC was designated in the 1997 White River ROD/RMP (BLM 1997) to protect important biologically diverse plant communities, riparian habitat, and Colorado River cutthroat trout habitat. Colorado River cutthroat trout, a BLM Sensitive species, occupy several streams within the East Douglas Creek ACEC, including East Douglas Creek, Bear Park Creek, Cathedral Creek, Lake Creek, and Solider Creek. These creeks are all small headwater streams but do persist in supporting self-sustaining populations of trout.

East Fork Parachute Creek ACEC

This ACEC was designated in the 2007 Roan Plateau ROD/RMP for its scenic qualities, fish and botanical resources, and natural processes (BLM 2007a). The area contains a scenic 200-foot-high waterfall and box canyon, Colorado River cutthroat trout habitat, a BLM sensitive plant species, a Green River Shale endemic plant, and four significant plant communities (BLM 2008).

Irish Canyon ACEC

This ACEC was designated as a Natural Area by the Colorado Natural Areas Program in 1990. The canyon supports populations of several plant species of special concern: Yampa beardtongue, ligulate feverfew, tufted cryptanth, and woodside buckwheat. The presence of mountain clover in Irish Canyon is the only such occurrence in the LSFO. High-quality examples of northwestern Colorado plant communities are found on the floor and canyon walls, and Irish Lakes represent one of the few natural playa lakes in Colorado. Rock art and other archaeological sites are also found in the canyon (BLM 2010).

Kremmling Cretaceous Ammonite ACEC/Research Natural Area

This ACEC is managed for research and preservation of fossil resources. The area contains a rich fossil assemblage of giant ammonites and other extinct species of marine fauna. In addition to the geologic importance of the Kremmling Cretaceous Ammonite ACEC/Research Natural Area, the area contains substantial habitat for GRSG (BLM 2007b).

Moosehead Mountain ACEC

This ACEC was designated in the 1997 White River ROD/RMP (BLM 1997) to protect biologically diverse plant communities, riparian habitats, and cultural resources. To prevent damage to watershed resources and wildlife habitat, 77 percent of the Moosehead Mountain ACEC is closed to motorized vehicle use.

North Park Natural Area ACEC/Research Natural Area

This ACEC was designated in order to protect North Park phacelia (*Phacelia formosula*), a federally endangered plant. The population is critically imperiled globally and within the State of Colorado due to its rarity (CNHP 2007).

Raven Ridge ACEC

This ACEC was designated in 1985 through the Raven Ridge Amendment to the White River Management Framework Plan (BLM 1985) and was expanded in the 1997 White River ROD/RMP (BLM 1997). It is coincident with Colorado's Raven Ridge Natural Area. The Raven Ridge ACEC was designated to protect special status plants, remnant vegetation associations, fragile soils, and paleontological resources. The area is located near the boundary between the Piceance and Uinta Basins. Raven Ridge effectively links the endemic floras of these two physiographic basins, resulting in a rich collection of rare endemic plants. The White River beardtongue is a currently a candidate for listing under the ESA and Graham's beardtongue is proposed for listing. BLM Sensitive species include the Debris milkvetch, Rollins' cryptantha, and Ephedra buckwheat. Portions of the ACEC are within the interface between the Wasatch and Green River Formations, which is classified as a Potential Fossil Yield Class 5. About 15 to 20 vertebrate fossil localities, primarily early primate specimens, have been documented within the Raven Ridge ACEC.

South Cathedral Bluffs ACEC

This ACEC was designated in 1987 through the Piceance Basin RMP (BLM 1987) and was expanded in the 1997 White River ROD/RMP (BLM 1997). It is also coincident with Colorado's South Cathedral Bluffs Natural Area. The area was designated for sensitive plant species, including the Cathedral Bluff dwarf gentian, the Piceance bladderpod, and the Cathedral Bluff meadow-rue. In addition, the area is the type locality for both the Cathedral Bluff meadow-rue and the Piceance bladderpod. A type locality is the location where a species was first discovered and is scientifically important because it is used as a reference site.

Trapper/Northwater Creek ACEC

This ACEC was designated in 2008 through the Roan Plateau RMPA (BLM 2007a) and is managed by both the WRFO and the CRVFO. Both Trapper Creek and Northwater Creek contain genetically pure populations of naturally reproducing Colorado River cutthroat trout. The ACEC also contains a Colorado endemic plant, the hanging garden sullivantia. Rare plant communities, including the Indian ricegrass shale barrens community and the mountain big sagebrush/Thurber fescue community, are also found within the area.

White River Riparian ACEC

This ACEC was designated in the 1997 White River ROD/RMP (BLM 1997) and consists of numerous small parcels managed by the BLM within the 100-year floodplain of the White River. These areas contain important biologically diverse communities associated with riparian habitats and provide nesting and roost

habitat for bald eagles, a BLM Sensitive species. The White River Riparian ACEC also contains designated critical habitat for the endangered Colorado pikeminnow below the Taylor Draw Dam.

Yanks Gulch/Upper Greasewood Creek ACEC

This ACEC consists of three distinct parcels that were designated in 1987 through the Piceance Basin RMP (BLM 1987) and carried forward in the 1997 White River ROD/RMP (BLM 1997). The Yanks Gulch/Upper Greasewood Creek ACEC is coincident with Colorado's Yanks Gulch Natural Area. The area was designated as an ACEC to protect special status plants, including occupied habitat for federally threatened Dudley Bluffs bladderpod and Dudley Bluffs twinpod. The area also contains four high quality examples of remnant plant communities representative of pre-settlement vegetation in the Piceance Basin. Two of these remnant plant communities are known to grow only on the Green River Formation.

Wilderness and Wilderness Study Areas

There are 12 WSAs on BLM-administered lands within GRSG habitat in the planning area. These WSAs comprise 13,600 acres of habitat, of which 4,800 acres fall within PH. Until Congress considers whether to designate a WSA as permanent wilderness, the BLM is required to manage the WSA in a manner designed to prevent the impairment of the area's suitability for wilderness designation. See **Table 3.63**.

Wild and Scenic Rivers

There are no designated wild and scenic rivers in the planning area. There are, however, 24 river segments on 12 different rivers or creeks on BLM-administered lands in GRSG habitat that have been determined to be eligible for inclusion in the National Wild and Scenic Rivers System, based on an initial evaluation. These eligible segments account for 32.6 miles on BLM lands within the planning area. There are 3 additional segments on the Yampa River that have been found suitable for inclusion in the National Wild and Scenic Rivers System, accounting for 19.1 miles on BLM-administered land within GRSG habitat in the planning area. See **Table 3.64**.

A final suitability determination of Wild and Scenic Rivers occurs through the RMP/EIS process. One BLM field office within the planning area, the LSFO, has completed suitability determinations. The other four BLM field offices within the planning area have yet to complete suitability determinations, but have identified eligible segments within their field offices. Rivers identified as suitable will then be managed to protect identified outstandingly remarkable values until Congress either approves or rejects the recommendation for their inclusion in the National Wild and Scenic River System. Only Congress can designate a Wild and Scenic River. Decisions in the RMP simply identify segments that are suitable for inclusion in the system, and provides for management to preserve the values that made them eligible or suitable.

Table 3.63
WSAs within GRSG Habitat on BLM-administered Lands

Name	BLM Field Office	Vegetation	Acres within PH	Acres within ADH
Bull Canyon WSA	WRFO	Pinyon-juniper, sagebrush, riparian vegetation	1,100	1,200
Bull Gulch WSA	CRVFO	Pinyon-juniper, aspen, Douglas fir, blue spruce, ponderosa pine	0	1,500
Castle Peak WSA	CRVFO	Grasslands, sagebrush, aspen, spruce-fir forest	200	1,100
Cross Mountain WSA	LSFO	Pinyon-juniper, sagebrush	700	800
Diamond Breaks WSA	LSFO	Pinyon-juniper, sagebrush	900	1,800
North Sand Hills Instant Study Area [1]	KFO	Sagebrush, aspen	50	50
Peterson Draw WSA	LSFO	Pinyon-juniper, ponderosa pine, sagebrush, native grass communities	0	200
Platte River Contiguous WSA	KFO	Pinyon-juniper, Douglas fir, sagebrush	10	10
Vale of Tears WSA	LSFO	Pinyon-juniper, ponderosa pine, sagebrush, native grass communities	0	600
West Cold Spring WSA	LSFO	Pinyon-juniper, sagebrush, grasses, Douglas fir, limber pine, riparian vegetation	1,500	3,600
Willow Creek WSA	WRFO	Douglas fir, riparian vegetation, pinyon-juniper, sagebrush, saltbush, greasewood, grasses	400	1,900
Windy Gulch WSA	WRFO	Douglas fir, pinyon-juniper, sagebrush	0	800
Total			**4,860**	**13,560**

[1] The FLPMA directed the BLM to identify and study for wilderness characteristics. Section 603 of the FLPMA included those areas that were formally identified as natural or primitive areas prior to November 1, 1975, which then were also identified as "Instant Study Areas." These areas are sometimes referred to as "603 WSAs" (Manual 6330 – Management of Wilderness Study Areas [BLM 2012d]).

Table 3.64
Eligible and Suitable Stream Segments within GRSG Habitat on BLM-Administered Lands

River or Creek	BLM Field Office	Number of Stream Segments	Eligible or Suitable	Length on BLM within PH or GH (total miles of all segments)	Preliminary Classification	Outstandingly Remarkable Values
Blue River [1]	KFO	3	Eligible	1.14	Recreational	Wildlife, Recreational, Biodiversity
Colorado River, Segment 6	CRVFO	1	Eligible	2.76	Recreational	Scenic, Recreational, Wildlife, Botanical
Colorado River	KFO	4	Eligible	3.83	Recreational	Recreational, Scenic, Geologic, Wildlife, Historic
East Fork Parachute Creek	CRVFO	2	Eligible	4.49	Wild	Scenic, Fish, Scenic, Botanic
East Middle Fork Parachute Creek	CRVFO	1	Eligible	0.42	Wild	Fish, Botanic
Egeria Creek	CRVFO	1	Eligible	0.36	Recreational	Historic
First Anvil Creek	CRVFO	2	Eligible	0.39	Wild	Scenic, Fish, Botanic
Golden Castle Creek	CRVFO	1	Eligible	1.05	Wild	Fish, Botanic
JQS Gulch	CRVFO	1	Eligible	1.14	Scenic	Fish, Botanic
Muddy Creek	KFO	1	Eligible	3.43	Recreational	Wildlife
Northwater Creek	CRVFO	1	Eligible	2.80	Wild	Fish, Botanic
Second Anvil Creek	CRVFO	2	Eligible	1.77	Wild	Recreational, Botanic
Sulphur Gulch	KFO	1	Eligible	3.04	Recreational	Paleontologic
Trapper Creek	CRVFO	3	Eligible	5.98	Wild	Recreational, Scenic, Fish
Yampa River Segment 1	LSFO	1	Suitable	1.9	Recreational	Fish population, Recreation
Yampa River Segment 2	LSFO	1	Suitable	13.9	Scenic	Fish population, Recreation
Yampa River Segment 3	LSFO	1	Suitable	3.3	Wild	Fish population, Recreation, Geologic, Scenic
Total		**27**		**51.7**		

Source: BLM 2013

[1] One (1) additional segment along the Blue River was originally identified as eligible (Blue River Segment 1). A re-examination of the land ownership and management status revealed that Segment 1 of the Blue River is on National Forest System land rather than on BLM-administered lands. As a result, this segment has been dropped from consideration by the BLM, and is not studied for suitability in this report.

National Scenic Byways
Portions of three scenic byways, the Colorado River Headwaters National Scenic Byway, the Dinosaur Diamond Prehistoric Highway, and the Cache La Poudre-North National Scenic Byway, traverse GRSG habitat in the planning area.

The 69-mile Colorado River Headwaters National Scenic Byway bisects the planning area, following the Colorado River from Grand Lake west to State Bridge.

The 101-mile-long Cache la Poudre-North Park National Scenic Byway begins east of Walden on Colorado Highway 14 and extends east to downtown Fort Collins. The byway was once a transit corridor for Native Americans and early Euro-American explorers (US Department of Transportation 2013). The 480-mile Dinosaur Diamond Prehistoric Highway traverses the planning area near the community of Rangely, Colorado.

Watchable Wildlife Areas
There are no formal Watchable Wildlife Areas on BLM-administered lands in the planning area. The Hebron Waterfowl Management Area in the KFO is promoted as a Watchable Wildlife Area; however, no formal management plan exists.

Conditions on National Forest System Lands

Routt National Forest

Special Interest Areas
Special Interest Areas on the Routt National Forest are managed to protect or enhance their unique characteristics, to maintain their special interest values, and to provide interpretative opportunities, where appropriate. While there are seven special interest areas scattered across the National Forest, only two of them contain GH or PH (**Table 3.65**).

Table 3.65
Special Interest Areas within GRSG Habitat on National Forest System Lands

Name	Total Acreage	Acreage within GH	Acreage within PH
California Park	23,000	6,700	0
Camp Creek	1,200	0	10
Total	**24,200**	**6,700**	**10**

Source: Forest Service 2013

California Park (Colorado MZ 7). This special interest area is a large, high-mountain park located in the northwest portion of the National Forest, about 20 miles north of Hayden, Colorado. The area was designated as a special interest area because of its geological, zoological, historical, paleontological, and scenic values. Many species exist in the area, such as greater sandhill crane,

sharp-tailed grouse, and boreal toads. The area also contains unique features such as sulphur springs, fossils, and buffalo skulls. Roughly 29 percent of this special interest area is located in GH.

Camp Creek (Colorado MZ 11). This special interest area is located in the northeast portion of the Forest, roughly 15 miles north of Walden, Colorado. This area was designated as a special interest area because of its geological, botanical, zoological, and historical values. The area supports a highly diverse ecosystem, including old growth Douglas fir, limber pine, and ponderosa pine. Willow and aspen communities also exist, which support a wide variety of Neotropical migratory songbirds as well as moose. Approximately 1 percent of the western edge of the special interest area is located in PH.

Research Natural Areas

Research Natural Areas on the National Forest are selected to provide a spectrum of relatively undisturbed areas representing a wide range of natural variability within important natural ecosystems and environments and areas with special or unique characteristics of scientific importance. There are three Research Natural Areas scattered across the National Forest; however, none of them contain PH or GH.

Inventoried Roadless Areas

Inventoried Roadless Areas on the Routt National Forest were identified as having special values for semi-primitive recreation opportunities and biological diversity. There are 32 Inventoried Roadless Areas on the National Forest that collectively comprise roughly 502,200 acres (37 percent) of the land base. Of the 32 Inventoried Roadless Areas, four contain GH (**Table 3.66**).

Table 3.66
Inventoried Roadless Areas within GRSG Habitat on National Forest System Lands

Name	Total Acreage	Acreage within GH	Acreage within PH
Nipple Peak South	13,800	400	0
Shield Mountain	10,200	800	0
Sugarloaf North	15,100	1,000	0
Sugarloaf South	23,300	700	0
Total	**62,400**	**2,900**	**0**

Source: Forest Service 2013

Nipple Peak South (Colorado MZ 7). This Inventoried Roadless Area is located in Routt County northwest of Steamboat Springs on the Hahns Peak Ranger District. Cover types within the area include spruce-fir (19 percent), lodgepole pine (17 percent), aspen (50 percent), shrubs (less than 1 percent), grass/forb (9 percent), non-vegetated (3 percent), and water/wetland (2 percent). The area is used primarily for dispersed recreation (primarily big game hunting with some snowmobile use in the winter) and seasonal livestock grazing. The entire area

has medium potential for oil and gas; however, no current leases exist. The entire area has low potential for locatable minerals, and no salable mineral sites exist. Approximately 400 acres (2.6 percent) of the Inventoried Roadless Area are located within GH.

Shield Mountain (Colorado MZ 7). This Inventoried Roadless Area is located is located in Routt County north of Steamboat Springs on the Hahns Peak Ranger District. The primary vegetation type is aspen, with some lodgepole pine and open parks at lower elevations. Higher elevations on northern aspects are stocked with over-mature spruce and lodgepole pine. The predominant use of the area is livestock grazing, with roughly 13,800 sheep grazing for 26,504 sheep months and 82 cows grazing for 219 cow months on a seasonal basis. Recreation use is low in the summer, while use in the fall hunting season is high due to the abundance of big game. There is little to no winter use due to the difficulty of access. Approximately 800 acres (7.6 percent) of the Inventoried Roadless Area are located within GH.

Sugarloaf North (Colorado MZ 7). This Inventoried Roadless Area is located in Routt County northeast of Craig, Colorado, on the Hahns Peak Ranger District. The primary vegetation type is spruce-fir with pockets of aspen and lodgepole pine intermixed, along with their associated understory vegetation. The area contains numerous grass/forb meadows, many of which are wet and are associated with streams or ponds. The eastern portion of the area is used for nesting and rearing grounds by sandhill cranes, a state-listed endangered species. A seasonal road closure is in effect on Forest Development Road 150 to protect the cranes during the critical nesting and rearing periods. Recreational use of the area is generally low, except during the big game hunting season when it is high. Livestock grazing occurs on a seasonal basis. The majority of the area has high potential for oil and gas; however, no leases exist. Although the entire area has low potential for locatable minerals, the area contains three salable mineral sites. Approximately 1,000 acres (6.8 percent) of GH are located in the Inventoried Roadless Area.

Sugarloaf South (Colorado MZ 7). This Inventoried Roadless Area is located in Moffat and Routt Counties northeast of Craig, Colorado, on the Hahns Peak Ranger District. The predominant vegetation type in the area is aspen with small pockets of spruce. Open parks of sagebrush and rabbit brush are also characteristic of the area. The area is used primarily by sheep herders and fall hunters seeking a remote hunting experience. Approximately 700 acres (3 percent) of the Inventoried Roadless Area are located in GH.

Wilderness Areas

Wilderness Areas on the Routt National Forest are managed to protect natural conditions and to offer varying degrees of solitude where natural processes and conditions have not been significantly influenced by human use. The Routt

National Forest manages seven Wilderness Areas, or portions thereof, for a total of 265,100 acres of wilderness. None of these areas contain GH or PH.

Wild and Scenic Rivers

There is no GH or PH within any Wild and Scenic River segments on the Routt National Forest.

National Scenic and Historic Trails

A short portion (1.7 miles) of the Continental Divide National Scenic Trail crosses GRSG habitat in the planning area. The vast majority of this portion of the National Scenic Trail occurs on private lands, with a short segment on National Forest System lands. This National Scenic Trail is officially administered by the Secretary of Agriculture in consultation with the Secretary of the Interior (*Federal Register* 150, August 5, 1981, page 39867).

Portions of the Continental Divide National Scenic Trail cross the planning area. The trail traverses the KFO from west to east, roughly following the southern Jackson County boundary. At US Route 34, it turns south along the eastern edge of the planning area. The trail is primarily on National Forest System lands, with very little crossing BLM-administered lands. A multi-agency effort is underway to complete the Muddy Pass section of the trail between Rabbit Ears Pass and Indian Creek. The potential routes may incorporate BLM-administered lands. Currently, trail users hike along Jackson County Road 53 near Indian Creek, which bisects public lands, in order to access the next designated portion of the trail. The trail is officially administered by the Secretary of Agriculture in consultation with the Secretary of the Interior (*Federal Register* 150, August 5, 1981, page 39867).

3.14.2 Trends

Trends on BLM-Administered Lands

Areas of Critical Environmental Concern and Wilderness Study Areas

Over the past 25 years, an increasing human population in the region and the associated increases in land use and development have increased impacts on natural systems, recreation opportunities, and cultural resources throughout the region, including the areas of mapped GRSG habitat. The primary impacts in the planning area have resulted from energy development activities, residential development, and recreation activities. A growing awareness of these impacts has led to more focused efforts to protect and manage diminishing resources. Special designations have become a primary tool for this focused management. ACEC inventories and designations are being actively pursued by the BLM field offices to identify and protect natural, recreational, and cultural resources in the area.

Oil and gas development is expected to challenge the characteristics for which many ACECs in the planning area were established. Lease stipulations on

activities authorized prior to the establishment of the special designation areas may allow surface-disturbing activities. These activities will conflict with the unique resources for which the areas were designated. The popularity of recreational OHV use due to the uniqueness of landscapes in the planning area is expected to continue to draw OHV users.

Should any WSAs be released from wilderness consideration by Congress, subsequent planning documents would prescribe how these lands would be managed.

Wild and Scenic Rivers

River-related recreation is increasing in parts of the planning area, including along the Colorado River. River-based recreation relies on certain flow rates to support the activity. For example, fishing requires a certain flow rate to support the fisheries, and whitewater boating relies on certain flow rates to create a whitewater experience. Flow rates that are necessary to support river-related recreation may become at risk as demand for additional water diversions occurs at upstream locations to satisfy growing populations on the Western and Eastern Slopes. It is generally difficult, however, for the BLM to ensure the protection of outstandingly remarkable values in fragmented stream segments.

National Scenic and Historic Trails and Scenic Byways

Driving for pleasure is expected to increase along the Colorado Headwaters National Scenic Byway. The BLM is collaborating with the Colorado Headwaters National Scenic Byway Committee to educate the public about, advertise, and develop an interpretive plan for the byway (BLM 2007c).

Trends on National Forest System Lands

Routt National Forest

The overall acreage of the special designation areas on the National Forest has remained stable over the last decade. This is partially due to limited motorized access, as well as existing management restrictions that are in place either locally (via Forest Plan direction) or nationally. In 2012 there was a slight increase (approximately 100 acres) in the amount of GH in the California Park Special Interest Area as a result of a land donation to the Forest Service.

3.14.3 References

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3.15 WATER RESOURCES

Water on public lands is regulated by the Clean Water Act, Safe Drinking Water Act, Public Land Health Standards, the Watershed Conservation Practices Handbook and other laws, regulations, and policy guidance at the federal, state, and local levels. The Clean Water Act (33 USC 1251 etc.) requires maintenance and restoration of the physical, biological, and chemical integrity of waters of the US. Sections 208 and 319 of the Clean Water Act recognize the need for control strategies for nonpoint source pollution. Soil and water conservation practices and best management practices are recognized as the primary control mechanisms for nonpoint source pollution on BLM-administered and National Forest System lands. The US EPA supports this perspective in their guidance, "Nonpoint Source Controls and Water Quality Standards" (August 19, 1987).

Water resources include surface and ground water sources, including streams, water bodies, riparian areas, and wetlands. Factors such as the amount of precipitation and run-off, water storage and withdrawals, pollution from outfalls, soil erosion, and overall conditions of the uplands and riparian areas affect surface water resources. Recharge, withdrawal, and infiltration of contaminants affect groundwater resources. The BLM and Forest Service management decisions regarding energy development, lands and realty actions, grazing, recreation, and forestry can result in potential impacts on water resources.

3.15.1 Existing Conditions

Conditions of the Planning Area

The planning area is split into several hydrological units. **Table 3.67** displays the level three hydrological units, or basins, within the planning area and within GRSG habitat. The largest tracts of land within PH in the planning area fall within the White-Yampa basin, followed by the Colorado Headwaters, North Platte, and Upper Green basins.

Table 3.67
Hydrologic Basins in the Planning Area

Level 3 Basin	Acres within the Planning Area	Acres within PH	Acres within ADH
North Platte	1,310,400	384,200	449,700
White- Yampa	6,180,400	1,432,100	2,741,200
Upper Green	506,400	129,900	367,300
South Platte	178,100	0	0
Lower Green	49,000	10,100	14,600
Colorado Headwaters	6,213,100	410,100	575,700
Upper Arkansas	1,700	0	0
Gunnison	384,900	0	0
Upper Colorado – Dolores	501,000	0	0

Freshwater is scarce and therefore extremely valuable in semi-arid western Colorado. Surface water is the primary source of fresh water in the planning area. The major sources of surface water in the planning area are the Colorado River and its tributaries, the North Platte River, Laramie River, Yampa River, Little Snake River, Green River, and White River. About 862 miles of rivers exist in the planning area, of which 177 miles fall within GRSG habitat. The rivers within GRSG habitat in the planning area are the White, Colorado, North Platte, Yampa, and Green Rivers, as well as a small portion of Plateau Creek. **Table 3.68** displays the rivers within the planning area for which some portion falls within GRSG habitat.

Smaller watercourses in the planning area include streams that can be ephemeral, intermittent, or perennial. About 8,705 miles of streams exist in designated GRSG habitat within the planning area.

Table 3.68
Rivers in GRSG Habitat within the Planning Area

River Name	Miles within Planning Area	Miles within PH	Miles within ADH
White River	94	0	31
Colorado River	259	22	33
Plateau Creek	23	0	2
North Platte River	35	26	27
Yampa River	147	29	70
Green River	32	0	15

Lakes, wetlands, ponds, and reservoirs are also important sources of water within the planning area. Lakes can be permanent or temporary. Wetlands and floodplains vary in extent and depth throughout the year. Permanent waters can also be in the form of ponds and reservoirs developed for human or livestock consumption.

Conditions on BLM-Administered Lands

Surface Water Sources

Due to the semi-arid nature of BLM-administered lands within the planning area, surface waters are extremely valuable. There are 3,169 miles of streams and 31 miles of rivers in GRSG habitat on BLM-administered lands within the planning area. Of these miles, 1,613 miles of stream and 13 miles of rivers fall within PH. Surface water flow volumes differ greatly throughout the year and across the planning area. Flows in unregulated rivers and streams have large seasonal variations, with the largest flows generally occurring during spring or early summer as a result of snowmelt and after intense summer and fall thunderstorms. Snowmelt in spring and summer rainstorms provide the major source of runoff for perennial streams, with groundwater inflow along gaining stream segments being a contributor during the remainder of the year. Interrupted and intermittent streams in the planning area are common. Some streams have significant flows in the alluvial aquifer with only limited surface expression. Although these watersheds are large with high water yields, surface expression of the creeks is limited to high stormwater runoff or to areas where permeability of the alluvium is reduced and water is forced to the surface. Perennial streams contain some water all year for an average water year. Most of the streams on BLM-administered land in the decision area are intermittent and flow from March to July. However, streams can still contain water during other months due to stored water being fed to the streams from shallow groundwater sources or floodplains.

Ephemeral streams do not flow during an average water year, but do flow in response to large precipitation events. Large ephemeral stream segments in the planning area generally have their headwaters at lower elevations (i.e., below 8,000 feet) and do not have gaining reaches from groundwater sources.

Frequently these ephemeral drainages occur as steep and relatively straight channels that are actively incising across upper reaches. Many of these systems are tributaries to intermittent and perennial streams. Intermittent streams flow during spring runoff for an average water year but dry up later in the summer.

Riparian areas are ecosystems that exist along rivers, streams, or waterbodies. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Typical riparian areas are lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers, streams, and shores of lakes and reservoirs with stable water levels. Excluded are such sites as ephemeral streams or washes that do not exhibit vegetation dependent on free water in the soil. Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and which, under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include marshes, swamps, lakeshores, sloughs, bogs, wet meadows, estuaries, and riparian areas. A description of current conditions in riparian and wetland areas within the planning area can be found in **Section 3.5**, Vegetation. Healthy surface water sources, such as ponds, lakes, and wetlands, provide habitat for insects and animals that are predators of mosquitos. Areas that both have standing water and do not support predators of mosquitos can be areas where mosquito populations increase.

Water developments can be important sources of surface water for wildlife. Water developments can function for multiple uses. They provide additional and alternative sources of water for wildlife and livestock and can decrease use of riparian areas. Within the planning area, most of the water developments are intended for livestock, followed by water developments intended for agriculture. However, wildlife will often take advantage of available water developments.

Surface water availability can be impacted on BLM-administered lands in the planning area by a number of factors occurring on or upstream of BLM lands. These include industrial uses such as oil and gas, agriculture, and large-scale diversions, as well as naturally occurring climactic variations.

Surface Water Quality

Water quality typically varies as a function of flow conditions and can be impacted by water uses (e.g., agriculture, oil and gas development, and surface disturbance), vegetation, groundwater interaction, and pollutants discharged into water bodies from point and non-point sources. The quality of runoff in ephemeral and intermittent stream channels is largely dependent upon the amount of salts, sediments, trace elements, and organic materials that accumulate in dry stream channels between flow periods. Periodic flushing of accumulated salts, trace elements, and sediments occurs during peak flow events, which often represent the only time that water quality samples can be collected. Factors that could govern the accumulation of salt, trace elements,

and sediments include physical properties of the watershed (e.g., topography, geology, and climate), land use in the watershed, and seasonal fluctuations in temperature and precipitation.

Water quality classifications in the planning area are established by the Colorado Department of Public Health and Environment, Water Quality Control Division to maintain and improve the quality of Colorado's surface waters. These classifications are based on current conditions and the beneficial uses of each particular river or stream (e.g. agriculture, aquatic life, and recreation). Classifications result in basic numerical and site-specific narrative standards that define the chemical, biological, and physical qualities of waters needed. Aquatic life beneficial uses can be for warm or cold water and are based on the abundance of species present. Recreation beneficial use is protected based on human health and current and expected recreational uses of surface waters. Agriculture beneficial use is protective for irrigating crops and livestock watering. Domestic water supply beneficial uses are for any surface waters that are suitable or intended to become suitable for potable water supplies. Surface water quality standards are reviewed and revised every 2 years by the Colorado Department of Public Health and Environment, Water Quality Control Division, the most recent of which occurred in 2012. Since then, CDPHE has updated the list of surface water quality standards and stream segments that are impaired or in need of additional monitoring for waters within BLM-administered lands. This list is called the Section 303(d) List of Water-Quality-limited Segments Requiring Total Maximum Daily Loads or the Monitoring and Evaluation List.

There are 1,196 miles of segments on BLM-administered lands within the planning area on the Section 303(d) list, of which 51 miles fall within identified GRSG habitat, and 14 miles fall within PH. For the segments within identified GRSG habitat, the most common impairments cited are for sediment, selenium, and iron (BLM 2010; BLM 2012).

Ground Water

The Safe Drinking Water Act presumes that aquifers are underground sources of drinking water, unless they are specifically exempted or if they have been shown to fall outside the definition of are underground source of drinking water. The geology of an area determines the occurrence, movement, and chemical characteristics of groundwater. Groundwater quality and chemistry depends on the lithology and mineral composition of the aquifer and any upgradient formations that the groundwater flowed through. Aquifer properties such as hydraulic conductivity and primary and secondary porosity also influence water quality based on the residence time of the groundwater in the subsurface. In the planning area, much of the surficial geology consists of consolidated sedimentary formations with water-bearing properties that are largely dependent on secondary porosity from faults, fractures, and joints. The mineral content of several of the sedimentary formations underlying the range-wide planning area includes relatively high amounts of soluble minerals and salts.

These soluble zones include sodium bicarbonate (nahcolite) and sodium chloride (halite) deposited in lacustrine mudstones. Groundwater recharge primarily occurs at higher elevations where precipitation exceeds evapotranspiration. This excess precipitation remains at the surface as overland flow, or recharges groundwater systems.

Groundwater near the land surface is available for plants and can contribute to the alluvium of stream systems. Alluvial aquifers are present along the larger perennial, intermittent, and interrupted flow segments and are generally composed of coarse sand and gravel deposits alternating with layers of clay, silt, and sand (Van Liew and Gesink 1985). The alluvial aquifers also serves as either a recharge or discharge zone for underlying bedrock aquifers. Groundwater discharge occurs as a result of permeability changes at or near the ground surface (geologic contacts between formations or rock units) or from the surface expression of faults, fractures, or joints in underlying bedrock aquifers. These discharge areas are often manifested as groundwater springs or gaining stream segments.

Surface expression of groundwater occurs naturally through springs that originate from confined bedrock aquifers and unconfined alluvial aquifers. Springs from confined aquifers typically arise from relatively deep groundwater that follows fractures, old well bores, faults, or joints to the surface. Variations in permeability across alluvial aquifers in the Piceance Creek Basin could be responsible for the groundwater-dominated hydrographs of Piceance and Yellow Creeks. In the planning area, perched groundwater zones occur locally within the Uinta Formation and other formations. These perched groundwater zones manifest themselves as springs and seeps above the valley floors in outcrop areas (Weeks and Welder 1974; Cole et al. 1995).

Conditions on National Forest System Lands

Water, riparian, and wetland existing conditions vary by the different geographic areas that contain GRSG habitat. **Table 3.69** lists information for perennial and intermittent streams on National Forest System lands in the range-wide planning area, and **Table 3.70** lists information for ponds and lakes on National Forest System lands in the range-wide planning area.

Table 3.69
Streams on National Forest System Lands

Stream Name: Intermittent or Perennial	Miles		
	GH	PH	Total
Perennial Streams	25.2	0.4	25.6
Intermittent Stream	37.9	2.6	40.5
Ditches	4.4	0	4.4

Source: Data from GIS, from the National Hydrography Dataset, high resolution flow lines, with attribute adjustments to correct ditch/stream errors done by the Medicine Bow - Routt National Forests, 2013

Table 3.70
Freshwater Ponds and Lacustrine on National Forest System Lands

Water Body Name	Acres		
	GH	PH	Total
Perennial Lake/Pond	7.2	4.0	11.2
Intermittent lake/pond	0.7	0	0.7
Reservoir	0	0	0
Swamp/Marsh	1.0	0	1.0

Source: Data from GIS, from the National Hydrography Dataset, high resolution waterbodies, 2013

Streams on National Forest System lands typically peak in the spring in response to snowmelt, and slowly decline to base flow in late July or August. Summer thunderstorms can result in short-term increases in stream flow during the summer months. While perennial streams generally flow year-round, the intermittent streams frequently run dry following spring peak flows. Ditches in the analysis area typically divert water for irrigation. Ditches can significantly affect stream flows by diverting most or all of the water out of a perennial or intermittent stream. Occasionally ditches can augment stream flows by delivering water diverted out of one stream into another stream. Ditches used for irrigation typically start diverting in the spring, may stop diverting during haying operations, and then may begin diverting again in the fall depending on the agricultural practices of the water user.

Lakes and ponds on the Forest Service lands may reflect stock water developments, large beaver complexes, or naturally occurring lakes and ponds. Perennial lakes and ponds rarely go dry while intermittent lakes and ponds fill up in response to snowmelt and then typically go dry with the progression of summer. All of these features are used by wildlife and livestock for watering, and may provide some aquatic habitat.

Surface water quality standards are reviewed and revised every 2 years by the Colorado Department of Public Health and Environment, Water Quality Control Division, the most recent of which occurred in 2012. The list of water quality standards and stream segments was updated in 2012. No impaired streams are present on National Forest System lands within GRSG habitat.

The fact that no streams are listed as impaired by the State of Colorado in GRSG habitat indicates that all streams and water bodies are currently meeting State Water Quality Standards, and that there are no known water quality impacts.

Each general geographic location of National Forest System lands is discussed in further detail below.

California Park and Slater Park Area. Water resources in the analysis area reflect 1) natural geologic processes of the area (soils and geology), 2) the effects of beaver, and 3) past and present management impacts. Bedrock geology consists

primarily of volcanic dikes and outcroppings that form the ridgetops and high points. These high points overlay sedimentary layers comprised primarily of interbedded shales and sandstones. Due to the nature of the shales and sandstones, mass movement is visible throughout the park, frequently referred to as 'mobile real estate.' The mobile real estate often impinges on stream channels delivering large quantities of sediment to the stream system, and causing continuous adjustment of the channels. Adjustments include lateral migration and erosion of slump blocks that impinge on the channel. Similar to the effects of mass movement, beaver dams can also cause lateral channel migration, downcutting through sediments deposited in old beaver dams, and affect riparian condition by reducing the shrub component. Beavers can also benefit streams by creating ponds that slow down stream velocities and bank erosion, provide fish habitat, and banks that promote riparian vegetation growth. The effects of past and present beaver activity can be seen throughout the stream system.

As a result of the shale and sandstone bedrock geology, many of the stream banks are composed of clay soils with little rock content. The lack of rock fragments means that the stream banks are highly dependent on riparian vegetation to stabilize the stream banks and make them resistant to erosion during high flows. Stream banks in much of California Park, particularly in lower First Creek and lower Elkhead Creek, are highly dependent on riparian vegetation to maintain stream bank stability.

It is believed that historical grazing practices and vegetative treatments, including spraying, have significantly affected the upland vegetation, increased bare soil, and resulted in increased surface runoff and channel instability. Stream channels develop the width, depth, and gradient necessary to transport the water and sediment supplied by the watershed. Altering the natural hydrologic regime through increased water yield can cause channel instability.

There is evidence of historic downcutting throughout the entire stream system in the California Park area. The volcanic dike on Elkhead Creek downstream of the confluence with First Creek is acting as a nickpoint that has prevented further downcutting. The downcutting has worked its way upstream through the stream system, and signs of active downcutting can be seen in many of the headwater tributaries and streams higher in the watershed. Downcutting has resulted in lowering of the water table and loss of stream access to floodplains (entrenchment) in many locations, particularly lower First and Elkhead creeks. This in turn has caused a shift in channel type and initiation of a new pattern of channel evolution. As a result of the natural processes coupled with historic impacts, several of the perennial and intermittent stream segments within GRSG habitat were rated functional at risk (BLM 1993). Management plans have been developed to address current management actions and improve riparian and stream conditions. A stream restoration plan has been developed to address all

of California Park; implementation began in 2012 and is expected to continue in 2013 and beyond.

South Hunt/Watson Creek Area. Water resources in this area are limited to steep headwater stream channels with narrow floodplains and riparian areas. The greatest impacts on available water resources come from ditch diversions, which can reduce stream flow available to support aquatic life and riparian plant communities. In general, the water resources in these areas are considered to be in good condition.

Western Gore Pass area including Long Park. Water resources in this area are generally confined to steep gradient streams with little to no floodplains, and bordered by narrow riparian areas. Due to the steep topography, management impacts are minimal, and water resources are generally in good condition. One isolated tributary segment to Crowner Creek was rated functional at risk (BLM, 1993) due to poor riparian vegetation and vigor, and vertical instability.

Lake Agnes Area. Water resources in this area are limited to steep headwater stream channels with narrow floodplains and riparian areas. The greatest impacts on available water resources come from ditch diversions which can reduce stream flow available to support aquatic life and riparian plant communities. In general, the water resources in these areas are considered to be in good condition.

Pete Gulch, West Carter Creek, and Diamond Creek Areas. Water resources in this area are generally confined to steep gradient streams with little to no floodplains and bordered by narrow riparian areas. Due to the steep topography, management impacts are minimal, and water resources are in good condition.

Lower Camp Creek Area. A portion of this habitat borders the North Platte River. The greatest impact on water resources in this area comes from recreation including white water boating and fishing, and upstream water diversions which can limit water availability for water resources. While some management impacts may exist, the overall existing condition for water resources is considered to be good with only isolated areas of concern.

3.15.2 Trends

Trends on BLM-Administered Lands

Activities associated with recreation, energy development, and grazing result in the greatest impact on water supply and quality within GRSG habitat, thereby affecting trends of water resources.

Within GRSG habitat, recreation activities have resulted in surface disturbance that require mitigation to prevent water resource damage. Types of damage include erosion, sediment production and gully creation, and riparian and terrestrial vegetation destruction. OHV activity has increased significantly in

more easily accessible wildland urban interface boundaries as well as more remote areas, due in part to population growth. Expansion of the wildland urban interface is anticipated to have long-term impacts on surface water quality and flow.

The BLM primarily monitors riparian and wetland conditions and does limited chemical analyses. The overall conditions of riparian areas and wetlands within the decision area are improving primarily due to more intensive range management techniques. In the past, heavy use of small riparian segments or wetlands for grazing occurred. In order to help meet the Public Land Health Standards related to riparian areas and wetlands, grazing plans, upland improvements, and allowable uses are being developed based upon the unique qualities and needs of these areas. In the more recent drought years, many riparian areas and wetlands actually continued to improve as permittees opted not to use their allotments or shortened their grazing season. Some riparian areas, however, were grazed heavier as upland water developments dried up and livestock stayed along streams and rivers.

Irrigation rights are expected to continue to be bought and sold, with some new property owners informally changing how rights are being used. Due to the continued population growth and land sales, more agricultural water rights may be converted to municipal and industrial uses. These changes may greatly impact the hydrology of streams, riparian areas and wetlands on BLM-administered lands. There are several acres of public wetlands that are supported or created by private irrigation practices.

Oil and gas development is also expected to have impacts on ground and surface water resources (BLM 2012). The BLM will continually strive to protect and improve water quality, and to reduce non-point source pollution. Phase II of the Stormwater Regulations requires more permitted actions on BLM-administered lands to develop erosion control plans and to reduce non-point source pollution resulting from ground disturbances. Federal lands are among the most manageable in terms of potential improvement because they must be managed in accordance with all applicable laws, rules, regulations, policies, standards, and guidelines. However, BLM-administered lands are often a small percentage of a watershed. Improving stream segments with limited public ownership, and mostly private water rights, would be more difficult. Section 303(d) of the CWA requires that states, Native American tribes, and federal agencies establish priority rankings for waters on the lists of impaired waters, and develop total maximum daily loads for these waters. Currently, none of the listed streams within the planning area have TMDLs that involve the BLM.

Trends on National Forest System Lands

In general, water resources are considered to be in good condition across the Routt National Forest. The area of greatest concern with GRSG habitat is in the California Park and Slater Park areas because portions of these watersheds

show an upward trend, while other portions show a static or downward trend. A conceptual watershed restoration plan has been developed for the California Park area and implementation began on along Armstrong Creek in 2012 and will continue in 2013-2014 (Bidelspach 2011). Other portions of the Forest with GRSG habitat are considered to be at or near the desired condition. Where concerns exist such as the tributary to Crowner Creek, management plans have been developed to reduce current management impacts and improve riparian and stream condition.

3.15.3 References

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3.16 SOIL RESOURCES

The BLM and Forest Service land management and resource use decisions influence long-term soil health, stability, and productivity. Many management activities and resources uses depend on suitable soils for the type, location, and

use level of that resource, including livestock grazing, mineral activities, fire management, road and travel management (including OHV use), recreation, wildlife habitat, riparian habitat, special status species, fisheries, water quality, and forestry. Consequently, soil attributes and conditions are important to BLM and Forest Service management decisions.

Soils are defined by the interaction of the processes that form them, including parent material (geology), climate, topography, biologic organisms, and time. Of these, soil surveys indicate that climate and topography have the primary influences on soil formation (US Department of Agriculture, Natural Resources Conservation Service 2000). Climate largely influences soil development processes including the rate of rock weathering, decomposition of plant materials, accumulation of organic matter, and nutrient cycling. Climate also has a strong influence on soil moisture and temperature, which in turn affects the rates of addition, removal, translocation, and transformation of material within the soil. Topography influences site conditions, such as precipitation amounts and effectiveness, drainage, runoff, erosion potential, and temperature.

Soils are classified by their degree of development into distinct layers and their dominant physical and chemical properties. These characteristics are used to groups soils into 1 of 12 orders which are based on defining soil properties, such as organic matter, dominant sediment particle (silt, sand, or clay), amount of mineral material present, water and temperature regimes, and unique properties such as salt content or volcanic ash layers. These soil characteristics, in combination with climate, determine whether sagebrush can exist in a given location, and what which variety of sagebrush communities are able to thrive. Since the presence of GRSG is heavily dependent upon the presence of sagebrush, and sagebrush type and viability are dependent on soil type and quality, soils are an important element in GRSG habitat.

3.16.1 Existing Conditions

Conditions of the Planning Area

Soil productivity within the planning area varies widely due to the diversity of soils and site characteristics, including varying climatic, vegetative, topographic, and geologic conditions. The range-wide planning area is divided primarily by two ecoregions in which soils can be generally characterized: the Southern Rockies to the east and the Colorado Plateau to the west. In addition, portions of the Wyoming Basin ecoregion lie in the north, along the Wyoming/Colorado border. In these ecoregions the dominant soil orders are mollisols, alfisols, inceptisols, and entisols (US Department of Agriculture, Natural Resources Conservation Service 2009).

The planning area is characterized by high elevations and rugged mountains (Chapman et al. 2006). Due to low soil temperatures, the chemical reactions that release plant nutrients from minerals take place slowly. The rate of biologic

activity is also limited by temperature, resulting in a slow rate of biologic decomposition, seed germination, and root growth. These factors combine to give the soils low fertility. However, in specific areas, particularly in valley bottoms, soils can have a dark, thick, fertile surface that supports a variety of vegetation.

The soils in the planning area vary from calcareous to alkaline and surface texture ranges from strongly alkaline loams, sandy loams, loams, to clay loams underlain by sandy loam to clay textures, and rock outcrop complexes. Precipitation varies greatly with elevation and aspect (Western Region Climate Center 2008). Permeability ranges from very slow to moderately rapid, and erosion hazard for most soils is moderate, with some ranked as severe. Some of these soils are highly saline. The depth of the soils range from 0 to 60 inches depending on slope and aspect. Some soils have a very high runoff potential and erosion hazard rating.

Many of the soils in the Colorado Plateau ecoregion have developed from alluvium that was deposited over time as the Colorado, Dolores, and Gunnison Rivers and their tributaries eroded through the surrounding mountain ranges. The mountain ranges contained various lithologies, including sandstones, siltstones, and marlstones associated with the Uinta Formation and the Green River Formation, and the claystones, shale, and sandstones associated with the lower part of the Green River Formation, the Mesaverde Group, the Wasatch Formation, the Fort Union Formation, and the Mancos Shale (BLM 2007a). Soils derived from Mancos Shale or from other saline sedimentary formations tend to be high in salts and trace elements like selenium. Due to the salt content in these soils, vegetative cover can be sparse, resulting in soil particles not being anchored in place; thus, the soil is easily eroded by wind and water (BLM 2007a).

The most productive soils in the planning area are those in valley bottoms and at higher elevations. The valley bottoms receive additional moisture because they concentrate run-off from adjacent uplands, and because water will percolate laterally into the subsoil from stream channels. Most valley bottoms support grass hay production. Areas at higher elevations receive a greater amount of precipitation during the growing season (BLM 1984b). Soils that feature shallow claypans, hardpans, or salts pose substantial constraints to land use and management.

Biological Soil Crusts

Biological soil crusts (also known as cryptogamic, cryptobiotic, microbiotic, or microphytic soil crusts) are a complex mosaic of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria. These biological crusts cover open spaces between vascular plants on relatively barren soils, and are found where vascular plant cover is sparse. Crust cover is generally greatest at lower elevation sites in semiarid areas (Belnap et al. 2001). The vertical and horizontal

vascular plant structure of many semi-arid vegetation communities optimizes growth of biological soil crusts. Vascular plants create windbreaks and shade, influencing how much moisture and light reach the soil surface. They also trap leaf litter, keeping the interspaces free of substantial or persistent litter cover. Biological crusts in many regions are best developed in interspaces between shrubs. Invasive exotic plants generally decrease the biological crust cover in most ecosystems (Belnap et al. 2001). Stable or embedded rocks at or near the soil surface can increase soil crust cover by perching water and armoring the surface from physical disturbances. Biological soil crusts have not been mapped in the range-wide planning area. In general, more stable, fine-textured soils (such as silty loams) support greater crustal cover than less stable, coarse-textured soils (Belnap et al. 2001). North and east slopes generally favor crustal development.

Biological crusts are well adapted to severe growing conditions; however, they are extremely susceptible to physical disturbances, domestic livestock grazing, and recreational activities (such as hiking, biking, and off-road driving). Fire can also damage the crust. Low-intensity fires, however, do not remove all of the crust structure, which allows for regrowth without significant soil loss. Shrub presence (particularly sagebrush) may increase fire intensity, thereby decreasing the likelihood of early vegetative or crust recovery after a burn (BLM 2009). Within the range-wide planning area, there are many areas where historic rangeland vegetation treatments (taking place around the 1950s) included ripping or plowing the soils, breaking apart the biological crusts. These crusts will remain broken during the life of the Approved Plan, regardless of current land conditions.

Disturbance of biological crusts results in decreased soil organism diversity, nutrients, stability, and organic matter. Trampling of the biological soil crust may reduce the number of crust organisms found on the surface and increase run-off and the rate of soil loss without apparent damage to vegetation. Burial of crusts by sediments kills non-mobile photosynthetic components (mosses, lichens, and green algae) of the crust.

Soil Erosion

Soil erosion is a concern throughout the western US, especially in semi-arid rangelands. The potential for soil erosion increases with increasing slope. The quantity of soil lost by water or wind erosion is influenced by climate, topography, soil properties, vegetative cover, and land use. While erosion occurs under natural conditions, rates of soil loss may be accelerated if human activities are not carefully managed (BLM 2007b). Recreational trails can quickly turn into widely braided ruts, especially in wetlands and at stream bank crossings. The resulting gully erosion can rapidly erode substantial quantities of previously stable soils (BLM 2007b).

It is possible to control rates of soil erosion by managing vegetation, plant residues, and soil disturbance. Vegetative cover is the most significant factor in controlling erosion because it intercepts precipitation, reduces rainfall impact,

restricts overland flow, and improves infiltration. Biological soil crusts are especially important for protecting the soil and controlling erosion in desert regions; however, they are easily disturbed by grazing and human activities.

Natural Resources Conservation Service soil map unit descriptions rate soils in the planning area according to their susceptibility to water and wind erosion. Wind erosion is particularly a hazard when surface litter and vegetation are removed by fire or other disturbances. Soils are considered fragile or of high erosion hazards if they contain the following characteristics:

- Soils rated as highly or severely erodible by wind or water, as described in soil survey reports
- Landslide Areas, as identified in soil survey reports
- Soils on slopes greater than 35 percent

Soil Compaction

Soil compaction is a complex process that depends upon the nature of the loading and moisture content of the soil, as well as on characteristics such as particle size, organic matter content, structure, and percent of coarse fragments. Soil compaction occurs in response to pressure exerted by machinery or animals. The risk for soil compaction is greatest when soils are wet. Compacted soil allows less water to infiltrate, resulting in greater overland flow of water for longer periods of time. The overland flow has greater energy to detach and transport soil particles, resulting in increased soil erosion.

Conditions on BLM-Administered Lands

Soil and soil condition of BLM-administered lands containing GRSG GH vary widely. A characterization of the major soil types found within GRSG habitat includes rock outcrops, very steep mountains, mesa breaks, and alluvial fans ranging down to mesas, terraces and benches, and a combination of clay and sandy loams, including clay loams, loamy sands, stony loams, and sandy loams. Erosion hazards of these soils range from moderate to severe and some soils are considered fragile.

Restrictions are imposed on other activities or uses of the BLM-administered lands within the planning area to improve soil conditions. These include ensuring rapid revegetation of disturbed areas, limiting vegetation manipulations or treatments in sensitive watersheds to spraying, aerial seeding, or designed grazing systems. Also, in order to protect sensitive watersheds, restrictions include limiting surface-disturbing activities from sensitive watersheds where they were contributing to, or had the potential for contributing to, water quality degradation, providing buffer strips between streams and surface-disturbing activities (such as mining, road building, and clear-cutting), and controlling OHV use in sensitive watersheds. General restrictions include reducing erosion or run-off on disturbed sites, placing timing restrictions on surface-disturbing

activities in order to avoid spring thaw and run-off seasons, and constructing snow management structures for watershed improvement.

Farmlands exist on GRSG habitat on private lands within the planning area. Many of these farmlands are irrigated hayfields and pastures. Of these farmlands in GRSG habitat, the majority are in Routt, Jackson, Grand, Rio Blanco, and Moffat Counties. Some of these private agricultural lands could have BLM-administered mineral resources. These split-estate areas (private surface but public minerals) are very rare and typically include small portions of irrigated pastures.

Conditions on National Forest System Lands

The major soil types on National Forest System lands in the planning area consist of shallow (10 to 20 inches) to very deep (greater than 60 inches), well drained soils. Many soils have formed in alluvium from fine grained sandstones, shales, and some basalts. Some soils formed in thin, noncalcareous, very gravelly or channery materials weathered residually from granite, sandstone, gneiss, or in places from tuff. The soil locations include plateaus, hills, mountain slopes, eroded side slopes and foot slopes. Some soils have varying amounts of rock fragments. Surface textures vary but are predominately loam and sandy clay loam with some very gravelly sandy loams with varying amounts of rock fragments. Subsurface textures vary as well and include sandy clay loams and clay loams.

In some locations, the soils have a dark thick surface soil supporting mainly big sagebrush, serviceberry, mountain snowberry, elk sedge, Gambel's oak, and aspen. Other vegetation consists of mountain brome, wheatgrass, western wheatgrass, Idaho fescue, Arizona fescue, mountain muhly, fringed sagebrush, slimstem muhly, blue grama, pine dropseed, sagebrush, junegrass, needle and thread, and bluegrass. These soils are generally used for livestock and wildlife grazing, with the Lower Camp Creek area being used for native pastureland. These soils are found in both PH and GH.

Detrimental soil disturbance usually occurs where cattle congregate, in locations of water development, and salting areas. There are several water developments in this area. However, overall detrimental soil disturbance is within the threshold set by the soil quality standards. Ground cover is sufficient to control accelerated erosion. Soil quality and productivity are being maintained.

Riparian area soils vary, but are generally very deep, somewhat poorly drained, and formed in alluvium from igneous and sedimentary rocks. Surface textures also vary, but are predominantly loam and sandy loam. Subsurface textures are sandy loam to clay loam. In some locations, riparian area soils are hydric. In general, riparian areas support planeleaf willow and water sedge on drier soil types and water sedge and beaked sedge on the wetter soil types. Other plants in these communities include rush, elkslip marsh marigold, bluejoint reedgrass, tufted hairgrass, elephant head, and cinquefoil.

Detrimental soil disturbance within the riparian areas is within the threshold set by the soil quality standards. Ground cover is sufficient to control accelerated erosion. Soil quality and productivity are being maintained.

3.16.2 Trends

Soil quality and quantity has degraded over time due to compaction and disturbance related to livestock grazing and mineral development. Implementation of the BLM's Standards for Rangeland Health Guidelines has reduced the potential for soil erosion in overgrazed areas and requirements for commercial operations to reclaim and restore damaged soils have slowed or reversed soil degradation (see **Appendix K**, BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado). Additionally, vegetation ground cover has been reduced due to invasive species, which increases soils susceptibility to wind and water erosion. Some invasive species also add salt or other elements that change the soil chemistry and affect the site potential.

The overall objective for management for soil resources is to maintain or improve the ability of the soil to support vegetation and allow water and nutrients to be cycled by either macro- or microorganisms, all of which promote and improve the health of the land. Degradation by excessive grazing, erosion, or land developments will cause a reduction in soil function, as one or perhaps many of the soil properties are changed, thereby affecting the functions necessary for healthy soil. In general, soils are being managed to meet or exceed Colorado land health standard #1 which states that soils must exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes of the area, and that adequate soil infiltration and permeability allow for the accumulation of soil moisture necessary for optimal plant growth and vigor and minimize surface runoff (see **Appendix K**, BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado).

On National Forest System lands, active management has been implemented in GH in the California Park and Slater Park areas to improve soil conditions and reduce bare ground by implementing sub-soiling actions to alleviate soil compaction and restoration planting to increase ground cover. This has resulted in improving soil conditions in the restoration area.

3.16.3 References

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3.17 AIR QUALITY

This section describes air quality conditions in the planning area. Air pollutants addressed in this assessment include criteria pollutants, hazardous air pollutants, and compounds that could cause visibility impairment or contribute to atmospheric deposition.

Clean, breathable air, expansive vistas, and minimal acidification of the lands, streams, and lakes are significant goals pursued by the BLM and Forest Service. The Clean Air Act and FLPMA require the BLM, Forest Service, and other federal agencies to comply with local, state, Native American tribal, and other federal agency air quality standards and regulations. The FLPMA further directs the Secretary of the Interior (BLM) to take any action necessary to prevent

unnecessary or undue degradation of the lands (Section 302 (b)), and to manage the public lands "in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values" (Section 102 (a)(8)).

Air resource management is accomplished by establishing desired outcomes (goals and objectives) and allowable uses (management actions) in BLM RMPs that, at a minimum, must ensure authorized activities are in compliance with regulatory standards. The BLM, within the scope of its authority to do so, may also go beyond simple regulatory requirements in order to prevent unnecessary or undue degradation of the public lands and their associated resources. For example, an objective for reducing atmospheric pollution might include requiring advance designed engines as COAs in a BLM permit. The Routt National Forest Plan contains similar direction (Forest Service 1997, p. 1-4).

3.17.1 Existing Conditions

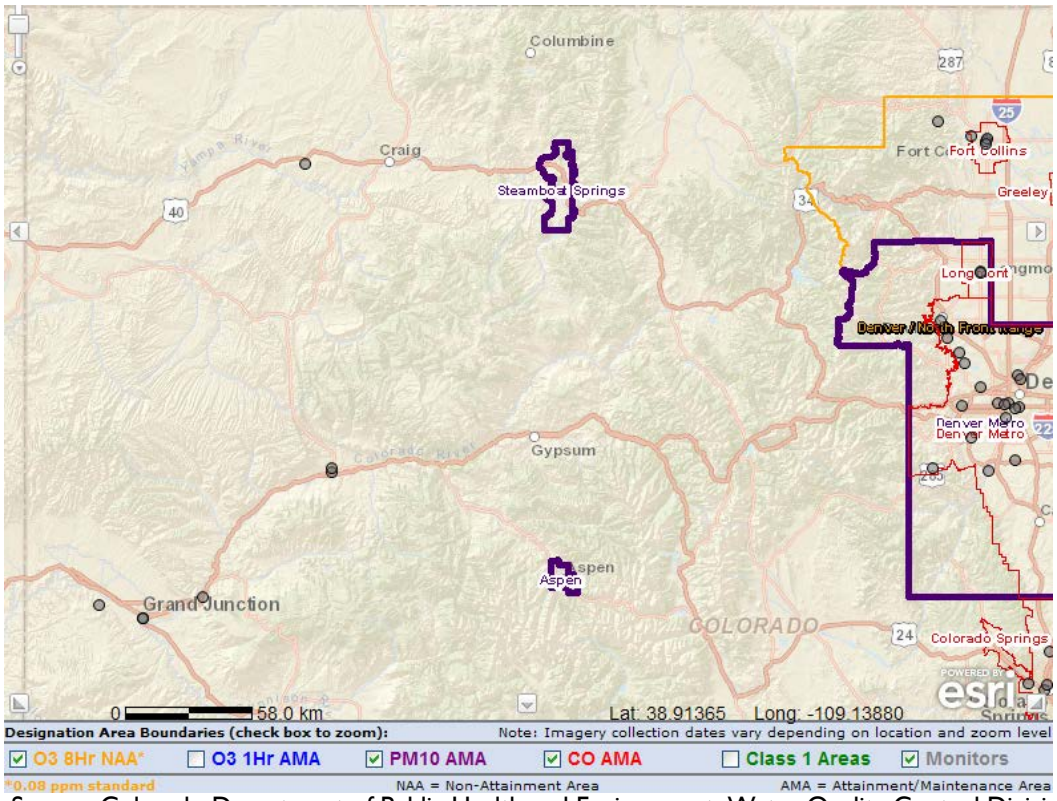
Conditions of the Planning Area

With respect to the National Ambient Air Quality Standards, the US EPA classifies all locations in the US as attainment (including unclassified), nonattainment, or maintenance areas. These classifications are determined by comparing actual monitored air pollutant concentrations to their applicable federal standards. **Diagram 3-8** shows all the nonattainment areas adjacent to or within close proximity of the planning area. Note that a very small portion of the North Front Range 8-hour ozone nonattainment area lies within the planning area boundaries.

Air Quality Monitoring

The majority of the planning area is contained within the Western and Mountain Counties monitoring districts maintained by the Colorado Department of Public Health and Environment, Water Quality Control Division. The 2010 annual monitoring data report describes the Mountain Counties as those that are generally located on or near the Continental Divide. They consist of mostly small towns located in tight mountain valleys. Currently, there are six particulate matter less than 10 microns in diameter (PM_{10}) monitoring sites operated by the air pollution control district in the Mountain Counties region. There is one ozone monitor (operated by the city of Aspen, Colorado) in the region. The report describes the western counties as generally smaller towns, usually located in fairly broad river valleys. Grand Junction is the only large city in the area, and the only location that monitors for carbon monoxide and air toxics on the western slope. In 2008, Rifle, Palisade, and Cortez began monitoring for ozone. The BLM also maintains two ozone monitors within the region at Rangely and Meeker. There are one carbon monoxide, five ozone, eight PM_{10}, and one particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) active monitoring sites within the planning area. The National Park Service and

Diagram 3-8
Nonattainment Areas and Monitoring Locations Within or Near the Planning Area



Source: Colorado Department of Public Health and Environment, Water Quality Control Division, 2012

Forest Service also maintain networks of ozone monitors within or adjacent to the planning area. **Table 3.71** shows the most recent monitoring data available for stations in or around the planning area (excluding National Park Service and Forest Service monitors).

Table 3.71
Air Quality Monitoring Data and National Ambient Air Quality Standard Percent Comparison

Location	Pollutant (standard) [1]	Concentration				Percent NAAQS [2]
		2007	2008	2009	2010	
Grand Junction	CO - 1 hr. (9 ppm)	2.8	7.1	2.3	1.7	18.9
Grand Junction	CO - 8 hr. (35 ppm)	1.8	1.5	2.2	1.1	3.1
Aspen	O_3 - 8 hr. (75 ppb)				0.063	84.0
Colorado National Monument	O_3 - 8 hr. (75 ppb)	0.067	0.067	0.064	0.063	84.0
Gothic	O_3 - 8 hr. (75 ppb)	0.067	0.067	0.067	n/a	89.3
Meeker	O_3 - 8 hr. (75 ppb)	n/a	n/a	n/a	0.066	88.0
Palisade	O_3 - 8 hr. (75 ppb)	n/a	0.07	0.064	0.067	89.3
Rifle	O_3 - 8 hr. (75 ppb)	n/a	0.066	0.062	0.065	86.7
Rangely	O_3 - 8 hr. (75 ppb)	n/a	n/a	n/a	0.058	77.3

Table 3.71
Air Quality Monitoring Data and National Ambient Air Quality Standard Percent Comparison

Location	Pollutant (standard) [1]	Concentration				Percent NAAQS [2]
		2007	2008	2009	2010	
Rio Blanco County	O_3 - 8 hr. (75 ppb)	n/a	n/a	n/a	0.072	96.0
Aspen	PM_{10} - 24 hr. (150 µg/m³)	52	53	47.3	44.7	29.8
Clifton	PM_{10} - 24 hr. (150 µg/m³)	62	96	93	98	65.3
Glenwood Springs	PM_{10} - 24 hr. (150 µg/m³)	28	n/a	n/a	n/a	18.7
Grand Junction (Pitkin Avenue)	PM_{10} - 24 hr. (150 µg/m³)	118	120	105	107	71.3
Grand Junction (South Avenue)	PM_{10} - 24 hr. (150 µg/m³)	72	83	77	76	50.7
New Castle	PM_{10} - 24 hr. (150 µg/m³)	50	n/a	n/a	n/a	33.3
Parachute	PM_{10} - 24 hr. (150 µg/m³)	64	88	89	87	58.0
Rifle	PM_{10} - 24 hr. (150 µg/m³)	55	67	68	67	44.7
Silt (County Road 233)	PM_{10} - 24 hr. (150 µg/m³)	27	n/a	n/a	n/a	18.0
Silt (County Road 327)	PM_{10} - 24 hr. (150 µg/m³)	23	n/a	n/a	n/a	15.3
Silt (Owens Drive)	PM_{10} - 24 hr. (150 µg/m³)	27	n/a	n/a	n/a	18.0
Grand Junction (South Avenue)	$PM_{2.5}$ - 24 hr. (35 µg/m³)	22.7	25	30.6	34.5	98.6
Grand Junction (South Avenue)	$PM_{2.5}$ - Annual (15 µg/m³)	9.18	9.43	9.44	9.28	61.9

Source: Colorado Air Quality Data Report, Colorado Department of Public Health and Environment 2007, 2008, 2009, 2010
[1] CO = carbon monoxide; O_3 = ozone; ppm = parts per million; µg/m³ = micrograms (one-millionth of a gram) per cubic meter; ppb = parts per billion; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; PM_{10} = particulate matter less than 10 microns in diameter
[2] Percent National Ambient Air Quality Standard is based on last year of available monitoring data for each site

The limited data available for $PM_{2.5}$ do not provide a reasonable basis for establishing area-wide baseline conditions. Additionally, the available monitoring data do not provide for definitive trending analysis for any of the pollutants. The National Park Service data available for ozone for Class I and sensitive Class II areas within or adjacent to the planning area suggests the ambient air quality in the area is between 86 and 99 percent of the National Ambient Air Quality Standard for ozone. For the majority of the planning area the monitored ozone values provide evidence that ozone is a pollutant of concern.

Air Emissions

The current emissions inventory for the planning area is based on the most recent Colorado Department of Public Health and Environment, Water Quality Control Division, county inventory data (2008). Counties that have a majority of land area contained within the planning area are included and summarized in **Table 3.72**. Although Larimer County has a substantial portion of land area

Table 3.72
Planning Area Emissions Inventory

Planning Area County	Pollutants Inventoried by Colorado Department of Public Health and Environment, Water Quality Control Division, (tons per year)					
	CO	Nitrogen Dioxide	SO_2 Sulfur Dioxide	PM_{10}	Volatile Organic Compounds	Benzene
Eagle	21,709	3,769	80	4,256	14,948	72
Garfield	35,464	13,546	279	6,338	55,727	267
Grand	9,565	1,695	75	2,429	19,315	39
Jackson	4,527	509	5	608	20,996	16
Mesa	40,688	9,048	2,879	8,050	39,828	161
Moffat	25,876	19,855	4,031	7,401	32,503	153
Pitkin	7,379	882	10	967	11,566	25
Rio Blanco	15,446	4,615	67	5,358	33,647	100
Routt	10,776	8,732	2,582	4,856	26,362	31
Summit	13,132	1,751	21	1,678	11,627	47
Total Emissions	**184,562**	**64,402**	**10,028**	**41,942**	**266,521**	**911**

Source: Colorado Department of Public Health and Environment, Water Quality Control 2008

within the planning area, no emissions are included in the inventory because it is assumed the majority of Larimer County emissions correspond to the major population centers that lie to the east outside of the planning area. These areas include the cities of Fort Collins and Loveland, and would also include those emissions associated with visitors to Rocky Mountain National Park.

Visibility Monitoring

The typical threshold of significance in visibility monitoring or prediction is an increase in the number of days above natural conditions where the 98th percentile value of the haze index is greater than 0.5 deciview (approximately a 5-percent change in light extinction), which is considered to contribute to regional haze visibility impairment. Similarly, where the haze index exceeds 1 deciview (approximately a 10-percent change in light extinction), visibility impairment will occur (Federal Land Managers' Air Quality Related Values Work Group 2010). The visibility data presented in **Table 3.73** are from the IMPROVE network. **Diagram 3-9** provides long-term Standard Visual Range trend data for each area outlined in this table.

Deposition Monitoring

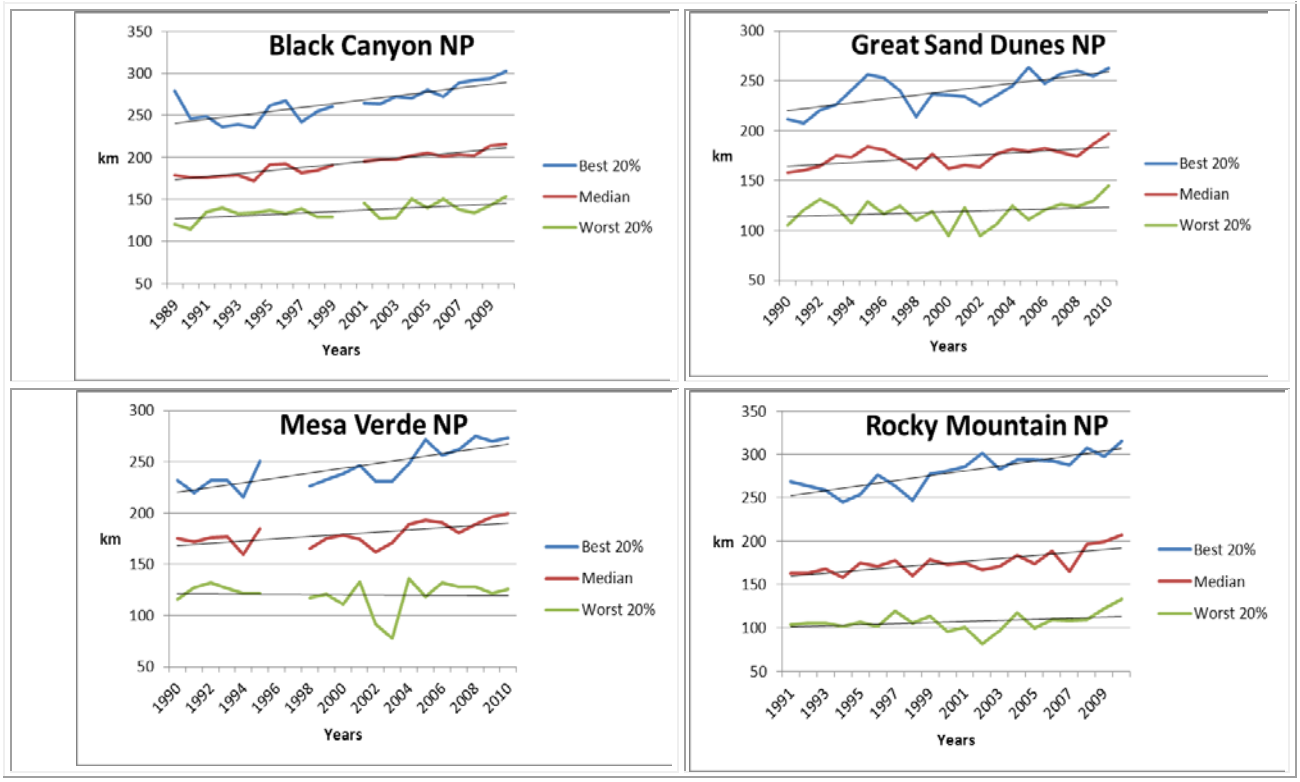
Ecological thresholds for air pollution, such as critical loads for nitrogen and sulfur deposition, are not currently included in the formal regulatory process for emissions controls in the US, although they are now considered in local management decisions by the National Park Service and Forest Service.

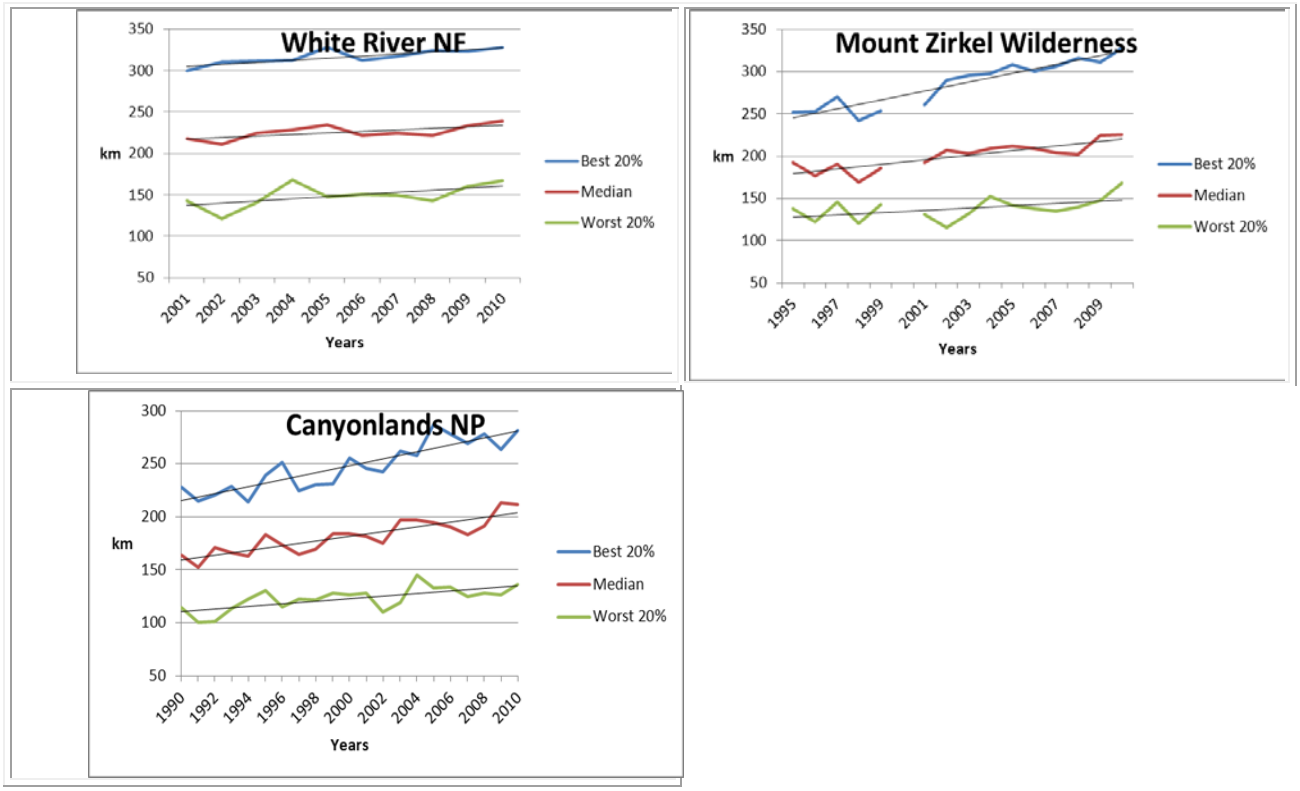
Table 3.73
Current Visibility Conditions (5-year average, 2006–2010)

Site Name	Class	State	Monitor Name	20% Clearest Days (deciviews)	20% Haziest Days (deciviews)
Black Canyon of the Gunnison National Park	I	CO	WEMI1	2.3	9.9
Great Sand Dunes National Park	I	CO	GRSA1	3.6	10.9
Mesa Verde National Park	I	CO	MEVE1	3.1	11.2
Rocky Mountain National Park	I	CO	ROMO1	1.9	12.0
White River National Forest	I	CO	WHRI1	0.3	10.7
Mount Zirkel Wilderness	I	CO	MOZI1	0.5	9.4
Arches National Park [1]	I	UT	NA	2.8	10.9
Canyonlands National Park	I	UT	CANY1	2.9	11.0

Source: Interagency Monitoring of Protected Visual Environments 2011
Note: With the exception of Arches National Park, all of the data are based on the revised (new) IMPROVE algorithm.
[1] National Park Service 2006–2010 5-Year Average Visibility Estimates

Diagram 3-9
Standard Visual Range Trends for Areas in Table 3.73, Current Visibility Conditions (5-year average, 2006–2010)





Thresholds for various deposition parameters or critical loads have been established by the National Park Service and Forest Service in several guidance documents (e.g., Federal Land Managers' Air Quality Related Values Work Group 2010)[1]. Adverse impact determinations are considered on a case-by-case basis for modeled deposition values that are higher than the threshold. Federal land managers will continue to use scientific data and information, in conjunction with modeling, to evaluate whether or not an adverse impact would occur.

Where specific impact analyses require reference to historical deposition rate data, it is included in **Chapter 4**, Environmental Consequences. **Diagram 3-10** and **Diagram 3-11** show the current trends for wet and dry deposition monitoring within or adjacent to the planning area. Total deposition (the sum of both wet and dry deposition) data are only available at two sites within the region where the deposition monitors are collocated; this is presented in **Diagram 3-12**.

[1] For water sensitivity within the planning area, the USFS has established guidelines for surface waters with Low Acid Neutralizing Capacity (ANC) that states: 1) for surface waters that have a baseline of less than 5 microequivalents per liter Acid Neutralizing Capacity, no more than 1 microequivalent per liter decrease in Acid Neutralizing Capacity would be acceptable; and 2) for surface waters that have a baseline of equal to or greater than 25 microequivalents per liter Acid Neutralizing Capacity, the limit of acceptable change is not more than 10 percent from the baseline. The National Park Service has established modeling Data Analysis Thresholds that trigger a management concern.

Diagram 3-10
Wet Deposition Trends

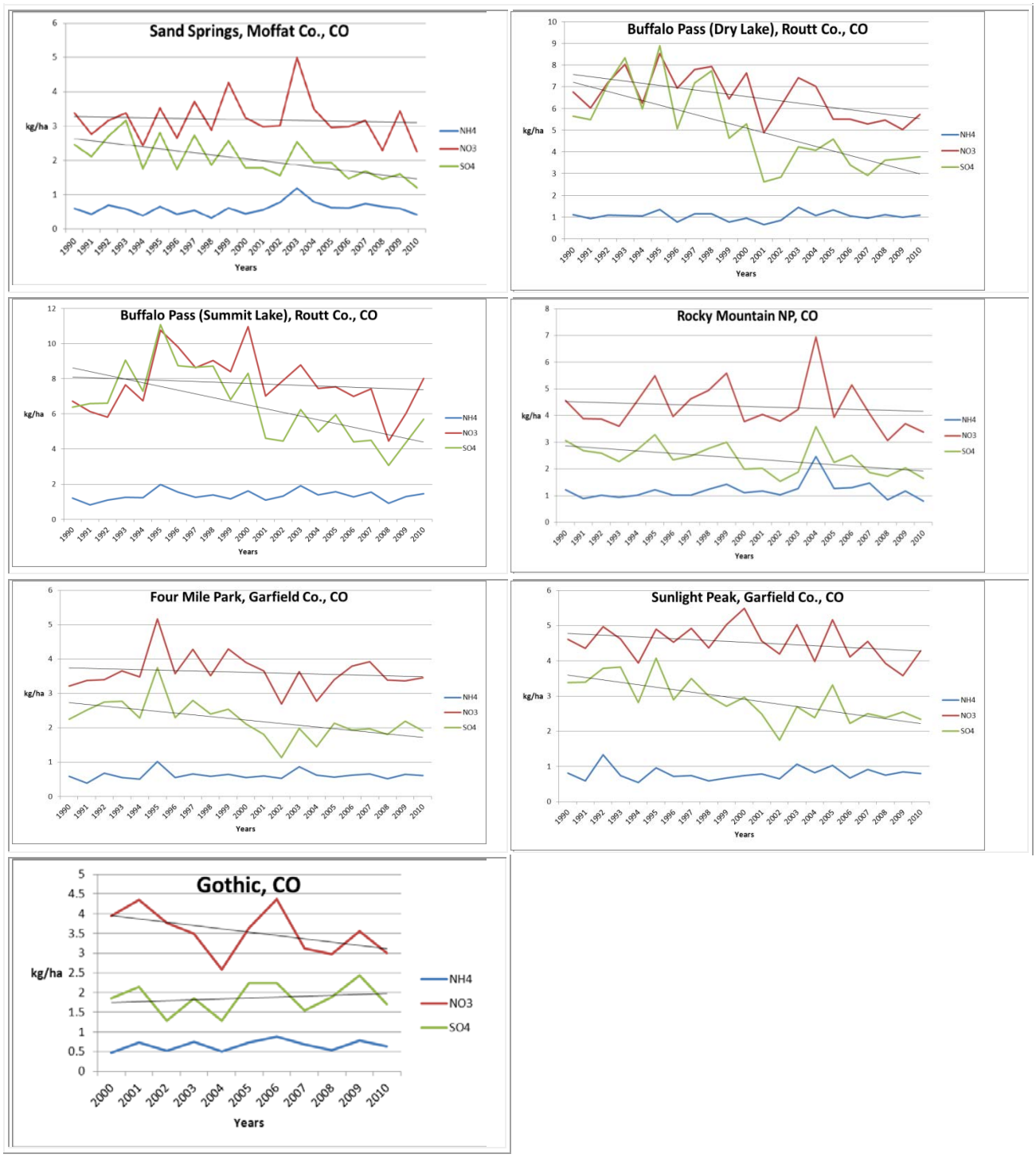


Diagram 3-11
Dry Deposition Trends

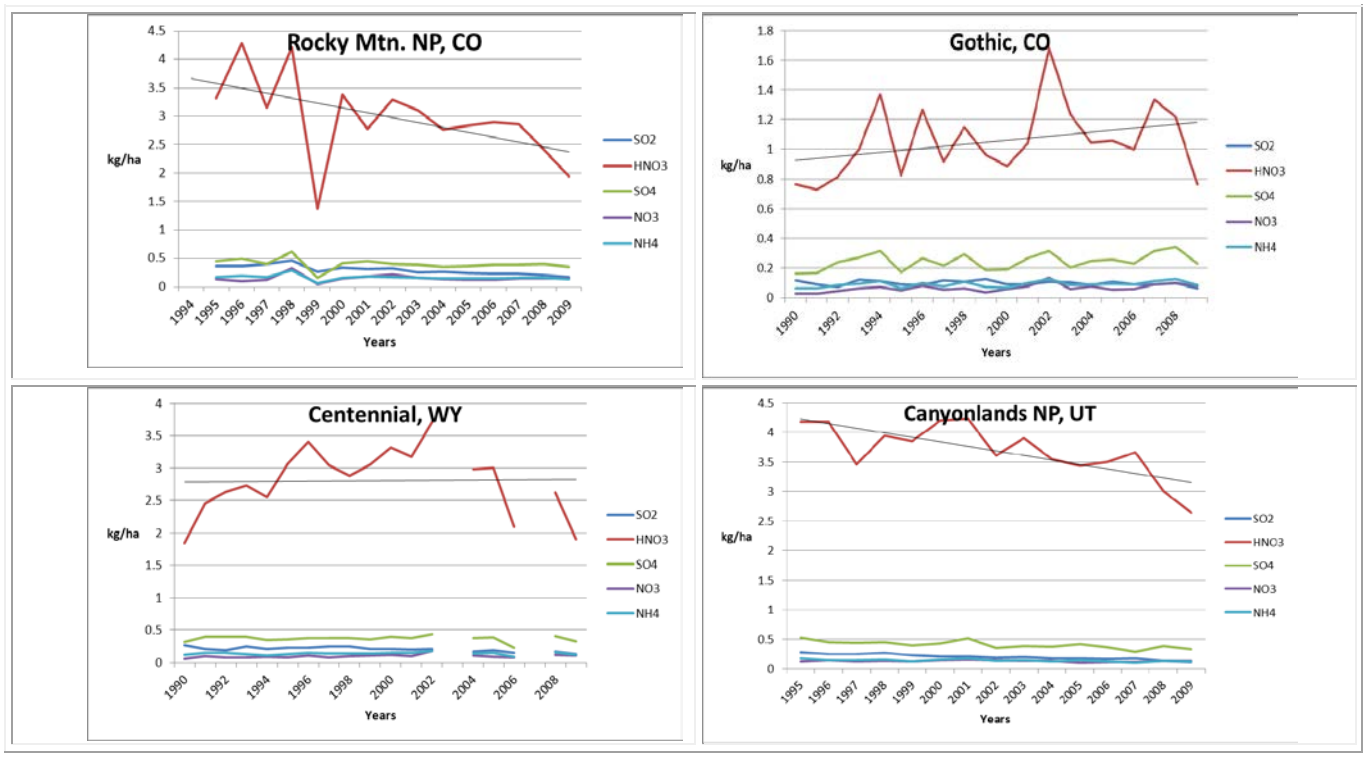
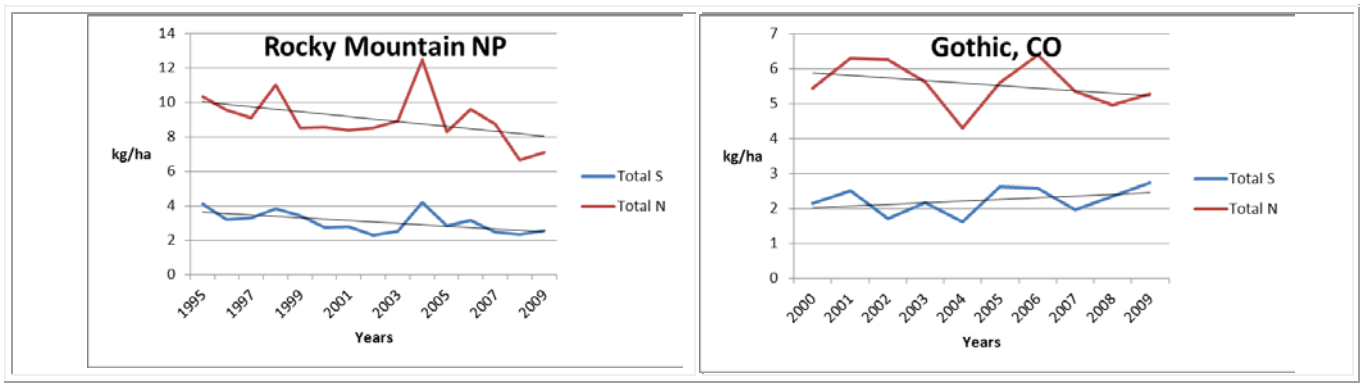


Diagram 3-12
Total Deposition Trends



Conditions on BLM-Administered Lands

Conditions on BLM-administered lands are as described above for conditions of the planning area. Authorized activities on BLM-administered lands that produce PM_{10} and $PM_{2.5}$, nitrogen oxides, volatile organic compounds, carbon monoxide, sulfur oxides, hazardous air pollutants, and greenhouse gas pollutants include wildfires, prescribed burns, and slash pile burns; mechanical thinning and other vegetation management activities; vehicle travel on paved and unpaved roads;

trails and open areas; energy development, mineral extraction, and mining operations; livestock grazing; and camping and other recreational activities.

Conditions on National Forest System Lands

Routt National Forest

Most of the air quality monitoring (wet deposition, dry deposition, and visibility) conducted in the Routt National Forest is and has been associated with the National Atmospheric Deposition Program and the National Trend Network. Two National Atmospheric Deposition Program monitoring sites are located in the Hahns Peak/Bears Ears Ranger District. Both sites, described in more detail below, were established in the 1980s to monitor air quality conditions in and adjacent to the Mount Zirkel Wilderness Area.

Recently, Routt County, Colorado, contracted for assistance with planning and implementing air quality programs designed to reduce the impacts of oil and gas development on ambient air quality and to comply with existing state and federal air quality standards and regulations. The Forest Service and the National Park Service have contracted to upgrade existing air quality monitoring infrastructure in Walden, Colorado, (Jackson County) to monitor the impacts of oil and gas development on air quality and criteria pollutant (particulate matter, sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, and lead) concentrations in Colorado, Utah, and Wyoming; the Walden site is part of a Three-State Pilot Study.

Like other parts of the country, the sources of air pollution in and adjacent to the Routt National Forest vary. Most of the sources of local air pollution are associated with automobiles and coal-fired, electrical-power generation. However, other sources of air pollution, such as oil and gas development, smelter operation, and wildland fires, also contribute to air quality degradation.

<u>Air Quality – Existing Monitoring Infrastructure</u>

Buffalo Pass, Summit Lake (CO97) – The CO97 monitoring site became operational on February 7, 1984, and continues to collect wet- and dry-precipitation samples, ozone samples, and air visibility data. This site is located near Buffalo Pass (Park Range) at an elevation of 3,234 meters (10,607 feet). Air quality samples collected at this site are precipitation sulfates, nitrates, chlorine, phosphates, sodium, potassium, calcium, magnesium, and ammonium. In addition, each sample is analyzed to determine pH and conductivity. CO97 is equipped with an IMPROVE MOZI1 device (filters) that measures changes in air visibility based on changes in atmospheric particulate matter concentrations. CO97 also is equipped to measure atmospheric mercury and is part of the Mercury Deposition Network and the National Trends Network.

Buffalo Pass, Dry Lake (CO93) – The CO93 monitoring site became operational on October 18, 1986, and continues to collect wet- and dry-precipitation samples, ozone samples, and air visibility data. This site is on the west side

Buffalo Pass (Park Range) at an elevation of 2,538 meters (8,325 feet). Air quality samples collected at this site are precipitation sulfates, nitrates, chlorine, phosphates, sodium, potassium, calcium, magnesium, and ammonium. In addition each sample is analyzed to determine pH and conductivity. CO93 is part of the National Trends Network.

State and Local Air Monitoring Stations Network monitoring station in Walden, Colorado – This monitoring station is located about 12 miles north of Walden near the small town of Cowdrey, Colorado. This station is part of the Three-State Pilot Study (Colorado, Utah, and Wyoming) designed to better monitor the impacts on air quality associated with oil and gas development in the three-state region. Air quality metrics measured at this station are ambient concentrations of ozone, nitrogen oxides, sulfur dioxide, and carbon monoxide. In addition, concentrations of atmospheric particulate matter less than or equal to 10 microns are measured. Finally, metrics such as air temperature, relative humidity, solar radiation, wind speed, and wind direction are measured at this station. Data collected at this station is submitted hourly to the US EPA's Air Quality System.

3.17.2 Trends

Because of limited available data, it is only possible to trend air quality-related values for a few locations. For those locations, ambient air quality concentrations are below standards, visibility is typical of clear skies associated with remote areas in the western US, and there have been improvements in total deposition at Rocky Mountain National Park in recent years. Future changes to air quality conditions in the 62-mile radius of the planning area would occur according to the intensity and expansion or reduction of activities that produce air pollutants; however, the use of air pollution mitigation techniques can also minimize air quality impacts and, in some cases, reduce emissions from sources. Proposed activities on BLM-administered lands and the mitigation measures planned for those activities must be evaluated on a case-by-case basis to determine if an air quality impact could occur, and whether the activity would be in compliance with air quality regulations. At this time, future impacts on air quality within the planning area from non-BLM sources (e.g., power plants and fireplaces) are uncertain; however, it is not anticipated that existing sources would increase their emissions in the future. In addition, major sources such as power plants are operating under state-administered air permits and are subject to periodic inspections.

Visibility

The majority of areas have seen steady improvements in visibility over the past 15 to 20 years. Standard Visual Range distances have been increasing at both ends of the visibility spectrum, meaning that improvements are generally being made on the best and worst visibility days.

Deposition

Current trends indicate that deposition rates are decreasing and progress is being made to reduce the associated impacts of deposition in and around the planning area. This does not suggest that the current levels of deposition are acceptable for all areas of concern. A case-by-case determination must be made to determine significance when specific project data are known.

3.17.3 References

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3.18 CLIMATE CHANGE

3.18.1 Existing Conditions

Conditions of the Planning Area

Climate represents the long-term statistical characterization of daily, seasonal, and annual weather patterns such as temperature, relative humidity, precipitation, cloud cover, solar radiation, and wind speed and direction. Climate is the composition of the general prevailing weather conditions of a particular region throughout the year, averaged over a series of years (typically 30 years). A region's climate is affected by its latitude, terrain, and elevation, as well as its relative location to large water bodies.

Climate in the planning area is varied depending on the orientation of topography, elevation, slope and aspect. Winters are typically cool to cold with temperatures ranging from below zero to above freezing. Precipitation events are occasional and, depending on the elevation, are typically in the form of snow.

Summers are generally warm to hot, again depending on elevation. Precipitation during the summer is usually in the form of short-duration, high-intensity

monsoonal thunderstorms. Precipitation ranges from 9 to 25 inches primarily dependent on elevation, with the highest receiving the most.

3.18.2 Trends

There is now strong and growing scientific evidence for human-induced climate change (National Climate Assessment Development Advisory Committee 2012). These changes typically forecast that temperatures will increase with precipitation becoming more variable in nature. This change in climate, primarily over the last 50 years, is due to the increased emissions of greenhouse gases such as carbon dioxide, methane, nitrous oxide (Intergovernmental Panel on Climate Change 2007). While these gases are produced naturally through physiological processes of plants and animals, decomposition of organic manner, naturally started wildfires, and volcanic and geothermal activity, concentrations of these gases has dramatically increased over the last 150 years from the emissions of industrial processes, transportation technology, urban development, agricultural practices, and other human-induced factors.

Climate is both a driving force and limiting factor for many biological, ecological, and hydrologic processes, as well as resource management activities such as disturbed site reclamation, wildland fire management, rangeland and watershed management, and vegetation and wildlife habitat management. Climate change presents a challenge to land managers because of the magnitude of potential effects of climate change on ecosystem structure, process, and function, along with the uncertainty associated with these effects.

While ecosystems gradually change over time in response to climate change, this accelerated change in climate over the 50 years is likely to impact ecosystems at rates where some resources (species and habitats) are unable to adapt at the same rate. Climate change also may intensify and compound existing non-climate change stressors such as invasive species, pests and diseases, and frequency and intensity of wildfires. Expected changes to ecosystems as a result of climate change include changing of the onset of spring and fall seasons, reduced snowpack, earlier snow melt, altering stream flows, more prolonged and intense seasonal droughts, local extinctions of species (including GRSG), and more intense and frequent extreme weather events.

While not covering the entire planning area (LSFO, KFO, CRVFO, and Routt National Forest), the recently completed Colorado Plateau Rapid Ecoregional Assessment (Bryce et. al. 2012) covers the southern and western portions of the planning area. This assessment projected future climate scenarios using the ECHAM5-driven RegCM3 model. While not covering the entire planning area, one can reasonably assume that the future climate scenarios for temperature and precipitation will be similar for the rest of the planning area.

The downscaled results from the Colorado Plateau Rapid Ecoregional Assessment show that northwest Colorado is expected to undergo a general warming through 2060. Average summer temperatures are expected to increase

by as much as 4 degrees Fahrenheit, but even greater increases are expected in the winter months. This increase in winter temperatures may lead to more rain events, thus impacting snow pack and causing earlier snow melt and leading to more prolonged drought in the summer. Further, increasing temperatures may result in a change of vegetation communities. Increase in temperatures in the summer may result in a loss of shrub and woodland canopy due to an overall drying of the soil for a longer period during the growing season and a shift of more drought-resistant vegetation or from shrublands to grasslands. This may ultimately result in a loss of sagebrush cover across the planning area.

Wyoming is also expected to increase in summer temperatures as well with increases as much as 8 degrees Fahrenheit by the end of the century (Karl et al. 2009). As with the Colorado Plateau Rapid Ecoregional Assessment, it is unclear if seasonal precipitation patterns will change. Even if they do not change, the increase in temperatures during the summer will increase the number and frequency of hot days. This would lead to increased water stress in vegetation during the summer.

Climate models are generally less reliable in predicting precipitation than temperature (Bryce et. al. 2012). Under the climate scenarios presented in the Colorado Plateau Rapid Ecoregional Assessment, precipitation is expected to decline throughout much of the year through 2030, with the exception of a couple of months in the fall. From 2030 to 2060, the precipitation trends in the northern part of the Colorado Plateau indicate a slight increase in precipitation, with this increase primarily occurring in the summer.

3.18.3 References

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Intergovernmental Panel on Climate Change. 2007. Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II, and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Core Writing Team: R. K. Pachauri and A. Reisinger (eds.). Intergovernmental Panel on Climate Change, Geneva, Switzerland.

Karl, T. R., J. M. Melillo, and T. C. Peterson (eds). 2009. In: Global Climate Change Impacts in the United States. Cambridge University Press, New York, NY. Pp:123-128.

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National Fish, Wildlife and Plants Climate Adaptation Partnership. 2012. National Fish, Wildlife and Plants Climate Adaptation Strategy. Association of Fish and Wildlife Agencies, Council on Environmental Quality, Great Lakes Indian Fish and Wildlife Commission, National Oceanic and Atmospheric Administration, and US Fish and Wildlife Service. Washington, DC.

3.19 VISUAL RESOURCES

Visual resources are the visible physical features on a landscape, such as soils, geomorphic features, water, vegetation, and human-made structures, that contribute to the landscape's scenic or visual quality and appeal. A visual impact is created when a perceptible contrast is created that affects the scenic quality of a landscape. The degree of visual impact as perceived by an individual or group depends on a variety of factors or conditions, including personal experience, time of day, and weather or seasonal conditions.

BLM

As required by the FLPMA, the BLM must consider scenic quality as part of its management of public lands. To carry out this mandate, the BLM uses the VRM system. VRM involves the identification and evaluation of scenic values. The BLM's VRM system helps to ensure that actions taken on public lands will benefit the visual qualities associated with the described landscape.

The VRM system includes the development of a visual resource inventory, determination of management levels, and visual resource contrast rating analysis when a surface-disturbing activity is proposed. Visual resource inventory involves identifying an area's visual resources. Based on the inventory and consideration of other RMP objectives, the BLM assigns area-specific management classes (**Table 3.74**; **Figure 3-12** [**Appendix A**, Figures]).

The BLM uses a contrast rating analysis process to evaluate the design elements of a proposed activity to determine the level of visual impact on the existing landscape as observed from key observation points. Mitigation requirements can be applied to an activity to lessen visual impacts on the landscape.

Forest Service

The Routt National Forest Plan (Forest Service 1998) provides guidance for all resource management activities, including scenic quality, in the Routt National Forest. The plan specifies desired conditions for visual resources. Desired conditions include the provision of scenic quality, maintenance of the overall landscape character, and continued attraction of visitors through the physical setting and scenic beauty of the Routt National Forest.

Historically, the Forest Service managed visual quality using the Visual Management System. The key component of the Visual Management System is the establishment of Visual Quality Objectives. These Visual Quality Objectives

Table 3.74
BLM Visual Resource Management Class Descriptions

VRM Class	Class Objective
I	Preserve landscape character. This class provides for natural ecological changes, but does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
II	Retain existing landscape character. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract a casual observer's attention. Any changes must repeat the basic elements of line, form, color, and texture found in the predominant natural features of the characteristic landscape.
III	Partially retain existing landscape character. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate a casual observer's view. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
IV	Provide for management activities that require major modification of the landscape character. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic landscape elements.
Rehabilitation Areas	Areas in need of rehabilitation should be flagged during the inventory process. The level of rehabilitation is determined through the RMP process by assigning the VRM approved for that particular area.

provide visual goals for management activities. Each Visual Quality Objective prescribes a different degree of acceptable alteration of the landscape based on the importance of aesthetics. Visual Quality Objectives consist of five levels: preservation, retention, partial retention, modification, and maximum modification.

- Preservation – Allows ecological change only. Management activities are prohibited except for very low visually impacting recreation facilities.
- Retention – Management activities may not be visually evident. Contrasts in form, line, color, and texture must be reduced during or immediately following the management activity.
- Partial Retention – Management activities must remain visually subordinate to the characteristic landscape. Associated visual impacts in form, line, color, and texture must be reduced as soon

after project completion as possible or at a minimum within the first year.

- Modification – Management activities may visually dominate the characteristic landscape. However, landform and vegetation alterations must borrow from naturally established form, line, color, or texture so as to blend in with the surrounding landscape character. The objective should be met within 1 year of project completion.
- Maximum Modification – Management activities including vegetation and landform alterations may dominate the characteristic landscape. However, when viewed as background they must visually appear as natural occurrences within the surrounding landscapes or character type. When viewed as foreground or middle ground, they may not appear to completely borrow from naturally established form, line, color, or texture. Alterations may also be out of scale or contain detail which is incongruent with natural occurrences as seen in foreground or middle ground. Reduction of contrast should be accomplished within 5 years.

With an amendment to the Forest Service Manual, Chapter 2380 in 2003 (Forest Service 2003), the Forest Service began transitioning from the Visual Management System to the Scenery Management System.

3.19.1 Existing Conditions

Conditions of the Planning Area

The visual landscape across the planning area varies greatly but is generally consistent with the broader landscape features found throughout the Rocky Mountains and western Colorado plateau. Landscape characteristics that contribute to the planning area's scenic conditions include mountains, ridges, narrow and broad river valleys, rolling hills, numerous lakes and reservoirs, sand dunes, and diverse vegetation regimes. Over time, volcanic activity, seismic forces, and erosion have produced unique ridges, isolated mountain peaks, rock outcrops, and waterways. Development in the planning area consists of oil and gas development, urban centers, utility infrastructure, dispersed ranches, recreation areas including ski areas, and range improvements such as fencing and water developments. Urban development is largely situated along major roadways. Taken together, these features create a variety of landscape compositions. Overall, public lands in the planning area serve as important scenic backdrops and visual open space.

Conditions on BLM-Administered Lands

BLM-administered land is distributed throughout the planning area, with the greatest acreage located in the LSFO, GJFO, and WRFO. Existing RMPs for each field office establish the VRM classes within which GRSG habitat is located.

Recently, several field offices have updated their Visual Resource Inventories and subsequently are preparing VRM management classes based on the new inventories. The VRM classes resulting from the new inventories will establish new baseline conditions from which trends can be determined. However, only in the KFO have the VRM classes been updated to reflect the latest inventory. For all other field offices, the VRM classes represent the most recent inventory.

GRSG habitat is widely distributed throughout the planning area, with the highest concentrations of PH and GH in the Wyoming Basin MZ. The largest habitat areas are in Moffat County within the BLM's LSFO, as well as throughout the KFO. Habitat areas in the remaining three field offices are generally smaller and less concentrated.

Colorado River Valley Field Office

GRSG habitats are found in two significant visual resource areas in the CRVFO: the Roan Plateau and Castle Peak-King Mountain areas. The Roan Plateau is home to the Parachute/Piceance/Roan population, and the Castle Peak-King Mountain area is home to the Northern Eagle-Southern Routt population. Two separate land use planning efforts were conducted for the two areas (BLM 1984; BLM 2006).

There are 36,200 acres of GRSG habitat, all of which is GH, located on top of the Roan Plateau and overlapping private surface estate, split estate, and BLM surface estate. The top of the Roan Plateau is characteristic of long ridgelines that slope to the north and are deeply incised by east and west-flowing tributaries of Parachute Creek. This effect creates an undulating horizontal line in the landscape broken by steep vertical lines created by the drainages. The top of the plateau is dominated by a mosaic of aspen woodlands, sagebrush flats, and mixed mountain shrublands, with riparian habitat along the deep stream valleys. The Roan Plateau landscape is visually fragmented by existing development that occurred prior to current VRM objectives (BLM 2006) and includes roads, cabins, grazing improvements, old vegetation treatments, communication towers, limited oil shale development, and (on private land) limited oil and gas development.

The Roan Plateau also lies within an area of high natural gas and oil potential. While no oil and gas development of the federal mineral estate has taken place above the rim, wells have been drilled and developed on private land. The top of the Roan Plateau has valid existing leases and with those leases, valid existing leasing rights. The visual resources within the Roan Plateau are protected through the application of stipulations and mitigation measures. Two stipulations are currently in place for the Interstate 70 viewshed and VRM Class II areas.

The Castle Peak-King Mountain area contains 105,400 acres of GRSG habitat, and is remote and largely undeveloped, although a number of towns are present along the major transportation routes. GRSG habitat is not easily accessible because of private land and topography constraints. The area is characteristic of

rural ranching and agricultural land. The topography is varied with visually prominent mountain peaks including King Mountain, Castle Peak, Greenhorn Mountain, and Horse Mountain. Within the mapped GRSG habitat, there is a distinct division of the landscape created by the Colorado River. The vegetation is diverse with the steep north-facing mountain slopes generally forested with conifers intermixed with extensive groves of aspen, and the drier south-facing exposures largely pinyon-juniper woodlands and oakbrush. Grasses, sagebrush, and assorted shrubby species constitute the ground cover along the valley bottoms and riparian communities follow the river corridors.

Grand Junction Field Office

The landscape containing PH and GH within the GJFO planning area lies on the mesa/ridge tops above Roan Creek and its tributaries in the northeast portion of the field office, and along the western and southwestern slopes of Battlement Mesa. The Roan Creek portion of this landscape, which contains 5,500 acres of PH and 8,900 acres of GH, is characterized by steep-sided mesas or ridges rising 1,500 to 2,000 feet above the primary drainages. The GRSG habitat lies primarily on the tops of these mesas. The Battlement Mesa portion of habitat, which is all GH, lies on the more gradually sloping lower and middle slopes of Battlement Mesa. Both areas share similar topography and vegetation types that create a landscape with relatively indistinct rolling form, gently undulating lines, subtle hues of greens, greys and tans, and a mottled medium texture. Human-made developments introducing visual contrast to this landscape include scattered roads, fences, stock ponds/tanks, homes and other structures, and energy development infrastructure (such as well-pads, compressor stations, and pipelines.)

The inventoried habitat on top of the mesas and ridges above the Roan Creek drainage is primarily visible only from observation points within and directly adjacent to the habitat areas. The habitat on the slopes of Battlement Mesa is visible from observation points above, below, and within the habitat area.

Kremmling Field Office

In the KFO, two mountain parks dominate the visual setting of the planning area: North Park and Middle Park. North Park is predominately an open landscape composed of flat valleys and rolling hills. Middle Park is a synclinal basin surrounded by mountain ranges. Most of the valley bottoms are privately owned and within the foreground of the viewsheds. GRSG habitat in North Park consists almost exclusively of PH. GRSG habitat in Middle Park is a mix of GH on the western side and non-habitat on the eastern side.

Throughout North Park, the views are predominantly of open rolling hills covered with grasses and sagebrush. The vegetation regime is characterized by sagebrush on the southern exposures and pine and aspen forests on the northern exposures. Throughout the center of North Park, water features and ridges contrast with the sagebrush hillsides. Creeks and rivers winding through

the hills include riparian vegetation communities and flowing water. Lakes in the northwest portion of North Park give this area additional variety. The ridges that run across North Park are composed of rock outcrops and open sage grasslands. The rock outcrops and mountains break the line of the rolling rounded hills.

Middle Park is more visually diverse than North Park. When traveling through the area, visitors observe a landscape that is constantly changing. The Middle Park landscape is comprised of open rolling sagebrush hills interrupted by isolated mountain peaks with rocky south faces and forested north faces. The Colorado River bisects Middle Park from east to west through Byers Canyon in the east and the steep-walled Gore Canyon in the west. As the river exits Gore Canyon, it winds through hills composed of reddish-orange, rocky soil strata. Pinyon-juniper-covered hills provide a diversity of color and texture along the riverway.

The human features on the east side of Middle Park are mainly the result of tourism. The largest town is Granby; other communities include Hot Sulphur Springs, Grand Lake, Fraser, Tabernash, and Winter Park. The east side provides a ski area, several subdivisions, gateway access to Rocky Mountain National Park, and recreational access to three large lakes. Many homes on this side of the county have been built in the forested areas and serve mainly as recreational homes.

Increasing urbanization and oil and gas development have changed the visual landscape in the KFO in recent years. Urban areas in the North Park area include Walden, Rand, Gould, and Cowdrey. In Middle Park, urban areas include Granby, Hot Sulphur Springs, Fraser, Winter Park, and Kremmling. The area also has several isolated communities, large ranches, ranchettes, and sizeable vacation homes. Oil and gas fields are primarily located east of Walden.

The viewshed in the KFO is also influenced by dead trees killed by the mountain pine beetle. Timber removal is occurring, and removal areas are designed to look like naturally occurring clearings. However, subdivisions in heavily forested areas are becoming more visible as trees are removed.

Little Snake Field Office

PH or GH covers a majority of the LSFO, with the exception of steep rugged terrain in the western portion of the field office. The landscape of the LSFO consists of open rolling hills and desert in the lower elevations of the western portion of the field office, while forested mountainous landscapes characterize the higher elevations to the east. The landscape types consist of mountains, ridges, narrow valleys, canyons, mesas, rolling hills, broad valleys, river valleys, basins, reservoirs and badlands. Although much of the LSFO is largely undeveloped, range improvements and oil and gas developments in the past 15 years have altered much of the scenery. Most oil and gas developments have

occurred in concentrated areas where the potential for economically recoverable mineral resources is high.

White River Field Office

The WRFO has over 120,000 acres of PH and 180,000 of GH scattered throughout the field office planning area. Landscapes in the WRFO display a variety of characteristics depending on location, elevation, vegetation, and cultural modifications. The region consists of high mountain ranges with deeply dissected, steep-side valleys and canyons. These narrow canyons are comprised of irrigated fields flanked by rugged foothills and cliff features. Vegetation in the foothills creates an irregular pattern caused by patches of grasses, low-lying shrubs, or dark evergreen stands.

River corridors such as the White River, Douglas Creek and Cathedral Creek provide high quality scenery. The vegetation along these river corridors provides color variation from the more muted upland hues. Certain landforms such as Cathedral Bluffs present distinct visual characteristics in the WRFO. These features often exhibit strong vertical lines in landscapes typically dominated by horizontal and shallow diagonals.

The WRFO is generally undeveloped and cultural modifications are sparse. The towns of Rangely, Dinosaur, and Meeker along with major roads (SH 139, US 40 SH13 and SH64) contain the highest concentrations of cultural modifications in the area. Rangeland improvements and utility lines are also scattered throughout the WRFO.

Oil and gas development equipment and infrastructure is scattered throughout the WRFO planning area concentrated in five major areas: Rangely, Wilson Creek, Douglas Creek Arch and Piceance Basin.

Conditions on National Forest System Lands

Routt National Forest

The Routt National Forest, located in the northeast portion of Routt County, contains a comparatively smaller concentration of GRSG habitat than is found on BLM-administered lands in the planning area. **Table 3.75** summarizes the distribution of PH and GH throughout the Routt National Forest's four Visual Quality Objective areas and includes the geographic location name. Refer to **Figure 3-13**.

Table 3.75
GRSG Habitat by Geographic Area, Visual Quality Objective, and Habitat Type on the Routt National Forest

Geographic Area Name	Visual Quality Objective [1]	GRSG Habitat Type	Acres
Chimney Rock	Modification	GH	5
Chimney Rock	Partial Retention	GH	110
Chimney Rock Subtotal			*115*
Corral Peaks	Modification	GH	150
Corral Peaks	Modification	PH	210
Corral Peaks Subtotal			*360*
Dunckley	Partial Retention	GH	90
Dunckley	Partial Retention	PH	30
Dunckley Subtotal			*120*
Elkhead Mountain	Modification	GH	140
Elkhead Mountain	Partial Retention	GH	7,150
Elkhead Mountain	Retention	GH	60
Elkhead Mountain Subtotal			*7,350*
Gore	Modification	GH	5
Gore	Modification	PH	10
Gore	Partial Retention	GH	40
Gore	Partial Retention	PH	410
Gore	Retention	PH	0
Gore Subtotal			*465*
Green Ridge	Partial Retention	GH	90
Green Ridge	Partial Retention	PH	150
Green Ridge Subtotal			*240*
Grizzly Creek	Partial Retention	GH	10
Grizzly Creek	Retention	GH	40
Grizzly Creek Subtotal			*50*
Pinkham Mountain	Partial Retention	PH	590
Pinkham Mountain	Retention	PH	180
Pinkham Mountain Subtotal			*770*
Red Dirt	Partial Retention	GH	70
Red Dirt	Retention	GH	370
Red Dirt Subtotal			*440*
Slater Creek	Modification	GH	1,370
Slater Creek	Partial Retention	GH	1,210
Slater Creek Subtotal			*2,580*
Troublesome	Modification	GH	20
Troublesome	Modification	PH	0
Troublesome Subtotal			*20*
Total			**12,510**

Source: Data from GIS by C. Tolbert, 6/15/2012
[1] Visual Quality Objective data was created for the Routt National Forest Plan (Forest Service 1998) and has not been updated since 1983.

3.19.2 Trends

Trends on BLM-Administered Lands

Visual resources throughout BLM-administered lands are expected to be influenced by a number of competing management areas. Recreation and oil and gas development are likely to be the most influential. As the state's population grows, more visitors will be attracted to BLM-administered lands for outdoor recreation in natural landscapes. The exercising of valid existing rights for oil and gas leases is also expected to affect scenic quality in the planning area over time. Other management activities expected to influence visual resources include fire management, energy and utility corridor development, road and trail construction, communication site placement, pipeline development, livestock grazing, and water tank siting.

Other possible trends or threats related to visual resources that are largely outside the control of BLM administrative actions include:

- decline in forest health and visual quality as a result of mountain pine beetle infestations
- changes to visual quality as a result of wildfire
- the proliferation of unauthorized routes on BLM-administered lands that can result in erosion, scarring, and deterioration of the scenic landscape

Activities on non-BLM-administered lands may also impact visual resources on BLM-administered land. Mineral extraction, energy development, and urban sprawl on neighboring lands have the greatest potential to alter the overall visual landscape in the planning area.

Trends on National Forest System Lands

Routt National Forest

Trends would be similar to activities occurring on BLM especially in outdoor recreation. Outdoor recreation use would continue to increase on Routt National Forest. Timber activities would occur in areas that have beetle killed trees and would change the visual quality.

3.19.3 References

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_____. 2003. Amendment to the Forest Service Manual, Chapter 2380. National Headquarters, Washington, DC.

3.20 LANDS WITH WILDERNESS CHARACTERISTICS

BLM

The purpose of and need for the national GRSG planning effort is limited to making land use planning decisions specific to the conservation of GRSG habitats. No decisions related to the management of lands with wilderness characteristics will be made as part of this planning effort; therefore, management of lands with wilderness characteristics is considered outside the scope of this plan amendment process. Impacts on lands with wilderness characteristics from the alternatives being analyzed for this planning effort are presented in **Chapter 4**, **Section 4.20**, Lands with Wilderness Characteristics.

As part of the original FLPMA Section 603-mandated inventories, inventories were conducted during past RMP revisions and amendment efforts, and through other various lands with wilderness characteristics inventory updates that have recently taken place. Inventories for wilderness characteristics were conducted for each field office, including some ongoing inventories and reflect the most up-to-date lands with wilderness characteristics baseline information for this planning area. For inventories that were conducted after 2011, findings were documented following guidance in BLM Instruction Memorandum 2011-154, Requirement to Conduct and Maintain Inventory Information for Wilderness Characteristics and to Consider Lands with Wilderness Characteristics in Land Use Plans, which is now encompassed in BLM Manuals 6310 and 6320. Lands with wilderness characteristics inventories will be updated for any site-specific project NEPA analyses that are conducted in the planning area to determine if a project will have impacts to lands with wilderness characteristics identified through previous or updated inventory efforts.

Forest Service

Wilderness characteristics assessments are not applicable to National Forest System lands.

3.20.1 Existing Conditions

Conditions on BLM-Administered Lands

The BLM's wilderness characteristics assessment is designed to answer the following question: Does the area meet the overall criteria for wilderness character? The assessment reflects current conditions and will be used to update wilderness inventories. The process entails the identification of wilderness inventory units, an inventory of roads and wilderness character, and a determination of whether or not the area meets the overall criteria for wilderness character (naturalness, sufficient size, outstanding opportunities for solitude and primitive and unconfined types of recreation). Units found to possess such character are evaluated during the land use planning process to address future management. The following factors are documented:

- Size: Must be a roadless area with over 5,000 acres of contiguous BLM land or contiguous with designated wilderness or WSAs (or the equivalent. A roadless area of less than 5,000 acres may be considered if it is demonstrated that the area is of sufficient size to make practicable its preservation and use in an unimpaired condition.
- Naturalness: Lands and resources exhibit a high degree of naturalness when affected primarily by the forces of nature and where the imprint of human activity is substantially unnoticeable. An area's naturalness may be influenced by the presence or absence of roads and trails, fences or other developments; the nature and extent of landscape modifications; the presence of native vegetation communities; and the connectivity of habitats. Wildlife populations and habitat are recognized as important aspects of naturalness and would be actively managed.
- Outstanding Opportunities for Solitude or Primitive and Unconfined Types of Recreation: Visitors may have outstanding opportunities for solitude, or primitive and unconfined types of recreation when the sights, sounds, and evidence of other people are rare or infrequent, where visitors can be isolated, alone or secluded from others, where the use of an area is through non-motorized, non-mechanical means, and where no or minimal recreation facilities are encountered.
- Supplemental Values: Does the area contain ecological, geological, or other features of scientific, educational, scenic, or historical value?

Within the planning area, there are inventoried units with wilderness characteristics in four of the five BLM field offices, encompassing approximately 116,800 acres. Of the lands with wilderness characteristics in the planning area, approximately 31,900 acres include GRSG PH and approximately 84,900 acres

include GRSG GH. Additionally, many acres have not yet been fully inventoried, particularly in the LSFO and WRFO. **Table 3.76** provides information on the lands with wilderness characteristics broken down by field office.

Table 3.76
BLM-Administered Lands with Wilderness Characteristics

Field Office	Acres with Wilderness Character	
	GH	PH
Colorado River Valley	25,500	3,600
Grand Junction	300	0
Kremmling	0	0
Little Snake[1]	57,600	25,700
White River[2]	1,500	2,600
Total	84,900	31,900

Source: BLM 2013
[1] The LSFO has not completed a field office-wide inventory of lands with wilderness characteristics. For purposes of analysis, it is assumed that lands not yet inventoried contain wilderness characteristics.
[2] In the WRFO, an additional 22,000 acres of GH and 14,000 acres of PH may potentially contain wilderness character. However, a full inventory of these areas has not been completed. Until these areas can be inventoried, they will be managed as though they contain these characteristics.

Conditions on National Forest System Lands

Routt National Forest
Wilderness characteristics assessments are not applicable to National Forest System lands.

3.20.2 Trends

Trends on BLM-Administered Lands
As the BLM's LSFO and WRFO complete their inventories of wilderness characteristics, it is anticipated that more units will be identified to contain wilderness characteristics within the planning area. For purposes of analysis, it is assumed that lands not yet inventoried contain wilderness characteristics. Following completion of the inventories, these offices will determine whether or not to manage for the protection of areas found to have wilderness characteristics. It is expected that the wilderness characteristics in these areas will be maintained over time.

Three units found to possess wilderness characteristics within the LSFO are currently managed for the protection of those wilderness characteristics. It is

expected that the wilderness characteristics in these three areas will be preserved over time.

Within the CRVFO and GJFO, the BLM has completed lands with wilderness characteristics inventories, but is deferring determinations of protection for lands with wilderness characteristics until the release of the RMPs for those field offices. The prioritization of management of GRSG habitats is likely to impact lands with wilderness characteristics within the decision area. It is anticipated that some wilderness characteristics in these areas will be degraded over time, while others will be protected or preserved.

Trends on National Forest System Lands

Routt National Forest
Wilderness characteristics assessments are not applicable to National Forest System lands.

3.20.3 References

BLM (United States Department of the Interior, Bureau of Land Management). 1984. Glenwood Springs RMP. Glenwood Springs, CO.

_____. 2005. Handbook H-1601-1: Land Use Planning Handbook. Rel. 1-1693, March 11, 2005. BLM, Washington, DC.

_____. 2008. Roan Plateau Planning Area RMP Amendment and EIS. Glenwood Springs, CO.

_____. 2011. Little Snake Record of Decision and RMP. Craig, CO.

_____. 2012a. BLM Manual 6310—Conducting Wilderness Characteristics Inventory on BLM Lands. Rel. 6-129. BLM, Washington, DC. March 15, 2012.

_____. 2012b. BLM Manual 6320—Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process. Rel. 6-130. BLM, Washington, DC. March 15, 2012.

_____. 2012c. Colorado River Valley Field Office Draft RMP. Silt, CO.

3.21 SOUNDSCAPES

Soundscapes, defined as the combination of sounds in a given area, are the result of and influenced by two primary factors: sound sources and landscape features that attenuate or amplify sound. Sound can originate from natural sources such as surface water features, animal vocalizations, and weather or from human sources such as aircraft, automobiles, construction equipment, and human speech. Terrain features that may affect noise transmission include mountains, vegetation, and structures such as buildings, fences, and sound walls.

3.21.1 Existing Conditions

Conditions of the Planning Area

GRSG habitat is widely distributed throughout the planning area, with the highest concentrations of PH and GH in the Wyoming Basin MZ. This area covers the northern portion of the planning area. The largest habitat areas are located in Moffat, Jackson, and Grand counties. Habitat areas in the remainder of the planning area are generally smaller and less concentrated.

Due to the planning area's distance from large urban centers and rugged topography, the existing soundscape is largely punctuated by natural sounds. Landscapes within the planning area vary, but include mountains, ridges, narrow valleys, canyons, mesas, rolling hills, broad valleys, river valleys, basins, reservoirs, and badlands. These features influence the soundscape by magnifying, attenuating, and influencing the various sounds in the soundscape. **Figure 3-13**, **Figure 3-14**, **Figure 3-15**, and **Figure 3-16** (**Appendix A**, Figures), represent the expected levels of sound dissipation during the winter months and the summer months as tied to vegetation and as tied to topography.

Conditions on BLM-Administered and National Forest System Lands

Soundscapes on both BLM-administered and National Forest System lands within the Colorado sub-region are consistent with the planning area where natural sounds are dominant. Ambient background sources of sound within unpopulated and undeveloped areas include wind, insects, birds, and flowing water in proximity to rivers and streams. Variations in wind speeds and direction can affect the soundscape. Additional factors influencing the GRSG habitat soundscape on BLM-administered and National Forest System lands include aviation sources, recreation (including OHV use), location of transportation routes, proximity to urban areas, and energy development.

Aviation

The Colorado Army National Guard conducts high-altitude army aviation training from its facility at the Eagle County Airport in Gypsum. The Colorado Army National Guard's training exercises typically extend outward in a 25-mile radius (BLM 2007) covering areas of the mapped GRSG habitat in Eagle County. On average, 5 training operations occur per weekday for 46 weeks of the year. Training exercises typically take place during daylight hours, but during the fall and winter months when darkness occurs earlier, training exercises may extend into darkness hours. Training in the area is dispersed and infrequent and the more distant sectors of the training areas tend to receive less use in order to maximize training time. High-altitude army aviation training operates in conformance with seasonal restrictions and specific best management practices for avoiding public areas, wildlife, livestock, and areas with special designations. At close range (less than 100 feet), helicopters produce a sound exposure level of around 100 A-weighted decibels for the instant an overflight occurs. With greater distance these sound exposure level decrease, so that at 1,000 feet the

noise level is 80 to 90 A-weighted decibels. At 1 mile, noise levels decrease to 80 A-weighted decibels or less.

There are several airports within or near the planning area, including in the towns of Steamboat Springs, Hayden, Craig, Meeker, Glenwood Springs, Kremmling, Granby, and Walden. The Walden-Jackson County Airport in Walden, McElroy Airport in Kremmling, and Craig-Moffat County Airport in Craig are in or directly adjacent to PH.

Recreation and Off-Highway Vehicle Use

Colorado State Law regulates noise emissions for OHVs. Under the law, vehicles manufactured before January 1, 1998, must not exceed 99 A-weighted decibels. Vehicles made after January 1, 1998, cannot exceed 96 A-weighted decibels. OHV use is popular throughout the planning area. In the CRVFO, for example, the BLM issues six special recreation permits for guided jeep and all-terrain vehicle tours around the Castle Peak area. Stipulations are included in the permits to limit group sizes, coordinate with other operators to minimize congestion, operate 2 trips or less per day, and avoid early dawn trips.

The Bocco Mountain SRMA, in the CRVFO, overlaps a small portion of the southern mapped boundary of GRSG habitat. This SRMA is also a popular OHV area. The BLM manages the Bocco Mountain SRMA for motorcycle activity on a system of designated single tracks. The Sand Wash area in the LSFO is also a popular location for OHV use.

Shotgun, riffle, and handgun discharges also influence the soundscape. Big game hunting is popular throughout the planning area, particularly in the fall. In addition, there are two developed shooting ranges in the planning area. The Byers Canyon Rifle Range, managed by Colorado State Parks and Wildlife, is along US Highway 40. The privately owned Blue Valley Sportsmen Club Rifle Range is along Colorado Highway 9. Both ranges are adjacent to BLM-administered lands. These shooting ranges see moderate to heavy use, with the highest usage rates occurring during the fall big-game hunting season.

Transportation Routes

Several major roadways traverse the planning area and contribute to the soundscape for areas adjacent to these routes. These roadways are used by private autos and the trucking industry to access other road networks, communities, and BLM-administered and National Forest System lands throughout the planning area. US Highway 40, which runs east to west through Sulphur Springs, Steamboat Springs, and Craig before entering eastern Utah, crosses more GRSG habitat than any other roadway in the planning area. Other roadways that contribute to the soundscape include State Highways 9, 13, 14, 125, and 131. A network of smaller local and private roads also influences the soundscape but to a lesser degree of intensity and frequency.

Several railroad lines cross the planning area. Passing trains provide intense but infrequent contributions to the surrounding soundscapes.

Urban Areas

GRSG habitat in the planning area is mainly on remote, rural land. However, noise radiating from urban areas influences the soundscape for certain GRSG habitat on BLM-administered land adjacent to urban areas. The municipalities with the greatest potential to influence the soundscape of adjacent GRSG habitat are Craig, Walden, Hot Sulphur Springs, and Kremmling. Urban activity originating in Steamboat Springs may contribute to the soundscape in the Routt National Forest.

Energy Development

Noise from energy-related surface activities and mineral extraction modifies the soundscape directly, adjacent to, and, due to the intensity of sound from these activities, well beyond the footprint of the activity. Noise levels associated with construction activities range from 70 A-weighted decibels to over 90 A-weighted decibels within 50 feet of the activity. Noise levels attenuate with distance with a reduction of approximately 6 A-weighted decibels with each doubling of distance (Thurman and Miller 1996). **Table 3.77** summarizes noise levels for a number of oil and gas activities. See also **Diagram 3-13**.

North Park, in the KFO, has the McCallum and Battleship oil fields, which have moderate to high levels of development and associated truck traffic. In recent years, additional oil and gas development has increased within the area but primarily on privately owned lands. The oil and gas rigs and associated vehicle traffic contribute to manmade noise in the soundscape.

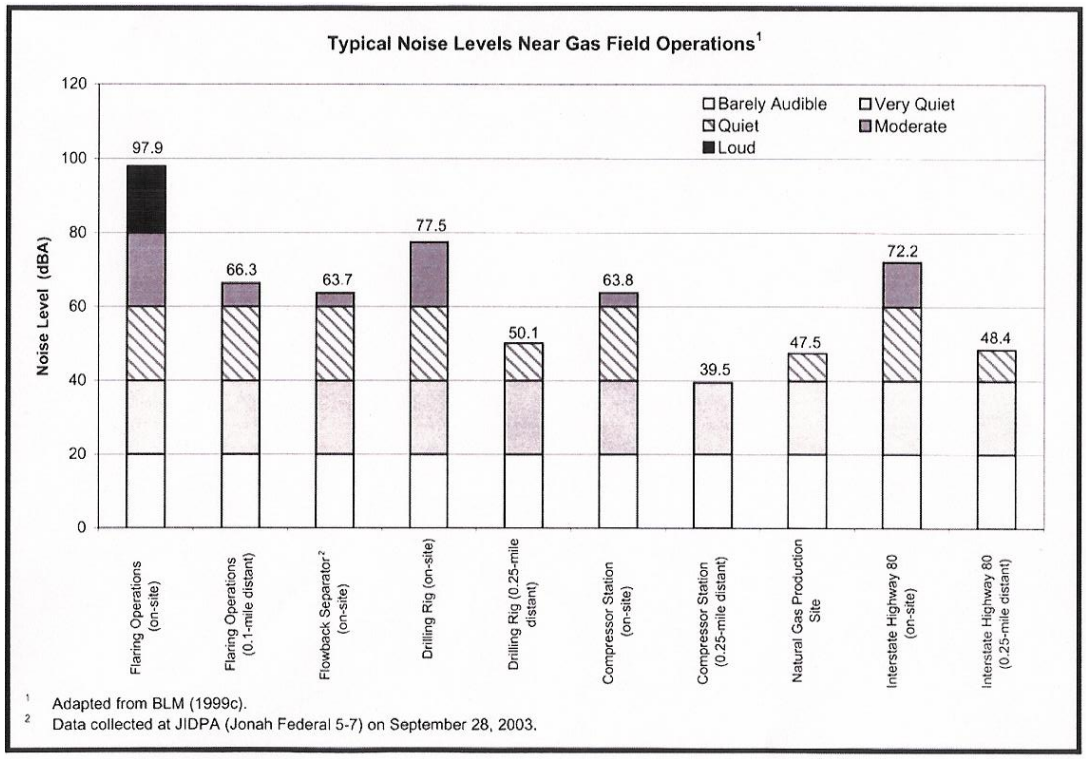
In the LSFO, about 226 wells have been constructed on BLM-administered lands in the last 20 years. Most oil and gas developments have occurred in more concentrated areas where the potential for economically recoverable mineral resources is high.

Table 3.77
Noise Levels for Oil and Gas Activities

Typical compressor station	50 A-weighted decibels (375 feet from property boundary)
Pumping units	50 A-weighted decibels (325 feet from well pad)
Fuel and water trucks	68 A-weighted decibels (500 feet from source)
Crane for hoisting rigs	68 A-weighted decibels (500 feet from source)
Concrete pump used during drilling	62 A-weighted decibels (500 feet from source)
Average well construction site	65 A-weighted decibels (500 feet from source)

Source: La Plata County, Colorado

Diagram 3-13
Typical Noise Levels Near Gas Field Operations



3.21.2 Trends

As the state's population grows, more visitors will be attracted to BLM-administered lands for recreation and solitude in natural landscapes. With the increase in both resident populations and in tourism, soundscapes are expected to become further influenced by human activities such as recreation, hunting, motor vehicle travel, and energy development.

Oil and gas development in the North Park area continues to slowly increase primarily on privately owned lands. The top of the plateau has valid existing leases and with those leases, valid existing leasing rights. Future oil and gas development on the Roan Plateau could generate noise but would be seasonally limited because of snow accumulations on top of the plateau. Limited convenient access to the top of the plateau would also limit the number of other users that may contribute to the ambient noise on top of the plateau.

Significant modifications to the existing soundscapes in the planning area may be limited since the habitat areas are not easily accessible due to topography constraints. The distribution of private land adjacent to BLM-administered and National Forest System lands also constrains access but may introduce the potential for soundscape changes in the planning area as private parcels are developed.

Soundscapes near GRSG habitat have not changed on the Routt National Forest in the past several decades, with the exception of increased snowmobile activity during the winter. The majority of this activity within GRSG habitat occurs in GH that is not suitable for winter use by GRSG.

3.21.3 References

BLM (United States Department of the Interior, Bureau of Land Management). 2007. Environmental Assessment #CO-140-2005-143. Increased Aircraft Operations at the Colorado Army National Guard High-Altitude Army Aviation Training Site. BLM, Glenwood Springs Field Office, CO.

La Plata County, Colorado. 2002. La Plata County Impact Report. pp 3-98.

Thuman, A., and R. K. Miller. 1996. Fundamentals of Noise Control Engineering. Prentice-Hall, Englewood Cliffs, New Jersey. 287pp.

3.22 CULTURAL RESOURCES AND NATIVE AMERICAN RELIGIOUS CONCERNS

Cultural resources are the material and physical remains of prehistoric and historic human activity, occupation, or endeavor. "Culture [is] a system of behaviors, values, ideologies, and social arrangements. These features, in addition to tools and expressive elements such as graphic arts, help humans interpret their universe, as well as deal with features of their environments, natural and social. Culture is learned, transmitted in a social context, and modifiable. Synonyms for culture include lifeways, customs, traditions, social practices, and folkways (Parker and King 1998). Natural features of importance in human history, such as mountains and rivers, may also be considered cultural resources. Overall, these resources are fragile and nonrenewable, and embody characteristics and information specific to the period in which a cultural group lived. Intrinsically, each cultural resource is important and provides valuable information about human occupation of an area. The protection of cultural resources is provided for by an extensive framework of laws, regulations, executive orders, and formal agreements. These laws and regulations have evolved over the past century to create a complex but strong policy for managing cultural resources for public benefit on both BLM-administered and National Forest System lands.

Section 106 (16 USC 470-f) and Section 110 (16 USC 470h-2) of the National Historic Preservation Act are the foundation of cultural resource protection and management for all federal agencies. Section 106 specifically requires federal agencies to take into account the effects of their activities on significant cultural properties, and specifies the procedures for meeting the statutory responsibilities. The Act also established the NRHP, which is a national program that coordinates and supports public and private sectors in the identification, evaluation, and protection of historic and archaeological resources. The NRHP provides an official listing of the nation's historic places deemed worthy of preservation.

Section 110 (16 USC 470h-2) provides the legal basis for the historic component of federal agencies' cultural programs. Section 110 prescribes to federal agencies and initiates a preservation program for each agency, which is responsible for both collecting information about cultural resource sites in a particular planning area, as well as identifying sites eligible for nomination to the NRHP. Historic properties are defined as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP. The term includes, for purposes of these regulations, artifacts, records, and remains that are related to and located within such properties. The term "eligible for inclusion in the NRHP" includes properties formally determined as such by the Secretary of the Interior and all other properties that meet NRHP listing criteria (36 CFR 800.2[e])."

Significant cultural properties include Traditional Cultural Properties. According to this code of regulations, a property is significant, and therefore eligible for nomination to the NRHP, if it possesses the following characteristics:

1. The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that
    a. Are associated with events that have made a significant contribution to the broad patterns of our history.
    b. Are associated with the lives of persons significant in our past.
    c. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.
    d. Have yielded, or may be likely to yield, information important in prehistory or history.

Although typically only properties 50 years or older may be considered significant, a number of exceptions apply for properties of unusual or exceptional significance (36 CFR 60).

Sites identified as eligible or that require additional data for significance evaluation as potentially eligible for the NRHP, are entitled to resource management considerations. These sites are protected through avoidance, and if avoidance is not possible, a mitigation strategy is developed to mitigate adverse impacts. Sites evaluated as not eligible for the NRHP after complete identification, description, and significance evaluation are eliminated from further resource management considerations. Federal agencies have the responsibility

to protect cultural resources on non-federal lands for certain Section 106 undertakings. However, federal agencies have no responsibility for their long-term protection because cultural resource sites are owned by the landowner.

The BLM has entered into a national programmatic agreement with the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers, and a protocol with the Colorado State Historic Preservation Office on planning for and managing historic properties under the BLM's jurisdiction or control. The protocol outlines how the BLM and State Historic Preservation Office would continue to interact, cooperate, and share information to ensure that the alternate procedures are consistent with the goals of the National Historic Preservation Act. These procedures allow the BLM more flexibility in identifying those cultural resources that meet criteria listed in 36 CFR Part 60.4 for NRHP eligibility and determining effects according to 36 CFR 800.9 without consulting State Historic Preservation Office for each routine undertaking.

The Routt National Forest currently has two forest specific programmatic agreements with the Advisory Council on Historic Preservation and the Colorado State Historic Preservation Office for project specific reporting and managing historic properties under the forest's jurisdiction. These agreements provide protocols for expedited reporting of surveys where there are no cultural resources that meet the criteria for NRHP eligibility as well as standard protection measures to ensure a no adverse effect to those sites meeting the criteria.

3.22.1 Existing Conditions

Conditions of the Planning Area

Documented prehistoric site types on BLM-administered lands in the planning area include open architectural, open and sheltered camps, open lithic, rock art, stone quarries, and a sheltered lithic. Prehistoric sites in this area commonly contain projectile points, scraping and cutting tools, hammerstones, tool manufacture flake debris, manos and metates, and, less commonly, pottery. Prehistoric sites could be associated with one or more of four regional cultural traditions: Paleo-Indian, Archaic, Formative (Fremont), and Proto-historic.

Historic sites are primarily related to early ranching and livestock grazing and are concentrated along the more moist drainage bottoms. Sites include, but are not limited to, arborglyphs, cow camps, trash scatters, mines, roads, trails, railroads, ditches, homesteads, and other historic structures. Artifacts at these sites commonly include tin cans, glass, ceramic, wire, nails, wood, and other metal objects.

Table 3.78 displays the number of inventoried acres and the number of historic properties found, divided up by BLM field office and Routt National Forest.

Table 3.78
Inventory Acreage, Sites, and Ratio of Known Cultural Resources Sites to Acres

Location	Total Class III Inventory	Known Sites	Total Historic Properties	Ratio of Known Sites to Acres (sites: acres)
CRVFO	23,300	243	56	1:96
GJFO	10,600	87	42	1:122
KFO [1]	305,500	5,533	1,086	1:55
LSFO [1]	65,400	5,679	1,573	1:318
WRFO	88,100	645	286	1:137
Routt National Forest	1,400	43	3	1:32
Total	**494,300**	**12,230**	**3,046**	**1:183**

Source: Reed et al. 2008 (for KFO); McDonald and Metcalf 2006 (for LSFO); BLM 2013 (for all other locations).
[1] Numbers for the KFO and LSFO includes acreage and sites outside of GRSG habitat. However, because a large proportion of both field offices falls within the planning area these numbers can be considered representative of the portions of these two field offices that falls within the planning area. Numbers for all other field offices are specific to GRSG habitat within those offices.

As a result of Class III Inventories, the most cultural resource inventory sites and historic properties are within the KFO and LSFO. The ratio of known sites to acres suggests the highest densities of cultural resources occur on the Routt National Forest and KFO.

Conditions on BLM-Administered Lands

The following field office descriptions are intended to provide a general overview of the condition of cultural resources on BLM-administered lands within the decision area. More specific information on the cultural resources for each area can be found in the respective RMPs and several overview reports, including Reed and Metcalf's Northern Colorado River Basin overview (1999), a synthesis of archaeological data compiled for several large pipeline projects (2009); Athearn (1982), Husband (1984), and Church (2007) for an overview of the historic context; and individual Class I Overview Reports for LUP revisions including for the LSFO (McDonald and Metcalf 2006).

Colorado River Valley Field Office

Within the portion of the decision area that falls within the CRVFO, cultural resources are broken out into two separate areas; the Roan Plateau and the North Eagle areas. The Roan Plateau area is located northwest of Rifle, Colorado, north of the Colorado River and on top of the Roan Plateau. The North Eagle area is located north of Eagle, Colorado, and north of the Colorado River within the Upper Colorado River watershed. Differences in cultural resources between the Roan Plateau and the North Eagle areas provide insight to how the areas were utilized in the past.

A total of 23,300 acres have been inventoried for cultural resources at the Class III level the portion of the planning area that falls within the CRVFO. This accounts for approximately 19 percent of the planning area that falls within the

CRVFO. A total of 172 prehistoric sites and 177 prehistoric isolated finds have been documented within this area. Of the 172 sites, 37 are eligible and 37 others are potentially eligible for the NRHP. Prehistoric cultural resources consist of open camp sites, open lithic sites, open architectural sites, and various isolated finds. Of the prehistoric sites that are datable, the majority (about 20 sites) date from the Archaic and 15 sites date to the Late Prehistoric. Additionally, the planning area contains one Paleoindian site, one Protohistoric site, and two possible Fremont sites. Unlike the entirety of the CRVFO, the planning area does not contain sites with Wickiup structures. Because Wickiups are mainly located within Pinion-Juniper vegetation and the planning area is predominantly sage brush, these types of sites are not found in this part of the CRVFO.

Historic cultural resources within the planning area consist of irrigation ditches, railroad segments, trails, roads, cabins, and bridges. A total of 58 historic sites have been documented, six of which are eligible and three of which are potentially eligible for the NRHP. Additionally, a total of 20 historic isolated finds have been recorded. Some unique historic sites in the planning area include the Historic Burns School, the Burns rodeo grounds, a cemetery, and 13 separate arborglyph (aspen art) sites. The oldest historic sites date to the 1880s and are segments of stage coach lines or roads.

Grand Junction Field Office

Within the portion of the decision area that falls within the GJFO, cultural resource settings can be split into two distinct units. One unit is located south and east of the Colorado River and wraps around the west end of Battlement Mesa (Sunnyside). The other is located north and west of the Colorado River and characterized as the high elevation ridges above the Roan Creek watershed (Roan Creek). These two environments seem to have been utilized differently during prehistoric times and have distinctly different cultural resources.

Within the portion of the decision area that falls within the GJFO, a total of 10,600 acres have had Class III surveys and a total of 87 cultural resources (sites) and 163 isolated finds have been recorded.

Within the Sunnyside unit, the majority of prehistoric sites are open camps, with open architectural (wickiups), sheltered camps, and rock art sites also recorded. Historic sites in this unit include homesteads, camps, isolated trash scatters, and a wagon road. Recorded Native American sites range from 6,000 years ago to what is interpreted as historic Ute occupation. Excavations in the unit have demonstrated that sites from the archaic time period are not only found on the surface, but in some locations are deeply buried with little to no surface artifacts.

Within the Roan Creek unit, the prehistoric sites are evenly divided between open camps and open lithic (one multicomponent site has an open lithic component at a homestead). Historic sites include cabins, corrals and camps.

No excavation data are available and all prehistoric sites have been recorded as "unidentified Native American" which gives no indication of even a general date of occupation. The presence of obsidian at the lithic scatter at the homestead suggests a possible historic Ute association but this is speculative.

Kremmling Field Office

Within the KFO, a total of 305,500 acres have had Class III surveys and a total of 5,533 known sites have been recorded. This includes some acreage and sites that fall outside the planning area for this EIS. However, because the decision area represents the majority of the KFO it can be assumed to be representative of the planning area within the KFO.

The draft EIS for the KFO RMP further describes cultural resource conditions that may affect historic properties on the KFO (BLM 2011, pp. Section 3.2.7) and describes the number of prehistoric and historic properties that are eligible and whether they are multi-component sites, and isolated finds within the decision area, three landscape units defined as: the Middle Park Unit, the North Park Unit and the Larimer Unit. The draft RMP/EIS also describes significant historic properties and actions for protection under the NHPA of 1966, as amended and its implementing laws and regulations within the KFO (BLM 2011, Section 3.2.7). Those portions of Chapter 3 of the draft RMP/EIS that describe the affected environment are incorporated here by reference.

Little Snake Field Office

Within the entirety of the LSFO, 65,400 acres have had Class III surveys and a total of 5,679 sites have been recorded. This includes some acreage and sites that fall outside the decision area for this EIS. However, because the decision area represents a large portion of the LSFO it can be assumed to be representative of the portion of the decision area within the LSFO.

The prehistoric and historic cultural context for the LSFO has been described in several recent regional contexts. The prehistoric context is described in Reed and Metcalf's Northern Colorado River Basin overview (1999), a synthesis of archaeological data compiled for several large pipeline projects (2009). The historic context is described in overviews compiled by Frederic J. Athearn (1982) and Michael B. Husband (1984). A historical archaeology context has also been prepared for the state of Colorado by Church and others (2007). An overview of significant cultural resources (affected environment) on BLM-LSFO administered lands has been compiled by McDonald and Metcalf (2006) for the Little Snake RMP and Final EIS (3-81). Those portions of Chapter 3 of the LSFO RMP/EIS that describe the affected environment are incorporated here by reference.

White River Field Office

Within the portion of the decision area that falls within the WRFO, a total of 88,000 acres (14 percent of the total acreage of the decision area within the WRFO) have had Class III surveys and a total of 645 sites have been recorded.

Of these 645 sites, 458 are prehistoric, 169 are historic, and 17 are multicomponent. Of the sites, one is listed on the NRHP (the Battle of Milk Creek/Thornburgh battlefield), 68 are eligible, 218 are potentially eligible, and 358 are not eligible sites. The majority of the previously recorded sites in the WRFO planning area have been identified as prehistoric in age and cultural affiliation.

Prehistoric sites could be associated with one (or more) of four regional cultural traditions: Paleo-Indian, Archaic, Formative (Fremont), and Proto-historic. Documented prehistoric site types in the portion of the decision area that falls within the WRFO include open architectural, open and sheltered camps, open lithic, rock art, stone quarries, and a sheltered lithic. Prehistoric sites in this area commonly contain projectile points, scraping and cutting tools, hammerstones, tool manufacture flake debris, manos and metates, and less commonly pottery.

The historic sites in the portion of the decision area that falls within the WRFO are primarily related to early ranching and livestock grazing and are concentrated along the more moist drainage bottoms. Sites include, but are not limited to, aspen art, a barn, a battlefield, bridges, brush fences, a cairn, cabins, camps, coal mines, corrals, cow camps, ditches, a historic marker, homesteads, horse traps, ranches, roads, rock art, school houses, a townsite, trails, and trash scatters. Artifacts at these sites commonly include tin cans, glass, ceramic, wire, nails, wood and other metal objects.

Conditions on National Forest System Lands

Routt National Forest

Of the 17,500 acres on the Routt National Forest in the decision area, 1,400 acres (8 percent) have been inventoried for cultural resources. Of the acres inventoried, 43 cultural resources have been located, or approximately one cultural resource located for every 30 acres of habitat inventoried.

Of the located cultural resources, the majority (26 of the 43, or 60 percent) are prehistoric sites. The most common type of site located in the habitat on the Routt National Forest is a lithic scatter. Historic sites in the habitat area include isolated USGS survey markers, historic aspen art, roads, and cabins.

Of the 43 sites located, only 3 have been evaluated as being eligible to the NRHP. This translates to one eligible site for every 452 acres surveyed. The Hahns Peak/Bears Ears Ranger District has one of the eligible sites, a historic cabin site. The Parks Ranger District has the other two sites, both of which are prehistoric sites.

3.22.2 Trends

Trends on BLM-Administered Lands

Known conditions of cultural resources within the decision area indicate that the majority of sites are in good or fair condition; few sites are in deteriorating or poor condition. Natural erosion, such as wind and water erosion, project development, increases in site visitation, and increases in recreation and development activities can all contribute to declining site conditions. Actions that specifically highlight stabilization or avoidance measures for cultural resources would contribute to maintaining current site conditions.

Declining site conditions can result from project development activities, permitted activities, or neglect. Causes of declining site conditions in the decision area include recreation activities, vegetation treatments, fire (both natural and unplanned), locatable mineral development, coal development, road and utility rights of ways and leases (such as pipelines, roads, and transmission lines), livestock grazing, and wild horses and burros. These activities generally fragment the landscape, break up site continuity, and can damage and destroy sites, contributing to their decline.

The cultural resource program within the Colorado GRSG decision area continues to be driven primarily by project-related cultural resource inventory, as well as proactive Section 110 inventories. As a result new discoveries are on-going, and newly discovered cultural resources are being documented and added to the cultural resource database regularly. Significant cultural resources are selected for protection or mitigation prior to project implementation.

Trends on National Forest System Lands

Routt National Forest

Trends that are likely to affect cultural resources include oil and gas development, recreation, vegetation treatments, lands and realty actions, and livestock grazing. For the Routt National Forest, these trends are primarily qualitative in nature. As projects are proposed, additional acres are surveyed for cultural resources. If a significant resource is located, mitigation is typically designed to avoid any negative consequences of the proposed actions. In general, increased numbers of proposed projects increase the ability of the Forest Service to identify and evaluate cultural resources, and thereby protect those that are considered significant. The increasing use of the Forest by recreation users has the potential to increase effects on significant resources through exposure of the sites by vehicular and foot traffic, as well as potential effects through unauthorized collection of artifacts.

3.22.3 References

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3.23 PALEONTOLOGICAL RESOURCES

Paleontology is the study of fossils and related remains. A fossil is defined as any trace of a past life form. The term "paleontological resources" includes any fossilized remains, traces, or imprints of organisms that are preserved in or on the earth's crust, are of scientific interest, and provide information about the history of life on earth. Paleontological resources constitute a fragile and nonrenewable scientific record of the history of life on earth.

Occurrences of paleontological resources are closely tied to the geologic units (i.e., formations, members, or beds) that contain them. The probability for finding paleontological resources can be broadly predicted from the geologic units present at or near the surface. Therefore, geologic mapping can be used for assessing the occurrence potential of paleontological resources.

BLM

BLM policy is to manage paleontological resources for scientific, educational, and recreational values and to protect or mitigate these resources from adverse impacts. To accomplish this goal, paleontological resources must be professionally identified and evaluated, and paleontological data should be considered as early as possible in the decision-making process. Paleontological resources are managed according to the BLM Manual Section 8270, Paleontological Resource Management, BLM Handbook H-8270-1, General Procedural Guidance for Paleontological Resource Management, and applicable BLM instructional memoranda and bulletins. Additional preservation measures have been enacted under the Omnibus Public Lands Act of 2009. The BLM is currently developing regulations to implement the requirements of this law.

BLM guidance (BLM Instruction Memorandum 2008-009, Potential Fossil Yield Classification System for Paleontological Resources on Public Lands) defines a classification system to provide a more uniform tool to assess potential occurrences of paleontological resources and evaluate potential impacts. The Potential Fossil Yield Classification system is intended to be applied in broad approach for planning efforts and as an intermediate step in evaluating specific projects. This is part of a larger effort to update BLM Handbook H-8270-1, General Procedural Guidance for Paleontological Resource Management.

Using the Potential Fossil Yield Classification system, geologic units are classified based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts. A higher class number indicates a higher potential. This classification is applied to the geologic formation, member, or other distinguishable unit, preferably at the most detailed mappable level. It is not intended to be applied to specific paleontological localities or small areas within units. Although significant localities may occasionally be found in a geologic unit, a few widely scattered important fossils or localities do not necessarily indicate a higher class; instead, the relative abundance of significant localities is intended to be the major

determinant for the class assignment. Five classes were developed: Class 1 has very low potential for containing fossils, and Class 5 has very high potential.

The Potential Fossil Yield Classification system class assignments are (BLM 2008h):

- Class 1—Very Low. Geologic units that are not likely to contain recognizable fossil remains.
- Class 2—Low. Sedimentary geologic units that are not likely to contain vertebrate fossils or scientifically significant nonvertebrate fossils.
- Class 3—Moderate or Unknown. Fossiliferous or scientifically geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential.
- Class 4—High. Geologic units containing a high occurrence of significant fossils. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented, but may vary in occurrence and predictability. Surface-disturbing activities may adversely affect paleontological resources in many cases.
- Class 5—Very High. Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils, and that are at risk of human-caused adverse impacts or natural degradation.

Forest Service

In 2009, Congress passed the Paleontological Resources Preservation Act as part of the Omnibus Public Land Management Act (Public Law 111-11). The Act mandated that the "Secretary [of Agriculture] shall manage and protect paleontological resources on federal land using scientific principles and expertise. The Secretary shall develop appropriate plans for inventory, monitoring, and the scientific and educational use of paleontological resources, in accordance with applicable agency laws, regulations, and policies. These plans shall emphasize interagency coordination and collaborative efforts where possible with non-federal partners, the scientific community, and the general public."

The Forest Service Rocky Mountain Region has developed a classification system of geologic units according to their probability of containing scientifically significant fossil resources referred to as the Fossil Yield Potential Classification. The Fossil Yield Potential Classification is designed to provide Forest Service management with a way to prioritize protection of paleontological resources. Under this system, geologic formations are classified on a scale from 1 to 5 (with 5 as the highest paleontological sensitivity) to reflect the likelihood of

containing scientifically significant vertebrate fossils of terrestrial (i.e., nonmarine) origin. A less arbitrary and subjective classification system is currently being developed by Forest Service paleontological resource specialists.

3.23.1 Existing Conditions

Conditions of the Planning Area

The planning area, which includes Dinosaur National Monument and other high fossil yielding geological formations, contains extensive paleontological resources. While comprehensive paleontological inventories have not been completed for the planning area, however, many studies have been conducted.

Conditions on BLM-Administered Lands

While a comprehensive paleontological inventory has not been conducted on BLM lands within the decision area, various government, academic, and private industry personnel have studied paleontological resources.

Within the KFO, 23 of the 59 named surface formations are known to contain fossils. Over 1,000 paleontological localities have been documented, representing a diverse array of plants, invertebrates, and vertebrates (BLM 2011, Section 3.2.8). Within the portion of the decision area that falls within the KFO, the Kremmling Cretaceous Ammonite ACEC is managed for scientific and educational purposes related to paleontological resources.

Within the LSFO, at least 40 groups and institutions from the 1850s to the present have collected fossils (Armstrong and Wolney 1989). During that period, over 1,000 paleontological localities have been documented, representing a diverse array of plants, invertebrates, and vertebrates. There are currently active paleontological use permits within the LSFO.

Roughly 20 percent of the GJFO has either Morrison or Wasatch formation on the surface, both of which have produced many scientifically significant fossils. Since 1987, numerous paleontological fossil sites have been discovered and continue to be surveyed and recorded. Nearly all of the decision area within the GJFO is classified as Potential Fossil Yield Class 5, meaning these areas have a high probability of containing significant fossils.

Over 1,000 paleontological localities have been documented in the CRVFO area, and the fossils recovered represent a diverse array of plants, invertebrates, and vertebrates. There are active paleontological use permits issued on decision area lands in the CRVFO. Efforts to fully inventory fossil resources within the CRVFO have been limited in scope. The 78 named surface formations identified within the CRVFO area are described in the draft EIS for the CRVFO RMP (DES 11-33, BLM 2011, Section 3.2.9). This document also outlines the 20 fossil bearing formations classified as high potential yield based on the BLM's Potential Fossil Yield Classification system. Most fossil bearing formations present within the identified PH and GH in the CRVFO are not exposed in bedrock outcrops

(which represent the majority of discovery sights) due to tertiary aged colluvium and alluvium deposits as well as a high degree of vegetative cover.

Efforts to fully inventory fossil resources within the WRFO planning area have been limited in scope. Government, academic, and private industry personnel have studied paleontological resources in various contexts, but principally in relation to surface-disturbing development activities. To date, there are approximately 355 documented paleontological localities within the WRFO and many more that were located prior to current recording standards. The GRSG habitat in the WRFO is primarily in Potential Fossil Yield Class 5 formations, so there is a very high probability of it containing significant fossils. There are 68 documented paleontological localities that have been recorded in the GRSG habitat.

Conditions on National Forest System Lands

Routt National Forest

The extent of paleontological deposits in the Routt National Forest is unknown at this time. A complete inventory of the possible fossil-laden deposits has not been completed. Two potential paleontological resource areas on the National Forest have been identified. In the late 1970s, a single mammoth femur was removed from the mud at the base of the Yamcolo Reservoir Dam during construction. Little is known about the circumstances of the recovery. However, the excellent preservation of the specimen and the geomorphology of the area suggest the presence of Pleistocene deposits which may contain more faunal material. The other area is California Park, which contains unique features such as sulphur springs, fossils, and buffalo skulls. The California Park area is the only areas of known fossils in conjunction with GH.

The Fossil Yield Potential Classification maps for the Routt National Forest show most of the forest as a 1or 2, with the two mentioned areas as 3's. At this time there are not any known areas with a classification rating of 4 or 5 on the National Forest.

3.23.2 Trends

Trends on BLM-Administered Lands

Interest in fossils and paleontology has been greatly stimulated in recent years, bringing new vocational and professional visitors to the known fossil locations, and increased exploration to discover new fossil localities. This has in turn increased agency concern for potential impacts on the resource from vandalism and theft. The current trend of paleontological resource use permits and scientific activity is likely to continue or to increase slightly in the future. Clearances and monitoring of surface-disturbing activities, land tenure adjustments, and scientific research are anticipated to be the primary means of identifying paleontological localities.

The current management direction and forecast for paleontological resources is to implement the Potential Fossil Yield Classification throughout the decision area and to identify and record new findings. Another goal is to seek opportunities to identify areas with significant paleontological resources for special management. Preservation measures for paleontological resources enacted under the Omnibus Public Lands Act of 2009 would be implemented.

Surface-disturbing activities and oil and gas development are two of the main drivers of the paleontology program. Developments of oil and gas and other minerals such as coal and nahcolite, as well as the realty actions associated with them, road and pipeline construction for example, fragment the landscape, and cause outright destruction of sites, as well as indirect impacts such as theft. The positive effect of energy and mineral development is the increased knowledge of the resource that is gained by surveys, construction monitoring, and excavations.

Additionally, despite the harm oil and gas can potentially cause paleontological resources, all paleontological resources are managed to protect their important scientific values and will continue in the future as the BLM continues to enact preservation measures enacted under the Omnibus Public Lands Act of 2009 and other legislation.

Trends on National Forest System Lands

Routt National Forest

The Forest Service recognizes multiple-use values for paleontological resources that include a legacy for present and future generations; scientific significance, education and interpretation; recognition of aesthetic qualities; and public participation. The Paleontological Resources Preservation Act set specific regulations for permitting, collection, and curation of paleontological resources from federal lands. Furthermore, it is the policy of the Forest Service to complete a paleontological resources inventory for all National Forest System lands potentially impacted by agency and non-agency project proposals. For sites located during these inventories, it is policy to complete a paleontological resource site form.

3.23.3 References

BLM (US Bureau of Land Management). 2008. Instruction Memorandum No. 2008-009, Potential Fossil Yield Classification System for Paleontological Resources on Public Lands. BLM, Washington Office, Washington, DC.

3.24 Social and Economic Conditions (Including Environmental Justice)

This section includes the individual resources of social conditions, economic conditions, and environmental justice. Due to the nature of social, economic, and environmental justice conditions, the social and economic analysis is based on a somewhat different area for analysis than is used for other resources. Specifically, the Socioeconomic Study Area is made up of counties within the

Northwest Colorado sub-region that contain some GRSG habitat, plus counties that may not contain habitat but are intimately linked to the economic or social conditions and also serve as important service areas. This latter category includes what are sometimes called "service area" counties, or counties from which businesses operate that regularly provide critical economic services, such as recreational outfitting or support services for oil and gas drilling and production, within the counties that contain habitat (METI Corp/Economic Insights of Colorado 2012). Including service area counties is important because a change in economic activity in a county containing habitat may result in changes in economic activity within service area counties as well. At the same time, not every possible service area county is included in the Socioeconomic Study Area, because to do so would risk dwarfing the impacts within the counties that would be most affected. For example, businesses within the City and County of Denver do provide some services within the Northwest Colorado sub-region, but including Denver in the Socioeconomic Study Area would risk overwhelming the observable conditions in less populated counties within the sub-region.

The Socioeconomic Study Area contains eight counties in Colorado: Eagle, Garfield, Grand, Jackson, Mesa, Moffat, Rio Blanco, and Routt. Each of these counties contains PH or GH. Larimer and Summit counties also have GRSG habitat in the Northwest Colorado sub-region but were excluded from the Socioeconomic Study Area because they have considerably less habitat than other counties (less than 10,000 acres), are not considered important service areas for the remaining counties, and, in the case of Larimer County, would have considerably altered the data presented for the Socioeconomic Study Area because of the size of the county's population and economy. Mesa County also has less than 10,000 acres of GRSG habitat but was kept in the Socioeconomic Study Area because the city of Grand Junction is a primary service area county for oil and gas support services. **Table 3.79** shows the counties contained partially or wholly within the Routt National Forest and each BLM field office composing the Socioeconomic Study Area.

Table 3.79
BLM and Forest Service Management Units and Counties within the Socioeconomic Study Area

Agency	Management Unit	Counties
BLM	CRVFO	Eagle, Garfield, Mesa, Pitkin, Rio Blanco, Routt
BLM	GJFO	Garfield, Mesa
BLM	KFO	Eagle, Grand, Jackson, Larimer, Summit
BLM	LSFO	Moffat, Rio Blanco, Routt
BLM	WRFO	Garfield, Moffat, Rio Blanco
Forest Service	Routt National Forest	Garfield, Grand, Jackson, Moffat, Rio Blanco, Routt

BLM and Forest Service considered Larimer and Summit Counties in Colorado, with some GRSG habitat, as part of a "secondary" Socioeconomic Study Area. In addition, Uintah County, in Utah, and Sweetwater and Carbon counties, in Wyoming, were also included as part of the secondary Socioeconomic Study Area. Uintah County was included because companies in Vernal provide important oil and gas related services within some of the areas of northwestern Colorado in the primary analysis area (Lau 2012). Sweetwater and Carbon counties were included because Rock Springs (Sweetwater County) and Rawlins (Carbon County) also seem to serve as an important service areas (Comstock 2013). Because any effects on the Secondary Socioeconomic Study Area would be indirect and sometimes focused on specific sectors (e.g., oil and gas in Uintah County), this section contains limited data on conditions within these counties, and focus on what is necessary to provide appropriate context for the impact analysis provided in **Chapter 4**, Environmental Consequences.

Table 3.80 shows the share of workers employed in a given county of the Primary and Secondary Socioeconomic Study Areas and that reside in the same county. It also shows other counties that provide labor to the selected primary or secondary study area. The table shows that no labor market in the Socioeconomic Study Area relies on a county outside the Socioeconomic Study Area for a considerable share of the workers employed.

Table 3.80
Commuter Patterns in the Socioeconomic Study Area, 2010

Geographic Area of Employment	Live in Same Area of Employment	Other Counties Where Considerable Share of Workers Live
Primary Socioeconomic Study Area		
Eagle County, CO	64.4%	Garfield (5.3%), Summit (4.6%), Lake (2.7%), Denver (2.4%), Jefferson (2.0%)
Garfield County, CO	60.8%	Mesa (9.0%), Eagle (5.0%), Pitkin (2.4%)
Grand County, CO	73.9%	Jefferson (3.8%), Larimer (3.2%), Denver (2.4%).
Jackson County, CO	74.7%	Larimer (3.4%), Jefferson (2.7%), Albany (2.5%)
Mesa County, CO	74.6%	Jefferson (2.5%), Montrose (2.2%), Delta (2.0%)
Moffat County, CO	68.6%	Routt (7.8%), Mesa (2.6%)
Rio Blanco County, CO	61.8%	Moffat (12.4%), Mesa (8.2%), Garfield (3.9%), Uintah, UT (2.6%)
Routt County, CO	70.7%	Moffat (8.6%)
Secondary Socioeconomic Study Area		
Larimer County, CO	68.1%	Weld (10.9%), Boulder (3.1%), Jefferson (3.0%)
Summit County, CO	55.2%	Eagle (7.3%), Jefferson (4.3%), Park (3.2%), Denver (2.9%), Arapahoe (2.3%), Boulder (2.2%), Douglas (2.0%)
Uintah County, UT	73.3%	Duchesne, UT (7.7%), Salt Lake, UT (5.1%), Utah, UT (3.2%)
Sweetwater County, WY	73.0%	Uinta, WY (5.4%), Natrona, WY (3.9%), Carbon, WY (2.4%)
Carbon County, WY	73.5%	Natrona, WY (3.9%), Laramie, WY (3.9%), Sweetwater, WY (3.5%), Fremont, WY (2.6%), Albany, WY (2.0%)

Source: US Census Bureau 2012b

Because of the nature of the Socioeconomic Study Area, the socioeconomic resources section has a slightly different format than the other resource analyses in the EIS. Rather than proceeding by Field Office and National Forest, the section provides information for the entire Socioeconomic Study Area except where the relevant information or data are tabulated for the specific geographic area of field office or National Forest. In addition, the analysis presents information about existing conditions and trends within the same section, because that is the common practice for analysis of social and economic conditions.

3.24.1 Existing Conditions

Social Conditions

Social conditions concern human communities, including towns, cities, and rural areas, and the customs, culture, and history of the area as it relates to human settlement, as well as current social values.

Population and Demographics

Table 3.81 shows current and historic populations in the Socioeconomic Study Area.

Table 3.81
Population Growth, 1990–2010

Geographic Area (Colorado)	1990	2000	2003	2005	2007	2010	Percent Change (1990-2010)
Eagle County	21,928	41,659	44,995	47,205	49,803	52,197	138.0
Garfield County	29,974	43,791	47,622	49,579	53,534	56,389	88.1
Grand County	7,966	12,442	13,324	13,627	14,306	14,843	86.3
Jackson County	1,605	1,577	1,512	1,449	1,407	1,394	-13.1
Mesa County	93,145	116,255	124,994	130,194	139,434	146,723	57.5
Moffat County	11,357	13,184	13,106	12,956	13,348	13,795	21.5
Rio Blanco County	6,051	5,986	5,923	5,945	6,373	6,666	10.2
Routt County	14,088	19,690	20,893	21,398	22,491	23,509	66.9
Socioeconomic Study Area	186,114	254,584	272,369	282,353	300,696	315,516	69.5
Colorado	3,294,473	4,301,261	4,528,732	4,631,888	4,803,868	5,029,196	52.7
US	248,790,925	281,421,906	290,107,933	295,516,599	301,231,207	308,745,538	24.1

Sources: US Census Bureau 1990, 2000, 2010a, 2010d

Since 1990, the population in Colorado has increased by 52.7 percent, over twice the percent change of the US. A higher percentage of growth occurred in Colorado between 1990 and 2000 than between 2000 and 2010. Of the percentage increase in Colorado's population since 1990, natural increase (births minus deaths) accounts for approximately 41 percent of the growth and

an increase in net migration accounts for approximately 59 percent (Colorado State Demography Office 2012).

Within the Socioeconomic Study Area, Mesa County has maintained the largest population of any county over the last 20 years. Currently, Mesa County's population of nearly 147,000 is over twice the size of the Study Area's second largest county.

With a population of 58,566 people (US Census Bureau 2010a), Grand Junction is the most populous city in Mesa County and the 15th most populous city in Colorado. Other large communities include Fruita in Mesa County with a population of 12,646 (the 37th most populous city in Colorado); Steamboat Springs in Routt County with a population of 12,088 (39th most populous); Glenwood Springs in Garfield County with a population of 9,614 (46th most populous); Craig in Moffat County with a population of 9,464 (47th most populous); and Rifle in Garfield County with a population of 9,172 (48th most populous) (US Census Bureau 2010a, 2010b).

Table 3.82 shows age and gender characteristics of the population in each county of the Socioeconomic Study Area.

Table 3.82
Demographic Characteristics, Share in Total Population (percent), 2010

Geographic Area (Colorado)	Women	20 to 64 Years of Age	Under 20 Years of Age	65 Years of Age or Older
Eagle County	46.7	68.0	26.4	5.6
Garfield County	48.4	62.2	29.4	8.4
Grand County	46.6	67.5	22.3	10.2
Jackson County	47.2	60.8	20.8	18.4
Larimer County	50.4	62.7	25.4	11.9
Mesa County	50.3	58.5	26.6	14.9
Moffat County	48.9	60.0	29.5	10.5
Rio Blanco County	48.5	60.0	27.6	12.4
Routt County	46.8	68.8	23.1	8.1
Summit County	45.1	73.3	19.0	7.7
Colorado	49.9	62.0	27.1	10.9
US	50.8	60.1	26.9	13.0

Source: US Census Bureau 2010b

In terms of demographic characteristics, Colorado generally follows the same trends as the country as a whole: approximately 50 percent of the population is women, and approximately 60 percent of the population is between the ages of 20 and 64. The Socioeconomic Study Area, however, has a slightly lower percentage of women than the nation and a higher percentage of working age individuals. Of the counties within the Socioeconomic Study Area, Routt, Eagle, and Grand Counties have the highest percentages of working-age individuals, all

at least 7 percentage points higher than the national average. Jackson County has the highest percentage (18.4 percent) of individuals over the age of 65, with more than 5 percentage points higher than the national average (13 percent).

Interest Groups and Communities of Place

There is a range of interest groups in the Socioeconomic Study Area, and the positions advanced by these groups include some overlapping interests and some divergent interests. These groups sometimes define and/or measure "sustainable use" or "resource conservation" differently, and different definitions and measures of sustainability sometimes result in different conclusions about how land and resources should be managed. There are also groups that represent coalitions of interest groups. A list of interest groups that have requested to receive a copy of the draft EIS are provided in **Chapter 6**, Consultation and Coordination. Interest groups within the Socioeconomic Study Area include the following: federal agencies, state agencies, county agencies, local agencies, congressional representatives, academic institutions, civic organizations, local chambers of commerce, environmental groups, outdoors groups, farm associations, Native American groups, and various business groups. Specific types of business interest groups include the following: real estate; tourism; recreation; mineral development; textile manufacturers; grain, fruit and vegetable farmers; and ranch operators.

The Socioeconomic Study Area includes various communities of people who are bound together because of where they reside, work, visit, or otherwise spend a continuous portion of their time. The various communities in the Socioeconomic Study Area share a strong link to the land and natural resources.

For example, recreation opportunities and scenic beauty are among the most commonly cited reasons that people live in or visit the communities in the Colorado River valley. The quality of life and small town character are also reasons residents live in these communities (BLM 2007a). Popular recreation activities includes skiing, fishing, hiking, hunting, OHV use, pleasure driving and mountain biking. These activities contribute greatly to the quality of life and lifestyles in the Socioeconomic Study Area.

Recently, many rural communities in the western US have witnessed "migration turnaround," a reversal of the rural-to-urban migration that characterized much of the US prior to the 1970s. Many rural areas are experiencing a significant increase in population after decades of stability or decline. In scenic areas, particularly those with recreational opportunities, ranches are being sold and used for recreation purposes or subdivided for home sites. Other rural areas, however, continue to lose population. This is due, in part, to the out-migration of young people. In addition to these trends, some rural areas have experienced the population and employment "boom and bust" cycles that are sometimes associated with certain kinds of industries, such as mineral development (BLM,2010b; BLM 2011a). Most recently, several communities in the study area

experienced relatively rapid growth in the early- to mid-2000s in large part driven by natural gas development. The recent economic downturn in conjunction with falling natural gas prices slowed economic activity down substantially. This recent "boom and bust" cycle especially impacted housing as some developments were left partially completed or deteriorated.

Mining and agriculture have historically defined the character and lifestyle of Moffat County. The power plant and coal mine near the City of Craig have provided employment opportunities for ranchers and their family members. The Moffat County government has expressed the importance of protecting the customs and culture of Moffat County, which includes agricultural production, timber, industries and manufacturing, and mineral production (Forest Service 1998). There has been a population pattern of boom and bust due to energy production. The population was 6,525 in 1970, doubled between 1970 and 1980 to 13,133, and decreased by 13 percent to 11,357 in 1990. More recently, the population has remained relatively stable, increasing by only 611 persons from 13,184 in 2000 to 13,795 in 2010. While just 1.2 percent of Moffat County is contained within the Routt National Forest, ranchers, loggers, hunters, outfitters and guides, and other businesses and individuals use the Forest and contribute significantly to the character of eastern Moffat County. Dinosaur National Park, which is primarily located in Moffat County, represents a national and regional attraction.

Routt County's social context has changed considerably in recent years. This is due largely to a transition from dependence on agriculture and mining to dependence on recreation and tourism, especially downhill skiing. This transition has been accompanied by sustained, and at times relatively rapid, population growth. Much of the growth has been concentrated in the Steamboat Springs area (Forest Service 1998). Steamboat Springs is a major winter ski resort destination (Colorado Tourism Office 2012).

Historically, Mesa County's economy revolved around agriculture and energy extraction, including extraction of natural gas and uranium (BLM 2010a). Recently, its economy has become more diverse. Key industries include retail trade; healthcare and social assistance; accommodation and food services; and government. Tourism-related industries, in particular, have grown in importance as communities begin marketing the County's extensive public lands as tourism destinations (public lands comprise 76 percent of Mesa County's acreage) (BLM 2010a; Mesa County 2000). For example, the Gateway Canyons resort in Gateway, a community in Mesa County, has marketed surrounding public lands as tourism destinations. The resort's efforts have contributed to Gateway's shift from a primarily mineral extraction- and ranching-based economy to a diversified economy that includes tourism (BLM 2010a).

In addition to its evolving economy, Mesa County's population has grown over 50 percent since 1990 (BLM 2010a). The two most populous cities in the

Socioeconomic Study Area, Grand Junction and Fruita, lie in Mesa County (US Census Bureau 2010a). Both cities have grown quickly: Grand Junction's population has increased by 71 percent increase and Fruita's population by 163 percent in the past three decades (BLM 2010a). The Grand Junction economy was historically based on mining and agriculture, but the economy has diversified considerably in the last 25 years. The area's manufacturing base ranges from electronics to semiconductor equipment, advanced composites to bicycle parts, as well as traditional and base manufacturing. Additionally, oil and gas extraction, mining and construction have re-emerged as strong industry sectors in recent years. The area's growing gross metropolitan production was rated 15th in the nation in average annual growth from 1995 - 2005 (Grand Junction Economic Partnership 2012). Grand Junction also offers outdoor recreation opportunities including hunting, fishing, and biking (Grand Junction Economic Partnership 2012). It serves as the healthcare, educational, economic, and political hub of the County and Western Colorado (BLM 2010a). Fruita, once focused on farming and ranching, has expanded its economy to include energy extraction and tourism. The City considers itself a "mountain biking and outdoor sports destination" (City of Fruita 2008).

Grand County has historically had a farming and ranching culture. However, consistent population and economic growth since the 1970s has introduced opportunities for diversification, as well as challenges to preservation of the County's rural character. In the western portion of the county, agriculture still predominates; in the eastern portion, outdoor recreation (e.g., skiing, hiking, biking, and snowmobiling) and tourism focused on Grand County's natural amenities have become important contributors to the economy (Grand County 2011b). Tourist destinations in the county include the Winter Park ski area, Fraser Valley, Silver Creek ski and resort area, Town of Grand Lake resort community, and Rocky Mountain National Park, among others (Grand County 2011b). Grand County consists primarily (75 percent) of public lands (Grand County 2011b).

Social characteristics in Jackson County differ from those of many of the other counties within the Socioeconomic Study Area. Jackson County is one of the few counties in Colorado that has experienced a recent reduction in population. Its population is rural, with most economic activity coming from agriculture, forestry, fishing, hunting, and mining (BLM 2011b). The Town of Walden is the county seat and has a population of 608 people (US Census Bureau 2010b). The North-Central Colorado Community Assessment Report (BLM 2007a) identified the reasons people live in Jackson County, the most important issues to Jackson County residents, and their desired benefits from public land management. Jackson County residents expressed the wish to preserve the rural character and lifestyle but still want to pursue some development. They enjoy a rugged lifestyle and they respect the land and its resources, as it provides the base for their lifestyle. Jackson County residents have a flexibility and survivability inherent in their lifestyle that is necessitated by the lack of

diversity in economic opportunities (BLM 2007a). During the scoping process, commenters highlighted the importance of Jackson County's agricultural industry and heritage as well as the importance of energy development on BLM-administered land to the social values and economy of the county (BLM and Forest Service 2012). Recreation opportunities available in Jackson County include hunting, fishing, OHV use, GRSG tours, and campgrounds and cabin facilities (Crowder 2012).

Rio Blanco County is primarily rural and is the second smallest county by population in the Study Area after Jackson County. The majority of the land in the county is public, including land administered by BLM and Forest Service, as well as land managed by the State of Colorado. Public land therefore plays a central role in the social and economic characteristics of Rio Blanco County. The residents of the county place a high value on quality of life, independence, open space, and outdoor recreational opportunities – values reliant, to a large extent, on public land (BLM 1994). Many residents also place a high value on resource extraction industries and their importance to the economic well-being of the county. The primary economic activities in the county include agriculture, mineral development (coal, nahcolite, natural gas, oil, oil shale), and recreation (Rio Blanco County 2012). Much of this activity, excluding agriculture, occurs on public land. The communities of Meeker (county seat) and Rangely are located within the county. Both towns advertise the scenic qualities and recreational opportunities in the surrounding area and both are important staging areas for nearby oil and gas and other mineral-related activity. Meeker offers abundant outdoor recreational opportunities in part because it is the home to some of the nation's largest elk herds (Meeker Colorado 2012).

Respondents to the 2008 Garfield County Community Survey identified cost of living, affordable housing, preservation of rural character, water availability, and preservation of open space as the most important issues facing Garfield County (Garfield County 2008). Garfield County has experienced rapid population growth in recent years resulting from increases in energy development, tourism and recreation. From 1990 to 2010, the population of Garfield County increased 88.1 percent and the resulting pressures on the housing market, including the availability of affordable housing for workers, has become an issue for many communities in the county. In the face of increasing population and development, many long-time residents have expressed the importance of preserving rural characteristics and values. The presence of public land plays an important role in the county – approximately 60 percent of land in the county is publicly owned (Garfield County 2012). Many of the primary economic activities in the county including energy development, recreation, and livestock grazing occur on public lands and residents have expressed the importance of protecting these industries and the economic lifeline they provide to local communities. The county seat, Glenwood Springs, is the largest community in the county with a population of 9,614 (US Census Bureau 2010b). The

communities of Rifle and Parachute are staging areas for oil and gas activity in the Piceance Basin.

Eagle County is located in the central mountains of Colorado whose terrain and geology has sculpted the social and economic characteristics of the county. Eagle County is home to downhill skiing resorts Vail and Beaver Creek. Many of the mountain communities were founded in the mid- to late-1800s to support local mining industry. As the industry declined in the region, many of the towns declined along with it, with some disappearing altogether. Over the last several decades, tourism and recreation, and especially ski tourism, has become the dominant industry in many mountain communities. In Eagle County, oil and gas activity has also been an important economic contributor (BLM 2011a). Population growth in Eagle County has more than doubled since 1990, driven primarily by resort development. With the increase in population have come problems with local services including housing, day care, and health care along with strains on infrastructure and other county and community services (BLM 2011a). Affordability has become a major issue in many communities as the cost of housing and other goods and services has increased alongside the rise in resort and second-home development (BBC Research and Consulting 2008). Eagle County has a 39 percent housing vacancy rate due in large part to the high presence of secondary homes in its resort communities (Colorado State Demography Office 2010; BLM 2011a, 2011b).

A common theme expressed by many residents of the Socioeconomic Study Area – including in previous planning processes – is the concern for the preservation of rural characteristics and values; however, there is also a perceived conflict in values and beliefs between long-time residents and newer residents (BLM 2011a, 2011b). For instance, some individuals perceive that people who commute to jobs distant from their residential communities have less of a social connection with the places where they live, and that they participate less in local affairs (BLM 2011a). In addition, various trends threaten the economic viability of livestock grazing and ranching, and the number and size of ranches is decreasing in parts of the Socioeconomic Study Area, especially in Garfield, Grand, and Routt Counties (BLM 2011a, 2011b). Development of land for purposes other than ranching, including residential development, has raised social concerns about preserving open space and traditional Western values and culture (BLM 2011a, 2011b). Cattle ranching has played a large role in distinguishing this culture and in providing open areas (BLM 2007b; Grand County, 2000).

Residents expressed some similar themes during public scoping and the June 2012 Economic Strategies Workshop for this planning document (BLM and Forest Service 2012; BLM 2013a). In addition to the themes expressed above, some individuals were concerned that certain recreation and tourism activities important to communities across the Socioeconomic Study Area, including OHV use, hunting, and lek-viewing, would be adversely impacted by additional

GRSG protections. Conversely, residents who expressed support for additional conservation measures noted indirect benefits to recreation, tourism, and scenic values through the preservation of habitat for big game and other wildlife.

As before, many residents expressed concerns that constraints on energy development, mining, and ranching might create economic hardship within their communities. Additionally, some argued that constraints on livestock grazing would exacerbate existing trends of conversion of ranch lands to agricultural and residential uses, perhaps with the unintended consequence of decreasing available GRSG habitat.

County Land Use Plans

BLM-administered and National Forest System surface land in the Socioeconomic Study Area is intermingled with State and private lands. County governments have land use planning responsibility for the State and private lands located in unincorporated areas within their jurisdictions. County-level LUPs were identified for all eight counties in the Socioeconomic Study Area. Of these, five (Eagle, Garfield, Jackson, Moffat, and Rio Blanco) include explicit economic development components.

Economic Conditions

Economic analysis is concerned with the production, distribution, and consumption of goods and services. This section provides a summary of economic information, including trends and current conditions in the Socioeconomic Study Area. This section also identifies and describes major economic sectors in the Socioeconomic Study Area that can be affected by BLM and Forest Service management actions. The economic sectors most likely affected by BLM and Forest Service management actions would be those sectors that rely or could rely on public lands.

Economic Sectors, Employment and Personal Income

The distribution of employment and income by industry sector within the Socioeconomic Study Area is summarized in **Table 3.83** and **Table 3.84**. See **Appendix N**, Socioeconomics Data and Methodology, for equivalent data by county.

Employment results for the Socioeconomic Study Area as a whole are driven in large part by Mesa County. The industry sector in the Socioeconomic Study Area employing the greatest number of individuals is the services related sector, which comprised 68.3 percent of total employment in 2010. This reflects a growth rate of 16.5 percent from 2001, compared to an overall employment growth rate of 13.2 percent. Within the services related sector, retail trade (10.3 percent) and accommodations and food services (10.1 percent) accounted for the largest share of employment in 2010, followed by construction at 9.1 percent. The industries that demonstrated the largest growth between 2001 and 2010 were mining, with an increase of 204.6 percent; management of companies and enterprises (increase of 99.5 percent); and finance and insurance

(increase of 47.1 percent). Compared to the services related sector, the non-services related sector and the government sector represented much lower levels of employment, 18.2 percent and 12.1 percent, respectively.

Diagram 3-14 presents the employment trends for several industries from 2001 to 2010. Notably, retail trade and accommodation and food services both employed approximately 20,000 to 25,000 individuals in each year of the 10-year period. This is more than double the employment in the mining industry and approximately four times the employment in the farming industry. (Note: Values in **Diagram 3-14** may not match exactly those in **Table 3.83** due to revisions to data between data releases.) See **Appendix N**, Socioeconomics Data and Methodology, for equivalent data by county.

Table 3.83
Employment by Industry Sector within the Socioeconomic Study Area

Socioeconomic Study Area	Absolute			Percentage of Total		Percent Change 2001-2012
	2001	2010	Change 2001-2010	2001	2010	
Total Employment (number of jobs)	**181,183**	**205,113**	**23,930**	**100.0%**	**100.0%**	**13.2%**
Non-services related	**38,190**	**37,300**	**-890**	**21.1%**	**18.2%**	**-2.3%**
Farm	4,941	4,905	-36	2.7%	2.4%	-0.7%
Forestry, fishing, and related activities	883	1,127	244	0.5%	0.5%	27.6%
Mining (including fossil fuels)	2,736	8,333	5,597	1.5%	4.1%	204.6%
Construction	24,105	18,627	-5,478	13.3%	9.1%	-22.7%
Manufacturing	5,525	4,308	-1,217	3.0%	2.1%	-22.0%
Services related	**120,332**	**140,181**	**19,849**	**66.4%**	**68.3%**	**16.5%**
Utilities	586	572	-14	0.3%	0.3%	-2.4%
Wholesale trade	3,713	4,348	635	2.0%	2.1%	17.1%
Retail trade	21,074	21,220	146	11.6%	10.3%	0.7%
Transportation and warehousing	4,426	5,494	1,068	2.4%	2.7%	24.1%
Information	2,466	2,224	-242	1.4%	1.1%	-9.8%
Finance and insurance	5,989	8,812	2,823	3.3%	4.3%	47.1%
Real estate and rental and leasing	11,485	15,835	4,350	6.3%	7.7%	37.9%
Professional and technical services	8,843	10,804	1,961	4.9%	5.3%	22.2%
Management of companies and enterprises	521	1,039	518	0.3%	0.5%	99.5%
Administrative and waste services	8,699	10,152	1,453	4.8%	4.9%	16.7%
Educational services	1,464	1,976	512	0.8%	1.0%	35.0%
Health care and social assistance	13,643	16,803	3,160	7.5%	8.2%	23.2%
Arts, entertainment, and recreation	8,567	9,504	937	4.7%	4.6%	10.9%
Accommodation and food services	19,224	20,795	1,571	10.6%	10.1%	8.2%
Other services, except public administration	9,632	10,603	971	5.3%	5.2%	10.1%
Government	**20,415**	**24,748**	**4,333**	**11.3%**	**12.1%**	**21.2%**
Federal	2,820	3,598	778	1.6%	1.8%	27.6%
State	3,174	3,412	238	1.8%	1.7%	7.5%
Local	14,417	17,734	3,317	8.0%	8.6%	23.0%

Source: US Department of Commerce 2012a

Table 3.84
Labor Income by Industry Sector and Non-Labor Income within the Socioeconomic Study Area (2010 dollars)

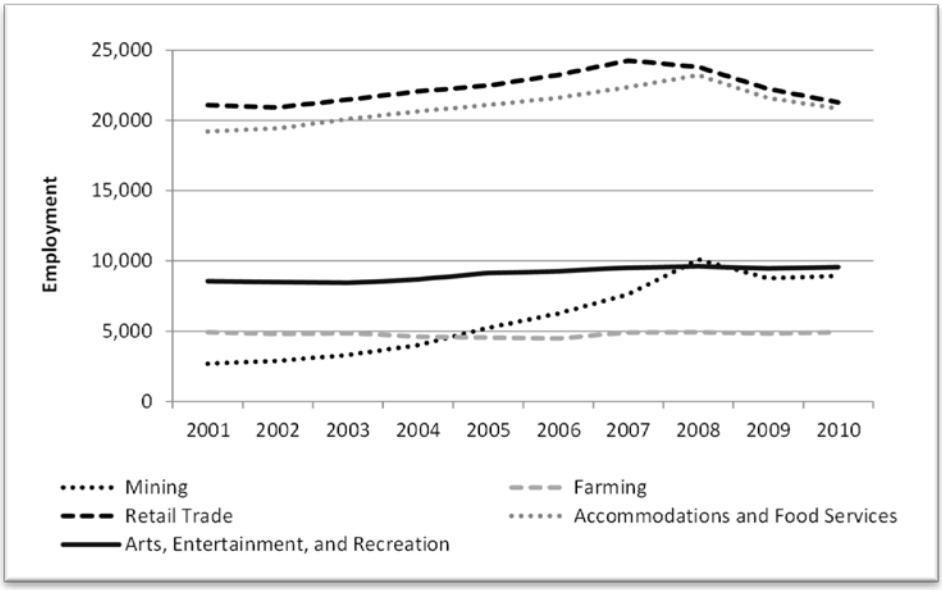
Socioeconomic Study Area	Absolute (Millions)			Percentage of Total [1]		Percent Change 2001-2010
	2001	2010	Change 2001-2010	2001	2010	
Total Labor Earnings [2]	**$7,124.3**	**$8,431.8**	**$1,307.6**	**100.0%**	**100.0%**	**18.4%**
Non-services related	**$1,786.6**	**$1,827.1**	**$40.6**	**25.1%**	**21.7%**	**2.3%**
Farm	$35.4	$33.4	-$2.1	0.5%	0.4%	-5.8%
Forestry, fishing, and related activities	$20.8	$17.3	-$3.5	0.3%	0.2%	-16.9%
Mining (including oil and gas)	$213.1	$644.9	$431.8	3.0%	7.6%	202.6%
Construction	$1,251.3	$953.4	-$297.9	17.6%	11.3%	-23.8%
Manufacturing	$265.9	$178.2	-$87.7	3.7%	2.1%	-33.0%
Services related	**$4,279.5**	**$5,181.0**	**$901.5**	**60.1%**	**61.4%**	**21.1%**
Utilities	$80.1	$81.7	$1.7	1.1%	1.0%	2.1%
Wholesale trade	$179.4	$244.9	$65.6	2.5%	2.9%	36.5%
Retail trade	$681.9	$684.5	$2.6	9.6%	8.1%	0.4%
Transportation and warehousing	$221.3	$306.6	$85.3	3.1%	3.6%	38.6%
Information	$109.2	$100.9	-$8.3	1.5%	1.2%	-7.6%
Finance and insurance	$241.2	$279.7	$38.5	3.4%	3.3%	16.0%
Real estate and rental and leasing	$403.5	$471.1	$67.6	5.7%	5.6%	16.7%
Professional and technical services	$354.8	$451.9	$97.1	5.0%	5.4%	27.4%
Management of companies and enterprises	$42.2	$47.2	$5.1	0.6%	0.6%	12.0%
Administrative and waste services	$212.5	$311.0	$98.6	3.0%	3.7%	46.4%
Educational services	$51.1	$67.5	$16.4	0.7%	0.8%	32.1%
Health care and social assistance	$651.6	$897.7	$246.1	9.1%	10.6%	37.8%
Arts, entertainment, and recreation	$244.3	$283.7	$39.4	3.4%	3.4%	16.1%
Accommodation and food services	$467.8	$560.9	$93.1	6.6%	6.7%	19.9%
Other services, except public administration	$338.7	$391.5	$52.8	4.8%	4.6%	15.6%
Government	**$985.3**	**$1,377.4**	**$392.1**	**13.8%**	**16.3%**	**39.8%**
Federal	$188.2	$286.1	$97.9	2.6%	3.4%	52.0%
State	$161.7	$185.7	$23.9	2.3%	2.2%	14.8%
Local	$635.4	$905.6	$270.2	8.9%	10.7%	42.5%
Non-labor Income [3]	**$2,986.6**	**$4,400.6**	**$1,414.0**	**30.9%**	**36.2%**	**47.3%**
Dividends, interest, and rent	$2,046.8	$2,719.7	$672.9	21.1%	22.4%	32.9%

Table 3.84
Labor Income by Industry Sector and Non-Labor Income within the Socioeconomic Study Area (2010 dollars)

Socioeconomic Study Area	Absolute (Millions)			Percentage of Total [1]		Percent Change 2001-2010
	2001	2010	Change 2001-2010	2001	2010	
Personal current transfer receipts [4]	$939.8	$1,680.9	$741.1	9.7%	13.8%	78.9%
Contributions to government social insurance [5]	**$686.8**	**$873.2**	**$186.4**	**7.1%**	**7.2%**	**27.1%**
Total Personal Income [6]	**$9,677.7**	**$12,154.6**	**$2,476.9**	**100.0%**	**100.0%**	**25.6%**

Source: US Department of Commerce 2012a. Values reported in 2001 dollars were converted to 2010 dollars using the Consumer Price Index (US Bureau of Labor Statistics 2012a).
[1] Industry earnings are reported as a share of total labor earnings. Dividends, interest, and rent; personal current transfer receipts; and contributions to government social insurance are reported as a share of personal income.
[2] Total labor earnings are reported by place of work.
[3] Non-labor income includes dividends, interest, and rent and personal current transfer receipts.
[4] "Personal current transfer receipts" are benefits received by persons for which no current services are performed. They are payments by government and business to individuals and institutions, such as retirement and disability insurance benefits.
[5] "Contributions for government social insurance" consists of payments by employers, employees, the self-employed, and other individuals who participate in the following government programs: Old-age, Survivors, and Disability Insurance; Medicare; unemployment insurance; railroad retirement; pension benefit guarantee; veterans' life insurance; publicly-administered workers' compensation; military medical insurance; and temporary disability insurance (US Department of Commerce 2012b).
[6] Total personal income is reported by place of residence.

Diagram 3-14
Employment Trends by Select Industry Sector within the Socioeconomic Study Area, 2001-2010



Source: US Department of Commerce 2012a
Note: Farming value sums data for "Farm and Agriculture and forestry support activities."

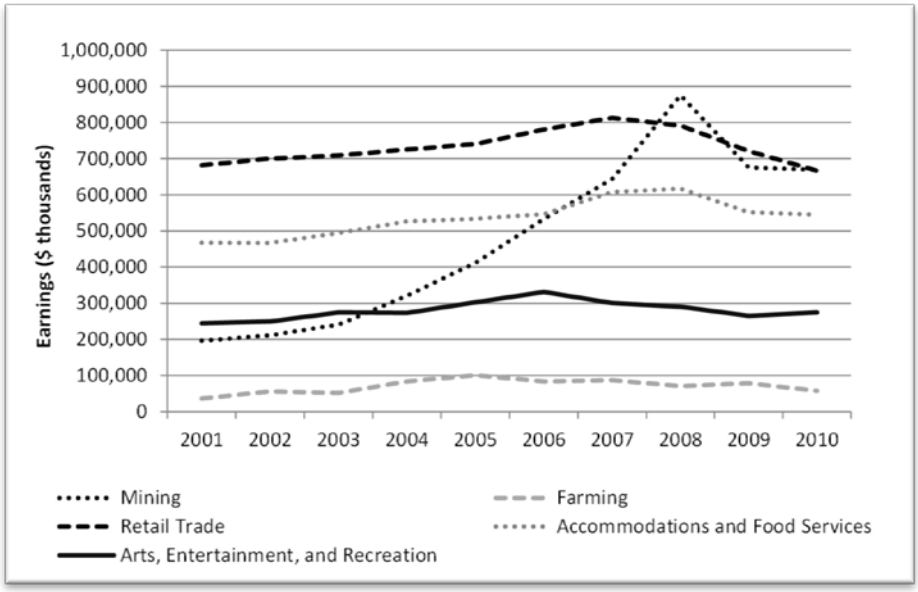
Focusing on industry sectors that directly use public lands, mining contributes a substantial portion of employment in several counties, especially Rio Blanco but also Moffat, Garfield, Jackson and Mesa. Mining also contributes substantially in Sweetwater and Carbon counties, Wyoming and Uintah County, Utah, which constitute part of a secondary study area for socioeconomics as noted in the introduction. Farming, including livestock grazing, also contributes a sizable share of employment in several counties, particularly Jackson County (11.8 percent) as well as Rio Blanco, Moffat, Routt, and others. (Ranching contributes a sizable share of employment in Jackson County. The US Department of Commerce captures ranching employment in its data for the "farming" industry.) The accommodation and food services industry (which depends partly on outdoor recreation on public lands) contributes substantially to employment in all counties, but is particularly large in Eagle and Grand Counties. The accommodation and food services industry also contributes substantially in Summit County, which makes up part of a secondary study area for socioeconomics as noted in the introduction. See **Appendix N**, Socioeconomics Data and Methodology, for equivalent data by county.

With respect to personal earnings, the services related sector accounted for the largest share (61.4 percent) of labor income in the Socioeconomic Study Area in 2010, followed by the non-services related sector (21.7 percent) and the government sector (16.3 percent). In 2010, the individual industries that generated the largest shares of personal earnings included the construction industry (11.3 percent), the healthcare and social services industry (10.6 percent), and the retail trade industry (8.1 percent). Several industries showed a trend of relative growth since 2001, with the mining industry displaying the highest growth rate (202.6 percent). During the same time period, the manufacturing and construction industries experienced the largest declines (33.0 percent and 23.8 percent, respectively).

Diagram 3-15 presents the labor earnings trends for several industries from 2001 to 2010. In 2010, the mining industry generated over three times its earnings in 2001. Retail trade has consistently generated a high level of earnings, compared to the other four industries displayed. In the 10-year period, farming generated the least, at fewer than $100 million almost every year. (Note: Values in **Diagram 3-15** may not match exactly those in **Table 3.84** due to revisions to data between data releases.) See **Appendix N**, Socioeconomics Data and Methodology, for county-level detail.

Appendix N, Socioeconomics Data and Methodology, provides county-level labor earnings figures. The county-by-county patterns (focusing on sectors that directly use public lands) are similar to those for employment. Mining contributes the most to earnings in Rio Blanco County at 31.8 percent, followed by Moffat County at 19.6 percent. Mining is also a significant contributor to earnings in Uintah County, Utah, which represents part of a secondary study

Diagram 3-15
Labor Earnings Trends by Select Industry Sector within the Socioeconomic Study Area, 2001-2010



Sources: US Department of Commerce 2012a. Values reported in 2001 dollars were converted to 2010 dollars using the Consumer Price Index (US Bureau of Labor Statistics 2012a).
Note: Farming value sums data for "Farm and Agriculture and forestry support activities."

area as noted in the introduction. The earnings data indicate that farming, including livestock grazing, is an important industry in the Socioeconomic Study Area, particularly in Jackson County, where it accounts for 25.1 percent of earnings. (Ranching contributes substantially to earnings in Jackson County. The US Department of Commerce captures ranching employment in its data for the "farming" industry.) Within the remaining counties a much lower share of earnings is from farming, with the greatest share at 2.8 percent in Moffat County. Earnings from the accommodation and food services sector also vary by county; they are highest in Eagle and Grand. Retail trade, another recreation-related industry, contributes consistently across all counties (between 7.0 and 9.4 percent of earnings).

In addition to industry shares of labor earnings, another metric – residence adjustment – provides information about the economic conditions in the Socioeconomic Study Area. Residence adjustment represents the net inflow of the earnings of inter-area commuters. A positive number indicates that, on balance, area residents commute outside to find jobs; a negative number indicates that, on balance, people from outside the area commute in to find jobs. Moffat County's residence adjustment represented 11.4 percent of its total personal income, the highest share of all counties in the Socioeconomic Study Area. Grand County had the second highest share (7.8 percent). Residence adjustment accounted for the lowest share of total personal income in Rio

Blanco County (-9.1 percent), followed by Routt County (-3.7 percent). See **Appendix N**, Socioeconomics Data and Methodology, for detailed county data.

Table 3.85 presents the unemployment rates for each county in the Socioeconomic Study Area, as well as the rates for the eight counties aggregated and the State of Colorado. The data show that the Socioeconomic Study Area as a whole experienced a lower rate of unemployment than the State in 2007 and 2008. In 2012, the most recent year reported, the Socioeconomic Study Area recorded an unemployment rate of 8.2 percent, compared to the state rate of 7.8 percent. At the county level, in 2012, the unemployment rate ranged from a low of 3.6 percent in Jackson County to a high of 9.1 percent in Mesa County.

Table 3.85
Annual Unemployment, 2007–2012

Geographic Area (Colorado)	2007	2008	2009	2010	2011	2012
Eagle County	2.9%	3.5%	7.8%	9.5%	8.9%	7.9%
Garfield County	2.5%	3.1%	7.8%	10.1%	9.1%	7.9%
Grand County	2.6%	3.7%	7.4%	9.1%	8.3%	7.3%
Jackson County	2.5%	3.2%	4.6%	6.7%	4.3%	3.6%
Mesa County	3.2%	3.9%	9.3%	10.7%	9.9%	9.1%
Moffat County	3.1%	3.8%	6.9%	9.5%	8.8%	7.5%
Rio Blanco County	2.1%	2.6%	5.4%	6.5%	5.6%	5.8%
Routt County	2.6%	3.4%	7.3%	9.5%	8.3%	7.1%
Socioeconomic Study Area	3.1%	3.8%	7.6%	10.1%	9.2%	8.2%
Colorado	3.8%	4.8%	8.1%	8.9%	8.3%	7.8%

Source: US Bureau of Labor Statistics 2012b

Recreation

Approximately 33,701 jobs (27.0 percent of all private sector jobs) in the Socioeconomic Study Area are related to travel and tourism (Headwaters Economics 2012). This estimate is based on data from the US Census Bureau County Business Patterns and selects industrial sectors that, at least in part, provide goods and services to visitors to the local economy and to the local population.[2]

It includes both full- and part-time jobs. Most of these jobs are concentrated in the "accommodation and food services" and "retail trade" sectors. Travel and tourism-related jobs in the Socioeconomic Study Area grew 14.3 percent between 1998 and 2010. This growth was below the growth of non-travel and tourism-related jobs in the Socioeconomic Study Area (20.6 percent) and the share of travel and tourism-related jobs in the total employment in the Study

[2] Typical sector classifications do not map easily into tourism. For example, "accommodation and food services" includes meals out by local residents, not just tourists; "retail trade" captures purchases of souvenirs but also a wide range of other purchases.

Area fell from 28.1 percent to 27 percent during that period. Still, the share of travel and tourism-related jobs in the Socioeconomic Study Area is approximately 11.9 percent points higher than the national average. Jobs in these sectors are more likely to be seasonal and/or part-time and the average annual earnings per job tend to be lower than jobs in non-travel and tourism-related sectors. The average annual wage per job in this sector was $21,849 (2010 dollars) in the Socioeconomic Study Area in 2011, compared to $43,339 (2010 dollars) for private sector jobs not related to travel and tourism (Headwaters Economics 2012).[3]

Although much of the recreation use on BLM-administered and National Forest System lands is dispersed, and far from counting devices such as trail registers, fee stations, or vehicle traffic counters, approximations of the number of visitors to BLM-administered lands can be obtained from the BLM Recreation Management Information System database, in which BLM recreation specialists provide estimated total visits and visitor days to various sites within the boundaries of their field office.[4] The Forest Service tabulates visitor data through its National Visitor Use Monitoring program. **Table 3.86** summarizes the most recent visitation data available for BLM field offices and the Routt National Forest.

Visitor expenditures can be approximated by using the Recreation Management Information System data in conjunction with data from Forest Service, which has constructed recreation visitor spending profiles based on years of survey data gathered through the National Visitor Use Monitoring program. Although the data are collected from National Forest visitors, the analysis that follows is based on the National Visitor Use Monitoring program profiles because the BLM has no analogous database. The profiles break down recreation spending by type of activity, day use versus overnight use, local versus nonlocal visitors, and non-primary visits. **Table 3.87** summarizes individual and party visits and expenditures by trip type and estimated direct expenditure.

As **Table 3.87** shows, the estimated total visitor spending on BLM and Forest Service lands in the Socioeconomic Study Area was about $301 million in fiscal year 2011. It is important to note that this includes expenditures from local residents and visitors whose use of public lands was incidental to some other primary purpose.

[3] All dollar values were converted to 2010 dollars using the US Bureau of Labor Statistics Consumer Price Index Inflation Calculator (US Bureau of Labor Statistics 2012a).

[4] In Recreation Management Information System, a *visit* is defined as the entry of any person onto lands or related waters administered by the BLM for any time period. A same day reentry, negligible transit, and entry to another recreation site or detached portion of the management area on the same day are considered a single visit. Recreation Management Information System defines a *visitor day* as equivalent to 12 visitor hours.

Table 3.86
Estimated Number of Annual Visits by Field Office and National Forest

BLM Field Office or National Forest	Total Individual Visits [1]	Local Individual Visits [2]	Nonlocal Individual Visits [2]	Non Primary [3] Individual Visits [2]
BLM CRVFO	826,267	446,184	272,668	107,415
BLM GJFO	839,252	453,196	276,953	109,103
BLM KFO	640,606	345,927	211,400	83,279
BLM LSFO	118,398	63,935	39,071	15,392
BLM WRFO	252,605	136,407	83,360	32,839
Forest Service Routt National Forest	1,631,680	881,107	538,454	212,118
Total	**4,308,808**	**2,326,756**	**1,421,906**	**560,146**

[1] Data for BLM field offices is for fiscal year 2011 (BLM 2012c); data for the Routt National Forest is for fiscal year 2007 (Forest Service 2012). Fiscal year 2011 is the year ending September 30, 2011.
[2] Based on national averages for all National Forests. White and Gooding (2012). Party spending per visit is converted from 2009 to 2010 dollars using the Consumer Price Index (US Bureau of Labor Statistics 2012a).
[3] Non-primary means incidental visits where the primary purpose of the trip was other than visiting the National Forest being surveyed.

Table 3.87
Visitor Spending from Recreation on BLM-Administered and National Forest System Lands in Socioeconomic Study Area

Trip Type	Percent of Visits [1]	Estimated Number of Individual Visits	Average Party Size [1]	Estimated Number of Party Visits	Party Spending Per Visit (2010) [1]	Estimated Direct Expenditure ($ millions)
Nonlocal Day Trips	10	430,881	2.5	172,352	$63.68	$11.0
Nonlocal Overnight on Public Lands	9	387,793	2.6	149,151	$237.27	$35.4
Nonlocal Overnight off Public Lands	14	603,233	2.6	232,013	$522.63	$121.3
Local Day Trips	49	2,111,316	2.1	1,005,389	$33.56	$33.7
Local Overnight on Public Lands	4	172,352	2.6	66,289	$165.14	$10.9
Local Overnight off Public Lands	1	43,088	2.4	17,953	$216.48	$3.9
Non-Primary Visits	13	560,145	2.5	224,058	$376.62	$84.4
Total	100	4,308,808	N/A	1,867,205	N/A	$300.6

[1] National average for all National Forests. White and Gooding (2012). Party spending per visit is converted from 2009 to 2010 dollars using the Consumer Price Index (US Bureau of Labor Statistics 2012a).

Grazing

Farming employed approximately 4,905 people in the Socioeconomic Study Area in 2010, accounting for 2.4 percent of total employment. The share has been falling consistently over the last 40 years. The average annual wage for a farm job in the Study Area was $26,993 (2010 dollars) in 2011. This was lower

than the average annual wage for a non-farm job, which was $37,469 (Headwaters Economics 2012).[5] As of 2007, the Socioeconomic Study Area contained 4,289 farms, with an average farm size of 742 acres. Farms covered approximately 22.9 percent of the land area in the Study Area. **Table 3.88** presents the breakdown of number of farms and land area by county.

Table 3.88
Number of Farms and Land in Farms, 2007

Geographic Area (Colorado)	Number of Farms	Land in Farms (Acres)	Average Farm Size (Acres)	Approximate Percent of Land Area in Farms
Eagle County	152	124,000	816	11.5
Garfield County	623	335,300	538	17.8
Grand County	229	208,500	910	17.6
Jackson County	120	387,100	3,226	37.5
Mesa County	1,767	372,500	211	17.5
Moffat County	503	836,600	1,663	27.6
Rio Blanco County	285	386,600	1,356	18.8
Routt County	610	533,000	874	35.3
Socioeconomic Study Area	4,289	3,183,600	742	22.9

Source: US Department of Commerce 2012a

Table 3.89 presents the distribution of farms by primary product type and county. These data demonstrate the prevalence of farms engaging primary in activities related to beef cattle, and to some extent sheep and goats, across the Study Area in 2007 (Headwaters Economics 2012).

Table 3.90 presents the proportion of personal income originating from farm earnings and the farm cash receipts from livestock received throughout the Socioeconomic Study Area and Colorado as a whole. Mesa has the largest amount of farm cash receipts in absolute terms. Farm earnings are a highest share of total earnings in Jackson County. Just over 70 percent of farm cash receipts in that county are from livestock.

Table 3.90 shows that – as noted earlier in this section – the relative contribution of farm earnings varies substantially across the counties in the Socioeconomic Study Area, and the share of farm earnings is greatest in Jackson and Moffat Counties (25.1 percent and 2.8 percent, respectively). Compared with the state as a whole, the share of farm cash receipts originating from livestock and crops in the Socioeconomic Study Area are roughly equal.

[5] All dollar values were converted to 2010 dollars using the US Bureau of Labor Statistics Consumer Price Index Inflation Calculator (US Bureau of Labor Statistics 2012a).

Table 3.89
Number of Farms by Type, 2007

Geographic Area (Colorado)	Crops [1]	Beef Cattle	Cattle Feedlots	Dairy Cattle & Milk	Hog & Pig	Poultry & Egg	Sheep & Goat	Animal Aquaculture & Other
Eagle County	41	56	1	0	0	0	5	49
Garfield County	235	155	4	4	10	13	17	185
Grand County	68	85	3	1	5	3	1	63
Jackson County	27	54	1	0	0	1	1	36
Mesa County	836	413	29	9	22	43	47	368
Moffat County	195	148	1	1	14	17	25	102
Rio Blanco County	92	91	1	1	12	1	15	72
Routt County	289	166	8	0	11	9	13	114
Study Area	1,783	1,168	48	16	74	87	124	989

Source: Headwaters Economics 2012.
[1] The "Crops" category includes farms primarily engaged in oil seed and grain, vegetables and melon, fruit and nut, greenhouse/nursery, and other crops.

Table 3.90
Farm Earnings Detail, 2010 (2010 dollars)

Geographic Area (Colorado)	Farm Earnings as Share of All Earnings	Earnings from Agriculture and Forestry Support Activities as Share of All Earnings [1]	Farm Cash Receipts ($millions)	Share of Farm Cash Receipts from Livestock	Share of Farm Cash Receipts from Crops
Eagle County	0.1%	(D)	$5.3	68.1%	31.9%
Garfield County	-0.1%	0.1%	$24.4	65.9%	34.1%
Grand County	1.2%	(D)	$10.5	78.6%	21.4%
Jackson County	25.1%	(D)	$24.7	72.2%	27.8%
Mesa County	0.1%	0.2%	$62.8	43.1%	56.9%
Moffat County	2.8%	0.5%	$31.5	81.1%	18.9%
Rio Blanco County	0.8%	(D)	$17.1	83.1%	16.9%
Routt County	0.5%	(D)	$38.2	79.2%	20.8%
Socioeconomic Study Area	0.3%	0.1%	$355.2	63.4%	36.6%
Colorado	0.6%	0.1%	$6,375.7	64.4%	35.6%

Source: US Department of Commerce 2012a
[1] This division is the finest resolution of data provided by the US Department of Commerce's Bureau of Economic Analysis that includes agricultural services.
[2] (D) indicates that the value is not released to the public by the US Department of Commerce's Bureau of Economic Analysis to avoid disclosure of confidential information.

Table 3.91 provides information on active and billed AUMs on BLM and Forest Service land, for each of the BLM field offices and the Routt National Forest. An AUM is the amount of forage needed to feed 1 cow, 1 horse, or 5 sheep for 1 year. Cattle are the dominant species grazed in all areas, although sheep

Table 3.91
Active and Billed Animal Unit Months, 2011

Region	Active (2011)	% Billed	(Avg. Billed 2000-2011)	Cattle (%)	Sheep (%)	Other (%)	Allot-ments	Acres per AUM	Expenditures (millions)
CRVFO	44,446	69	30,718	88	12	0	191	12.4	$1.54
GJFO	64,190	61	38,839	100	0	0	188	16.3	$1.95
KFO	34,630	80	27,547	99	0	1	246	9.7	$1.38
LSFO	139,772	62	86,530	61	36	3	312	9.5	$4.35
WRFO	120,401	69	82,848	82	18	0	155	12.1	$4.16
Routt NF[1]	73,213	102	74,592	n/a	n/a	n/a	104	n/a	$3.75
Total	476,652	-	341,074	-	-	-	1,196	-	$17.14

Source: BLM 2012b; Forest Service 2013; Workman 1986; US Department of Agriculture Economic Research Service 2012.
Expenditures are calculated based on billed AUMs and 10-year average expenditures, as described in the text.
[1] For Routt NF, Active AUMs as of March 06, 2013 and Billed AUMs average of 2001-2012. Percent billed over 100% reflects decrease in active and billed AUMs during the period 2001 to 2013

consume about one-third of the forage in the LSFO. The estimated expenditure data in **Table 3.91** are calculated from data from the US Department of Agriculture Economic Research Service, which publishes annual budgets for cow-calf operations for different production regions across the country (US Department of Agriculture Economic Research Service 2012). The BLM calculated a 10-year inflation-adjusted average expenditure per cow-calf operation from the US Department of Agriculture Economic Research Service budgets, then converted that information to a per-AUM figure based on average forage requirements for a cow including other livestock (e.g., bulls and replacement heifers) that are needed to support the production from the cow (Workman 1986). Based on these calculations, BLM estimates that the 10-year average expenditure in the Socioeconomic Study Area is $50.24 per AUM (2010 dollars).

The data in **Table 3.91** help to demonstrate the importance of livestock grazing throughout the Socioeconomic Study Area. It is important to remember, as well, that the data are only for forage values on BLM-administered land; forage on other public lands, and private lands, contribute additional values to the Socioeconomic Study Area. The economic analysis of the alternatives, presented in **Chapter 4**, Environmental Consequences, addresses additional indirect contributions of livestock grazing (as well as other resource uses) to the regional economy, comparing the alternatives to one another.

Minerals

Approximately 4,416 jobs (3.5 percent of all private sector jobs) in the Socioeconomic Study Area are from mining industry sectors (Headwaters Economics 2012). This is up from 1.7 percent of private sector jobs in 1998. The relative contribution differs across the Study Area counties and is substantial for some counties. The share of mining jobs in the Socioeconomic

Study Area was higher than the national average of 0.5 percent. This estimate is based on data from the US Census Bureau County Business Patterns and a selection of industrial sectors that includes "oil and gas extraction," "coal mining," "metal ore mining," and "nonmetallic minerals mining" industry sectors. It includes both full- and part-time jobs. Average annual earnings per mining jobs are higher than non-mining jobs: The average annual wage per job in the mining sector was $74,219 (2010 dollars) in the Study Area in 2011, compared to $35,470 (2010 dollars) for private sector jobs not related to mining (Headwaters Economics 2012).

Several of the counties in the Socioeconomic Study Area have a significant percentage of mining jobs according to the data in the County Business Patterns: Rio Blanco (481 mining jobs, 26 percent of private employment) and Moffat (541 mining jobs, 14 percent of private employment) (Headwaters Economics 2012). Mining contributes more jobs numerically, but fewer proportionately, in Garfield (1,060 jobs, 6 percent of private employment) and Mesa county (1,755 jobs, 4 percent of private employment). **Table 3.92** provides sales volume and sales value for coal, gas and oil resources managed by the BLM, and underscores the importance of mining in these five counties – especially Garfield and Rio Blanco.

Table 3.92
Coal, Gas, and Oil: Sales Volume and Sales Value from BLM-Administered Resources, Fiscal Year 2011

Geographic Area (Colorado)	Sales Volume			Sales Value (millions)		
	Coal (tons)	Gas (mcf)	Oil and Condensate (bbl)	Coal	Gas	Oil and Condensate
Eagle County	0	0	0	$0	$0	$0
Garfield County	15,894	166,822,688	4,699,051	$0.7	$700.3	$249.9
Grand County	0	0	0	$0	$0	$0
Jackson County	0	0	76,875	$0	$0	$6.3
Mesa County	0	18,200,250	234,102	$0	$76.7	$7.9
Moffat County	3,145,954	16,136,910	312,561	$95.5	$68.7	$24.7
Rio Blanco County	3,725,700	88,457,430	4,235,755	$134.4	$384.4	$343.6
Routt County	696,048	0	19,210	$31.6	$0	$1.5
Socioeconomic Study Area	7,583,596	289,617,278	9,577,554	$262.2	$1,230.1	$634.1

Source: Office of Natural Resources Revenue 2012
mcf = thousand cubic feet; bbl = oil barrel

Other mineral production in the Socioeconomic Study Area includes gypsum (Eagle County), sodium, limestone, and construction sand and gravel (USGS 2011; BLM 2013b). **Table 3.93** shows production of other minerals in the study area in 2010.

Table 3.93
Other Mineral Production, 2010 (Tons)

Geographic Area	Leasable	Locatable		Salable
	Sodium	Limestone	Gypsum	Sand and Gravel
LSFO	N/A	5,000	N/A	10,000
GJFO	N/A	N/A	N/A	23,405
WRFO	130,000	N/A	N/A	20,000
KFO	N/A	N/A	N/A	20,000
CRVFO	N/A	50,000	350,000	N/A
Socioeconomic Study Area	130,000	55,000	350,000	73,405

Source: BLM 2013b

Other Values

Public lands provide a range of goods and services that benefit society in a variety of ways. Some of these goods and services, such as timber and minerals, are bought and sold in markets, and hence have a readily observed economic value (as documented in the sections above); others have a less clear connection to market activity, even though society derives benefits from them. In some cases, goods and services have both a market and a non-market component value to society. This section provides an overview of several "non-market" values described through a qualitative and quantitative economic valuation analysis.

The non-market values associated with public lands can be classified as values that derive from direct or indirect use (e.g., recreation) and those that do not derive from use, such as existence values held by the general public from self-sustaining populations of GRSG. This section and **Appendix N**, Socioeconomics Data and Methodology, describe the use and non-use economic values associated with recreation, populations of GRSG, and land that is currently used for livestock grazing and ranch operations. The sections that follow discuss each of these values in turn. **Appendix N**, Socioeconomics Data and Methodology, provides more discussion of the concepts and measurement of use and non-use non-market values. It is important to note that these non-market values are not directly comparable to previous sections that describe output (sales or expenditures) and jobs associated with various resource uses on BLM-administered and National Forest System lands (see **Appendix N**, Socioeconomics Data and Methodology, for more information).

Values Associated with Recreation

Actions that promote the conservation of GRSG habitat may result in changes in recreation activity, by changing opportunities or access for different recreational activities. Opportunities for some activities such as wildlife viewing may increase as the amount of habitat may increase for species that depend on public lands including GRSG. The **Chapter 4**, Environmental Consequences,

addresses this issue for each of the management alternatives. This section documents baseline non-market values visitor receive associated with recreation activities. This is measured by what economists call consumer surplus, which refers to the additional value that visitors receive over and above the price they pay. **Appendix N**, Socioeconomics Data and Methodology, provides an explanation of consumer surplus. Fees to use public lands for recreation are typically very low or non-existent, so the value people place on public land recreation opportunities is not fully measured simply by the entrance fees people pay.

Economists estimate the consumer surplus from recreation by measuring how the variation in visitors' travel costs corresponds to the number of visits taken. This "travel cost method" has been developed extensively in academic literature and is used by federal agencies in economic analyses; the method is explained more fully in **Appendix N**, Socioeconomics Data and Methodology. Conducting original travel cost method studies can be time-consuming and expensive; for this project BLM and Forest Service relied on estimates of consumer surplus from prior recreation studies in the same geographic region, using an established scientific method called "benefit transfer." Based on the studies reviewed and cited in **Appendix N**, Socioeconomics Data and Methodology, visitors to natural areas, such as lands managed by BLM and Forest Service, gain values (in excess of their direct trip cost) ranging from approximately $31 per day for camping, to about $175 per day for mountain biking.

To calculate the aggregate "consumer surplus" value of recreation in the study area, BLM multiplied this per-day value of recreation by the estimated number of visitor days associated with each activity type. Visitation estimates by activity are derived based on the BLM Recreation Management Information System database and the Forest Service National Visitor Use Monitoring program for the study area.

Accounting for the value per day and the number of days, the total non-market value of recreation on BLM and Forest Service lands in the study area was estimated to be about $180 million per year (see **Appendix N**, Socioeconomics Data and Methodology, for details). Based on the quantity of recreational trips and the economic value of each type of activity, the largest annual non-market values are associated with hunting, camping, fishing, hiking, sightseeing, and pleasure driving. These categories omit downhill skiing, because there is little or no overlap between GRSG habitat and lands used for downhill skiing. **Chapter 4**, Environmental Consequences, discusses if and how recreational visits and total non-market value for recreation may change under the alternatives being considered.

Values Associated with Populations of Greater Sage-Grouse

The existence and perseverance of the ESA and similar acts reflects the values held by the American public associated with preventing species from going extinct. Economists have long recognized that rare, threatened and endangered species have economic values beyond those associated with active "use" through viewing. This is supported by legal decisions and technical analysis (see **Appendix N**, Socioeconomics Data and Methodology, for details), as well as a number of conceptual and empirical publications that refine concepts and develop methods to measure these non-use or existence values.

The dominant method uses surveys to construct or simulate a market or referendum for protection of areas of habitat, or changes in populations of species. The survey asks the respondent to indicate whether they would pay for an increment of protection, and if so how much they would pay. Economists have developed increasingly sophisticated survey methods for non-use value over the last two decades to improve the accuracy of this method. **Appendix N**, Socioeconomics Data and Methodology, offers an in-depth discussion of this method of value estimation.

Original surveys to estimate non-use values are complex and time-consuming; rather than perform a new survey, BLM and Forest Service reviewed existing literature to determine if there were existing non-use value studies for GRSG. No existing studies on valuation specific to the GRSG were found. However, there are several studies published in peer-reviewed scientific journals for bird species that BLM judged to have similar characteristics with GRSG, including being a candidate for listing as threatened or endangered and being a hunted species. These studies find average stated willingness to pay of between $15 and $58 per household per year in order to restore a self-sustaining population or prevent regional extinction (see **Appendix N**, Socioeconomics Data and Methodology, for details). These values represent a mix of use and non-use values, but the non-use components of value are likely to be the majority share, since the studies primarily address species that are not hunted. Since GRSG protection is a public good available to all households throughout the intermountain west, if similar per-household values apply to the species the aggregate regional existence value could be substantial.

Values Associated with Grazing Land

Public land managed for livestock grazing provides both market values (e.g., forage for livestock) and non-market values, including open space and western ranch scenery, which provide value to some residents and outside visitors, and may also provide some value to the non-using public (e.g., the cultural icon of the American cowboy). Many people who ranch for a living or who otherwise choose to live on ranches value the ranching lifestyle in excess of the income generated by the ranching operations. This could be seen as a non-market value associated with livestock grazing. On the other hand, some residents and visitors perceive non-market opportunity costs associated with livestock

grazing. Although some scholars and policy makers have discussed non-market values associated with livestock grazing, the process for incorporating these values into analyses of net public benefits remains uncertain, and BLM and Forest Service did not attempt to quantify these values for the present study.

Furthermore, some of the lifestyle value of ranching is likely to be captured in markets, such as through the property values of ranches adjacent to public lands with historic leases or permits for grazing on public land. Economists typically use a method called the hedonic price method to estimate values associated with particular amenities; this method may be used to explain the factors that influence the observed sale prices of ranch land. **Appendix N**, Socioeconomics Data and Methodology, provides more information about this method, as well as additional information to address potential non-market values associated with grazing.

Fiscal

Table 3.94 shows the main sources of revenues for counties in the Socioeconomic Study Area. For most counties, approximately half of their revenues are generated by taxes, with another 20 percent to 40 percent attributable to intergovernmental transfers. The main exception is Jackson County, which receives over half of its revenues from intergovernmental transfers. The table shows Payments in Lieu of Taxes, which are federal government payments based on the presence of federal lands within each county. The non-taxable status of BLM-administered lands is important to local governments, which must provide services to county residents and provide public safety and law enforcement services on BLM-administered lands. Federal revenue-sharing programs provide resources to local governments in lieu of property taxes because state and local governments cannot tax federally owned lands the way they would if the land were privately owned.

Intergovernmental transfers include a proportion of the mineral royalties and other revenues (such as lease/rent payments and bonus payments from lease sales) collected by the federal government from minerals leased by the federal government (including oil and gas and coal) in Colorado. Fifty percent of the royalties and payments collected by federal government related to mineral leases in Colorado are returned to the state (net of administrative charges). Colorado then distributes 50 percent of these funds (up to a limit) to the counties of origin and 50 percent to the state school fund, the Department of Local Affairs and the Water Conservations Board. Funds above the limit are distributed, in varying proportions, to the state school fund, counties, school districts, towns and the Department of Local Affairs (Garfield County, undated). Intergovernmental transfers also include transfers from Colorado state revenues to counties including revenues generated from the State Severance Tax on mineral extraction.

Table 3.94
Revenues Received in the Socioeconomic Study Area by County, Government Funds, 2010 (Thousands)

Geographic Area (Colorado)	Tax Revenues [1]	Payments in Lieu of Taxes [2]	Other Transfers [3]	Other Revenues [4]	Total
Eagle County	$46,201	$2,010	$14,730	$14,990	$77,931
Garfield County	$77,696	$392	$56,775	$11,283	$146,146
Grand County	$18,175	$852	$8,345	$6,482	$33,863
Jackson County	$1,004	$169	$2,042	$497	$3,712
Mesa County	$58,521	$512	$49,122	$10,658	$118,813
Moffat County	$14,647	$551	$11,280	$5,779	$32,257
Rio Blanco County	$16,504	$494	$8,842	$8,906	$34,746
Routt County	$21,197	$1,463	$8,216	$4,750	$35,626
Socioeconomic Study Area	$253,945	$6,443	$159,361	$63,345	$483,094

Sources: US Department of the Interior 2012; Eagle County 2011; Garfield County 2011; Grand County 2011a; Mesa County 2011; Moffat County 2011; Rio Blanco County 2011; Routt County 2011.
[1] Minor differences with **Table 3.95** reflect difference between government-wide revenues and fund revenues.
[2] Includes Payments in Lieu of Taxes received from BLM, Forest Service, US Bureau of Reclamation, National Park Service, and USFWS.
[3] Inter-governmental transfers excluding Payments in Lieu of Taxes
[4] "Other revenues" includes charges for services, licenses and permits, investment earnings and other unidentified revenues.

Table 3.95 shows tax revenues for the Socioeconomic Study Area, by county, for 2010. Property taxes are the main source of tax revenues for counties. Counties typically collect taxes on real property (e.g., oil and gas improvements and structures) located on public lands. Expenditures by visitors to BLM-administered and National Forest System lands also generate tax revenues through state, county, and municipality sales and use taxes.

Table 3.95
Tax Revenues Received in the Socioeconomic Study Area by County, 2010 (Thousands)

Geographic Area (Colorado)	Sales Tax	Property Tax	Other Tax [2]	Total Tax Revenues
Eagle County	$15,575	$29,770	$1,060	$46,405
Garfield County	$4,077	$71,028	$6,144	$81,248
Grand County [1]	$2,954	$14,670	$551	$18,175
Jackson County [1]	$240	$610	$154	$1,004
Mesa County	$24,275	$28,072	$5,985	$58,332
Moffat County	$2,752	$10,631	$706	$14,089
Rio Blanco County [1]	$4,203	$10,432	$1,869	$16,504
Routt County	$4,486	$16,711	$0	$21,197
Socioeconomic Study Area	$58,453	$181,786	$16,441	$255,954

Sources: Eagle County 2011; Garfield County 2011; Grand County 2011a; Mesa County 2011; Moffat County 2011; Rio Blanco County 2011; Routt County2011.
[1] Government Funds
[2] "Other taxes" may include use tax, specific ownership tax, insurance premium tax, and/or other unidentified form of tax.

BLM and FS Expenditures and Employment

BLM field offices and Forest Service units provide a direct contribution to the economy of the local and surrounding area. BLM and Forest Service operations and management make direct contributions to area economic activity by employing people who reside within the area and by spending dollars on project related goods and services. Contracts for facilities maintenance, shuttling vehicles, and projects contribute directly to the area economy and social stability as well. **Table 3.96** provides available information on the number of employees at each field office and the Routt National Forest. It also presents the contributions to the local economy, in terms of labor income, resulting from BLM and Forest Service operations and management expenditures. BLM and Forest Service contribute directly to area economic activity by employing people who reside in the area and by spending dollars on project-related goods and services. BLM and Forest Service expenditures also result in indirect contributions when BLM and Forest Service purchases supplies and services from other industries in order to produce their product.

Table 3.96
BLM and Forest Service Employment and Related Expenditures in the Socioeconomic Study Area

Agency	Management Unit	Number of Field Office Staff (Full-Time Equivalent Employees)	Labor Expenditures (millions of dollars)
BLM	CRVFO	43.8	$3.3
BLM	GJFO	49.2	$3.7
BLM	KFO	22.9	$1.7
BLM	LSFO	27.3	$2.2
BLM	Northwest District Office	15.4	$1.3
BLM	WRFO	41.7	$3.2
Forest Service	Routt National Forest	221 [1]	$12.1 [2]

Source: BLM 2012c; Forest Service 1998.
[1] Represents the number of full time employees supported by Forest Service in the Routt National Forest, not the number of field office staff.
[2] The Routt National Forest EIS reported Forest Service expenditures of $8.7 million in 1996 dollars. This value was converted to 2010 dollars using the Consumer Price Index (US Bureau of Labor Statistics 2012a).

Environmental Justice

Executive Order 12898 requires federal agencies to "identify and address the disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." The BLM Land Use Planning Handbook (BLM 2005) reiterates BLM's commitment to environmental justice – both in providing meaningful opportunities for low-income, minority, and tribal populations to participate in decision-making, and to identify and minimize any disproportionately high or adverse impacts on these populations. Similarly, the US Department of

Agriculture's Departmental Regulation on Environmental Justice (US Department of Agriculture 1997) provides direction to agencies for integrating environmental justice considerations into US Department of Agriculture programs and activities, including those of Forest Service. Specifically, the Departmental Regulation on Environmental Justice calls for the identification, prevention, and/or mitigation of disproportionately high and adverse human health or environmental effects of US Department of Agriculture programs and activities on minority and low-income populations and provision for the opportunity for minority and low-income populations to participate in planning, analysis, and decision making that affects their health or environment.

According to the CEQ's Environmental Justice Guidance Under the National Environmental Policy Act (CEQ 1997), "minority populations should be identified where either: (a) the minority population of the affected region exceeds 50 percent or (b) the minority population percentage of the affected region is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis." The same document states that "In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect."

Additionally, the CEQ guidance (CEQ 1997) advises that "In order to determine whether a proposed action is likely to have disproportionately high and adverse human health or environmental effects on low-income populations, minority populations, or Indian tribes, agencies should identify a geographic scale, obtain demographic information on the potential impact area, and determine if there is a disproportionately high and adverse effect to these populations. Agencies may use demographic data available from the Bureau of the Census to identify the composition of the potentially affected population. Geographic distribution by race, ethnicity, and income, as well as a delineation of tribal lands and resources, should be examined."

Minority Populations

Table 3.97 summarizes the percentage of the population made up of ethnic minority groups in each county of the Socioeconomic Study Area and in Colorado and the US as a whole.

With the exception of Eagle and Garfield Counties, which have a slightly greater minority population percentage than Colorado as a whole, the remaining counties within the Socioeconomic Study Area have a much lower minority population by percentage than Colorado or the US as a whole. The dominant minority group in Eagle and Garfield Counties is the Hispanic or Latino population, which makes up approximately 30 percent of each county's

Table 3.97
Population Race and Ethnicity, 2010

Geographic Unit Analyzed	Total Population	Percent of Total Population								
		White	Black or African American	Alaska Native or American Indian	Asian	Native Hawaiian & Other Pacific Islander	Other Race	Two or More Races	Hispanic or Latino [1]	Total Minor-ities [2]
Eagle County, CO	52,197	83.2	0.7	0.7	1.0	0.0	12.3	2.1	30.1	32.7
Garfield County, CO	56,389	82.2	0.7	1.1	0.7	0.1	12.6	2.6	28.3	31.0
Grand County, CO	14,843	93.5	0.4	0.5	0.8	0.1	3.1	1.6	7.5	10.2
Jackson County, CO	1,394	92.5	0.0	1.2	0.1	0.0	5.0	1.1	10.8	12.6
Mesa County, CO	146,723	89.4	0.6	1.1	0.8	0.1	5.4	2.7	13.3	16.7
Moffat County, CO	13,795	90.0	0.3	0.9	0.6	0.1	5.9	2.2	14.4	17.3
Rio Blanco County, CO	6,666	91.9	0.8	0.9	0.3	0.2	3.7	2.3	10.0	13.6
Routt County, CO	23,509	94.8	0.4	0.5	0.6	0.1	2.1	1.6	6.8	9.3
Socio-economic Study Area	660,288	89.2	0.7	0.8	1.3	0.1	5.4	2.4	14.2	18.1
Colorado	5,029,196	81.3	4.0	1.1	2.8	0.1	7.2	3.4	20.7	29.9
US	308,745,538	72.4	12.6	0.9	4.8	0.2	6.2	2.9	16.3	36.0

Source: US Census Bureau 2010b.
[1] Individuals who identify themselves as Hispanic or Latino might be of any race; the sum of the other percentages under the "Percent of Total Population" columns plus the "Hispanic or Latino" column therefore does not equal 100 percent, and the sum of the percentages for each racial and ethnic category does not equal the percentage of "total minorities".
[2] The total minority population, for the purposes of this analysis, is the total population for the geographic unit analyzed minus the non-Latino/Hispanic white population.

population. Other ethnic minorities each accounts for 2 percent or less of the population in each county within the Socioeconomic Study Area. Smaller communities (at the sub-county level) where minority presence is "meaningfully greater" than in the state as a whole may also exist in the primary study area and would be relevant in the analysis of site-specific projects and measures.

Low Income Populations

Table 3.98 summarizes the percentage of the population below poverty levels in each county of the Socioeconomic Study Area and in Colorado and the US as a whole. Following the Office of Management and Budget's Directive 14, the Census Bureau uses a set of money income thresholds that vary by family size and composition to detect what part of the population is considered to be in poverty (US Census Bureau 2012b).

Table 3.98
Low-Income Populations, 2006-2010 Average

Geographic Area	Percent Population Below Poverty Line
Eagle County, CO	9.4
Garfield County, CO	9.2
Grand County, CO	6.6
Jackson County, CO	13.9
Mesa County, CO	12.4
Moffat County, CO	13.0
Rio Blanco County, CO	5.3
Routt County, CO	6.9
Socioeconomic Study Area	11.6
Colorado	12.2
US	13.8

Source: US Census Bureau 2010c

Of the eight counties in the Socioeconomic Study Area, two counties have higher percentages of residents below the poverty level than the overall Colorado percentage (12.2 percent): Mesa (12.4 percent) and Moffat (13.0 percent). One county, Jackson County, has a higher percentage (13.9 percent) of residents below the poverty level than the national percentage (13.8 percent). Smaller communities (at the sub-county level) where minority presence is "meaningfully greater" than in the state as a whole may also exist in the primary study area and would be relevant in the analysis of site-specific projects and measures.

To ascertain whether there are disproportionate effects of the alternatives on low-income populations, data on effects by each alternative are reported in **Chapter 4**, Environmental Consequences.

Tribal Populations

There are two federally recognized Indian tribes in the State of Colorado: the Southern Ute Tribe and the Ute Mountain Ute Tribe (US Department of Interior, Bureau of Indian Affairs 2011). While neither is located within the Socioeconomic Study Area, feedback received during public scoping and the June 2012 Economic Strategies Workshop for this planning document emphasized the significance of the GRSG in Native American culture and the need for continued consultation and engagement of area tribes throughout the planning process (BLM and Forest Service 2012; BLM 2013a).

3.24.2 References

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