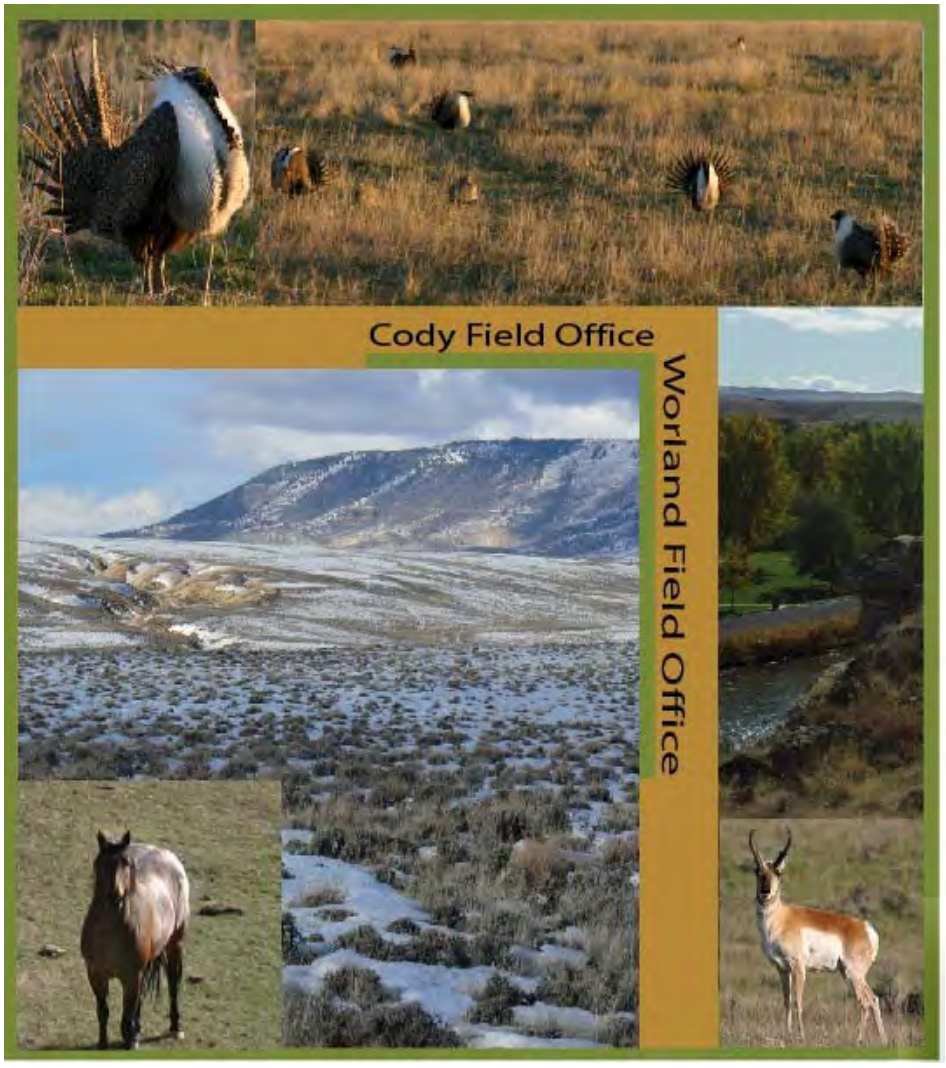
Bighorn Basin Resource Management Plan Revision Project

Proposed Resource Management Plan and Final Environmental Impact Statement



Volume 1 of 4
Chapters 1 - 3

May 2015

BLM

Wyoming - Cody & Worland Field Offices

The BLM's multiple-use mission is to sustain the health and productivity of 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.

BLM/WY/PL-15/013+1610
Volume 1 of 4

Bighorn Basin Resource Management Plan Revision Project

Proposed Resource Management Plan and Final Environmental Impact Statement

Volume 1 of 4
Chapters 1 – 3

U.S. Department of the Interior
Bureau of Land Management
Cody Field Office, Wyoming

and

U.S. Department of the Interior
Bureau of Land Management
Worland Field Office, Wyoming

May 2015

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Wind River Bighorn Basin District Office
101 South 23rd Street
Worland, WY 82401

TAKE PRIDE IN AMERICA

In reply refer to:
1610 (WY930)

Dear Reader:

Enclosed is the Proposed Resource Management Plan (PRMP) and Final Environmental Impact Statement (FEIS) for the Cody Field Office and Worland Field Office (Planning Area). The Bureau of Land Management (BLM) prepared the PRMP/FEIS in consultation with cooperating agencies, taking into account public comments received during this planning effort. The PRMP provides a framework for the future management direction and appropriate use of the Planning Area, located in Big Horn, Hot Springs, Park and Washakie Counties, Wyoming. The document contains land use planning decisions to guide the BLM's management of the Cody and Worland Field Offices.

This PRMP/FEIS is one of fifteen sub-regional planning efforts being conducted as part of the BLM's National Greater Sage-Grouse Planning Strategy. The PRMP identifies conservation measures to conserve, enhance and/or restore Greater Sage-Grouse (GRSG) habitat in response to the US 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. RMP conservation measures were identified as the BLM's principal regulatory mechanism.

This PRMP and FEIS have been developed in accordance with the National Environmental Policy Act of 1969, as amended, and the Federal Land Policy and Management Act of 1976, as amended. The PRMP is largely based on Alternative D, the preferred alternative in the Draft Resource Management Plan/Environmental Impact Statement (DRMP/DEIS), which was released on April 22, 2011 and the Supplement to the Draft RMP and Draft EIS, released on July 12, 2013. The PRMP/FEIS contains the Proposed Plan which integrates content from the DRMP/DEIS and Supplement, a summary of changes made between the DRMP/DEIS, Supplement and PRMP/FEIS, impacts of the Proposed Plan, a summary of the written and verbal comments received during the public review period for the DRMP/DEIS and Supplement, and responses to the comments.

Pursuant to BLM's planning regulations at 43 CFR 1610.5-2, any person who participated in the planning process for this PRMP and has an interest which 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:
Director (210)
Attn: Protest Coordinator
P.O. Box 71383
Washington, D.C. 20024-1383

Overnight Delivery:
Director (210)
Attn: Protest Coordinator
20 M Street SE, Room 2134LM
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 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 protests, the BLM will issue an Approved RMP and Record of Decision (ROD). The Approved RMP 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 http://www.blm.gov/wy/st/en/programs/Planning/rmps/bighorn.html.

Unlike land use planning decisions, implementation decisions included in this PRMP/FEIS are not subject to protest under the BLM planning regulations, but are subject to an administrative review process, through appeals to the Office of Hearings and Appeals (OHA), Interior Board of Land Appeals (IBLA) pursuant to 43 CFR, Part 4 Subpart E. Implementation decisions generally constitute the BLM's final approval allowing on-the-ground actions to proceed. Where implementation decisions are made as part of the land use planning process, they are still subject to the appeals process or other administrative review as prescribed by specific resource program regulations once the BLM resolves the protests to land use planning decisions and issues an Approved RMP and ROD. The Approved RMP and ROD will therefore identify the implementation decisions made in the plan that may be appealed to the Office of Hearing and Appeals.

Sincerely,

Mary Jo Rugwell
Acting State Director

Attachment 1

Protest Regulations

[CITE: 43CFR1610.5-2]

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 which 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 which 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.

(b) The decision shall be in writing and shall set forth the reasons for the decision. The decision shall be sent to the protesting party by certified mail, return receipt requested. The decision of the Director shall be the final decision of the Department of the Interior.

Bighorn Basin Resource Management Plan Revision Project

Proposed Resource Management Plan and Final Environmental Impact Statement

Lead Agency: U.S. Department of the Interior, Bureau of Land Management

Type of Action: Administrative (Final)

Jurisdiction: Portions of Big Horn, Hot Springs, Park, and Washakie counties, Wyoming

Abstract: This Proposed Resource Management Plan (RMP) and Final Environmental Impact Statement (EIS) describes and analyzes alternatives for the planning and management of public lands and resources the Bureau of Land Management (BLM) administers in the Bighorn Basin in northwestern Wyoming. The Draft RMP and Draft EIS were released for public review and comment in April 2011 (76 Federal Register [FR] 22721, April 22, 2011). In July 2012, the BLM Rocky Mountain Regional Interdisciplinary Team identified the need to prepare a Supplement to the Bighorn Basin Draft RMP and Draft EIS (the Supplement) to consider incorporation of proposed management actions in designated greater sage-grouse Key Habitat Areas and Priority Habitat Management Areas (PHMAs), and to thoroughly consider the conservation measures identified in the Greater Sage-grouse National Technical Team (NTT) Report on National Greater Sage-Grouse Conservation Measures (Sage-grouse NTT 2011), as referenced in BLM IM No 2012-044 (BLM National Greater Sage-Grouse Land Use Planning Strategy). The Supplement described and analyzed two additional alternatives (E and F) to address these issues.

The Proposed RMP and Final EIS integrate content from the Draft RMP and Draft EIS and the Supplement for the BLM Cody Field Office and BLM Worland Field Office (the Planning Area). The Planning Area is located in north-central Wyoming, and comprises approximately 5.6 million acres of land in Big Horn, Hot Springs, Park, and Washakie counties. Within the Planning Area, the BLM administers approximately 3.2 million acres of surface land and 4.2 million acres of federal mineral estate. The BLM is revising the three existing plans (the Cody, Washakie, and Grass Greek RMPs) under which the BLM Cody and Worland Field Offices operate to address the availability of new data and policies, emerging issues, and changing circumstances that have occurred during the approximately 20 years since the Records of Decision for the three existing plans were signed.

The Draft RMP and Draft EIS analyzed alternatives A through D, representing complete land use plans for managing the Planning Area. The Supplement analyzed management under Alternative E, which is the same as Alternative B, except it designates Key Habitat Areas for greater sage-grouse as the Greater Sage-Grouse Key Habitat Areas ACEC (Area of Critical Environmental Concern); and management under Alternative F, which is the same as under Alternative D, except it designates PHMAs for greater sage-grouse as the Greater Sage-Grouse PHMAs ACEC. The BLM analyzed ACEC designations for greater sage-grouse priority habitat because this resource was found to meet the relevance and importance criteria that require its consideration as an ACEC.

After careful consideration of both public and internal comments received on the Draft RMP and Draft EIS and Supplement, adjustments and clarifications have been made to the document, including Alternative D. As modified, Alternative D is now presented as the Proposed RMP in the Final EIS.

Protests: Protests must be postmarked or received no later than 30 days after publication of the U.S. Environmental Protection Agency Notice of Availability in the *Federal Register*.

Refer to the instructions in the letter preceding this abstract for additional information on how to protest. The close of the protest period will be announced in news releases, newsletters, and on the project website at http://www.blm.gov/wy/st/en/programs/Planning/rmps/bighorn.html.

For further information, contact:

Bighorn Basin RMP Revision Project
BLM Worland Field Office
P.O. Box 119
101 South 23rd Street
Worland, Wyoming 82401

Telephone: (307) 347-5100
Email: BBRMP_WYMail@blm.gov

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ACRONYMS AND ABBREVIATIONS

<	Less than
>	Greater than
°C	Degrees Celsius
°F	Degrees Fahrenheit
µg/m^3	Micrograms per cubic meter
ACEC	Area of Critical Environmental Concern
AML	Abandoned mine lands
AMP	Allotment management plan
AMS	Analysis of the Management Situation
amsl	Above mean sea level
APD	Application for Permit to Drill
APHIS	Animal and Plant Health Inspection Service
AQRV	Air quality related values
ARMS	Agricultural Resource Management Survey
AUM	Animal unit month
BACT	Best available control technology
bbls	Barrels
BBM	Benefits-based management
bcf	Billion cubic feet
BEA	United States Bureau of Economic Analysis
BLM	Bureau of Land Management
BMP	Best management practice
BOR	Bureau of Reclamation
C&MU	Classification and Multiple Use
CAMx	Comprehensive Air Quality Model
CAMx	Comprehensive Air Quality Model with extensions
CASTNet	Clean Air Status and Trends Network
CBNG	Coalbed natural gas
CEA	Cumulative effects analysis
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	Methane
CIAA	Cumulative Impact Assessment Area
CMAQ	Community Multiscale Air Quality
CO	Carbon monoxide
CO_2	Carbon dioxide
COA	Conditions of Approval
COT	Conservation Objectives Team
CPW	Colorado Parks and Wildlife
CREG	Consensus Revenue Estimating Group
CSU	Controlled surface use
CTTM	Comprehensive Travel and Transportation Management
CYFO	Bureau of Land Management Cody Field Office
dbh	Diameter at breast height
DDCT	Density and Disturbance Calculation Tool
DEQ	Department of Environmental Quality
DFC	Desired future condition
DLE	Desert Land Entry
DOI	United States Department of the Interior
DPC	Desired plant community
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act
ESD	Ecological Site Descriptions
FCRPA	Federal Cave Resources Protection Act
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FLPMA	Federal Land Policy and Management Act
FMP	Fire Management Plan
FMU	Fire Management Unit
FR	Federal Register
FRCC	Fire Regime Condition Class
GHG	Greenhouse gas
GHMA	General Habitat Management Areas
GIS	Geographic Information System
GRSG	Greater sage-grouse
H_2S	Hydrogen sulfide
H_2SO_4	Sulfuric acid
ha	Hectare
HAP	Hazardous Air Pollutant
HMA	Herd Management Area
HMP	Habitat Management Plan
HNO_3	Nitric acid
HUC	Hydrologic unit code

ID	Interdisciplinary
IM	Instruction Memorandum
IMP	Interim Management Policy
IMPLAN	Impact Analysis for Planning model
IMPROVE	Interagency Monitoring of Protected Visual Environments
IPCC	Intergovernmental Panel on Climate Change
kg	Kilogram
kV	Kilovolt
LAC	Limits of Acceptable Change
LAU	Lynx analysis unit
LOC	Level of Concern
LRP	Limited Reclamation Potential
LUP	Land Use Plan
LUPA	Land Use Plan Amendment
LWCF	Land and Water Conservation Fund Act
mbf	Thousand board feet
MCD	Meeteetse Conservation District
MFWP	Montana Department of Fish, Wildlife, and Parks
MLP	Master Leasing Plan
MLRA	Major Land Resource Area
MOU	Memorandum of Understanding
MYA	Million years ago
MZ	Management zone
N_2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NADP	National Atmospheric Deposition Program
NASS	National Agricultural Statistics Service
NEPA	National Environmental Policy Act
NH_4	Ammonium
NHPA	National Historic Preservation Act
NHT	National Historic Trail
NO	Nitric oxide
NO_2	Nitrogen dioxide
NO_3	Nitrate
NOA	Notice of Availability
NOC	National Operations Center
NOI	Notice of Intent
NO_x	Nitrogen oxides
NRCS	Natural Resources Conservation Service
NREL	National Renewable Energy Laboratory
NRHP	National Register of Historic Places
NSO	No surface occupancy
NTT	National Technical Team
NWSRS	National Wild and Scenic River System
O_3	Ozone
OHV	Off-highway vehicle
ORV	Outstandingly remarkable value
PAC	Priority Areas for Conservation
PARC	Partners in Amphibian and Reptile Conservation
Pb	Lead
PETM	Paleocene-Eocene Thermal Maximum
PFC	Proper Functioning Condition
PFYC	Potential Fossil Yield Classification
PHMA	Priority Habitat Management Areas
PM	Particulate matter
PNC	Potential Natural Community
ppb	Parts per billion
ppm	Parts per million
PRPA	Paleontological Resources Protection Act
PSD	Prevention of Significant Deterioration
R&PP	Recreation and Public Purposes
RAAT	Reduced Agent Area Treatment
RAMP	Recreation Area Management Plan
RAMS	Risk Assessment Mitigation Strategy
RAS	Rangeland Administration System
RFD	Reasonable Foreseeable Development
RMA	Recreation Management Area
RMP	Resource Management Plan
RMPA	Resource Management Plan Amendment
RMZ	Recreation Management Zone
ROD	Record of Decision
ROW	Rights-of-Way
RSCC	Recreational setting character condition
RVD	Recreation visitor-day
SCZ	Setting Consideration Zone
SDW	Stock driveway withdrawals
SFA	Sagebrush Focal Areas
SGI	Sage-Grouse Initiative

SHPO	State Historic Preservation Office
SLAMS	State and Local Air Monitoring Station
SLB	State Board of Land
SMA	Special Management Area
SO_2	Sulfur dioxide
SO_4	Sulfate
SPM	Special Purpose Monitoring
SRMA	Special Recreation Management Area
SRP	Special recreation permit
SUA	Special Use Authorization
SVR	Standard visual range
TCP	Traditional cultural property
TLS	Timing limitations
TMDL	Total Maximum Daily Load
TR	Technical Reference
U.S.	United States
U.S.C.	United States Code
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultra Violet
VOC	Volatile Organic Compound
VRI	Visual Resource Inventories
VRM	Visual Resource Management
WAAQS	Wyoming Ambient Air Quality Standards
WAFWA	Western Association of Fish and Wildlife Agencies
WAPA	Western Area Power Administration
WARM	Water and Atmospheric Resource Monitoring
WARMS	Wyoming Air Resource Monitoring System
WEPP	Water Erosion Prediction Project
WFO	Bureau of Land Management Worland Field Office
WGFD	Wyoming Game and Fish Department
WHMA	Wildlife Habitat Management Area
WOGCC	Wyoming Oil and Gas Conservation Commission
WQD	Water Quality Division
WSA	Wilderness Study Area
WSGWG	Wyoming Sage-Grouse Working Group
WSR	Wild and Scenic River
WUI	Wildland Urban Interface
WYCRO	Wyoming Cultural Records Office
WYPDES	Wyoming Pollutant Discharge Elimination System
WYSO	Wyoming State Office

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. This RMP and Environmental Impact Statement (EIS) describes and analyzes alternatives for the future management of public lands and resources the BLM administers within the Bighorn Basin planning area.

The BLM Bighorn Basin Proposed Plan provides a layered management approach that offers the highest level of protection for Greater Sage-Grouse (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).[1] 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 will work in concert to improve and restore GRSG habitat condition and provide consistency in how the BLM will manage activities in GRSG habitat in the planning area.

[1] For the Proposed RMP and Final EIS, GRSG habitat nomenclature has been changed from Core Areas to Priority Habitat Management Areas (PHMA) and Non-Core Sage Grouse Habitat to General Habitat Management Areas (GHMA).

ES.1.1 Rationale and Relationship to the Greater Sage-Grouse Planning Strategy

The Bighorn Basin RMP addresses the March 2010 US Fish and Wildlife Service (USFWS) 12-Month Finding for Petitions to List the GRSG (*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 as conservation measures in land use plans (LUPs).

The Bighorn Basin RMP is one of the 15 RMP revisions and amendments and EISs being prepared by the BLM as part of the National Greater Sage-Grouse Planning Strategy (BLM 2011).[2] 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).

[2] 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.

Figure ES-1

Science-based decision making and collaboration with state and local partners are fundamental to the GRSG Planning Strategy. The 15 GRSG 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 GRSG EISs (USFWS 2013).[3] Where consistent with 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.[4]

[3] USFWS (US Department of the Interior, Fish and Wildlife Service). 2013. Greater Sage-grouse *(Centrocercus urophasianus)* Conservation Objectives: Final Report. USFWS, Denver, CO. February 2013.

[4] 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, United States Geological Survey, and Department of the Interior.

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

The planning area is the geographic area within which the BLM will make decisions during this planning effort. The planning area boundary includes all lands regardless of jurisdiction. The Bighorn Basin RMP planning area covers approximately 5.6 million acres of federal, state, and private lands in four Wyoming counties (Big Horn, Park, Washakie, and Hot Springs). Of the total area, 3.2 million acres are BLM-administered surface lands and 4.2 million acres are federal mineral estate.

While the planning area consists of all lands regardless of ownership, decisions resulting from Bighorn Basin RMP/EIS would apply only to BLM-administered lands, 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.

As part of the National Greater Sage-Grouse Planning Strategy, GRSG habitat on BLM-administered lands in the decision area consists of lands allocated as PHMA and GHMA (**Figure ES-2**, Greater Sage-Grouse Habitat Management Areas – Bighorn Basin RMP/EIS, and **Table ES-1**, Habitat Management Areas in the Bighorn Basin Planning Area). PHMA and GHMA are defined as follows:

- PHMA (1,115,100 acres): BLM-administered 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 Core Area boundaries identified in the Draft RMP/EIS. PHMA was identified in coordination with the State of Wyoming. Areas of PHMA largely coincide with areas identified as Priority Areas for Conservation in the COT report.
- GHMA (2,034,000 acres): BLM-administered lands that require some special management to sustain GRSG populations. GHMA was identified in coordination with the State of Wyoming.

The planning area includes other BLM-administered lands that are not allocated as habitat management areas for GRSG. These lands would be managed as described in **Chapter 2**, Alternatives.

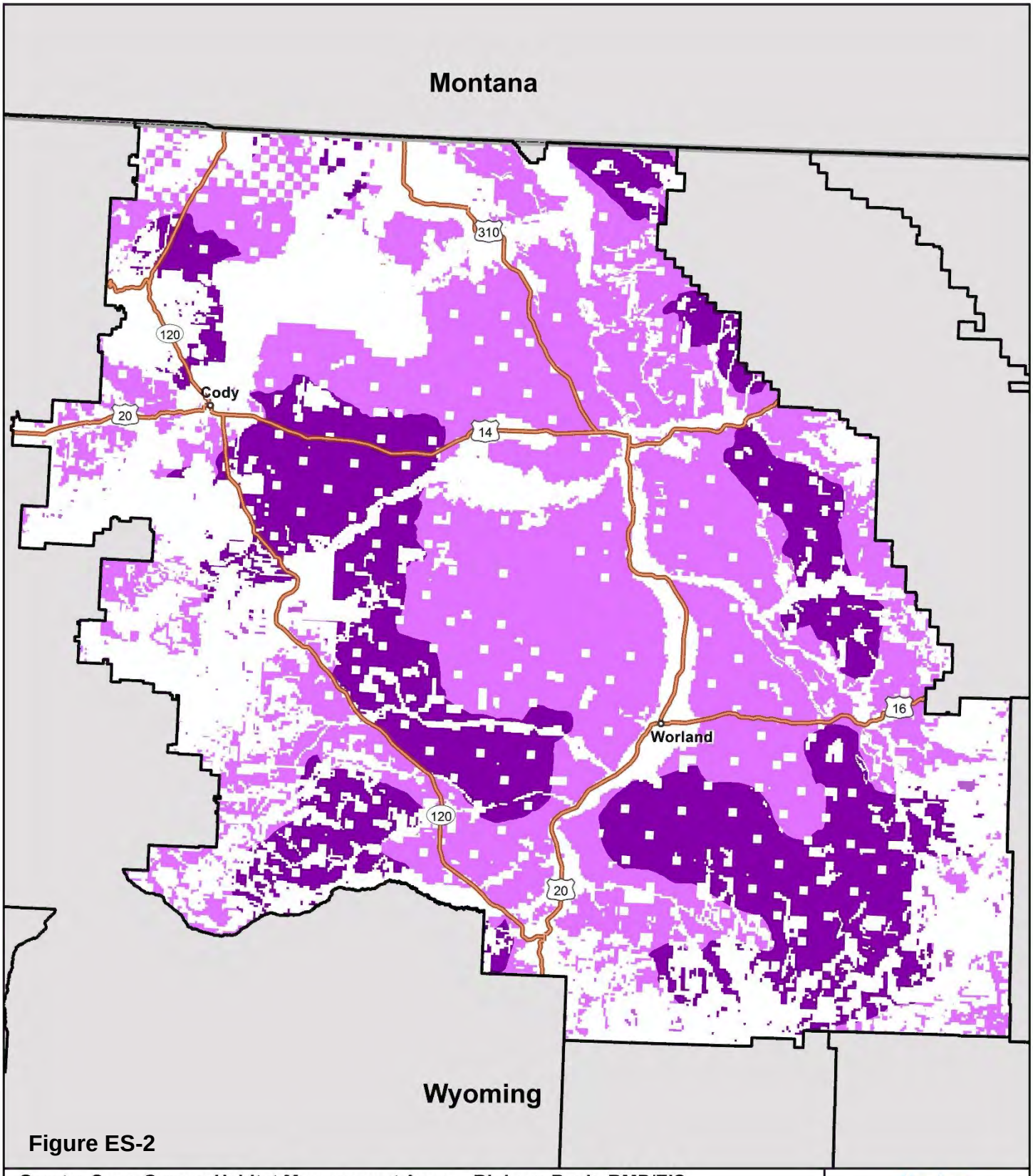

Figure ES-2

Greater Sage-Grouse Habitat Management Areas - Bighorn Basin RMP/EIS

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

N W E S

0 10 20 Miles

Map Area

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.

Table ES-1
Habitat Management Areas in the Bighorn Basin Planning Area

Habitat Management Area	Acres of BLM-administered Lands	Percent of BLM-administered Lands in Planning Area
PHMA	1,115,100	35
GHMA	2,034,000	64
Other BLM-administered lands	38,100	1

ES.2 PURPOSE AND NEED

The BLM currently administers public lands in the planning area according to three plans – the Cody RMP (BLM 1990)[5] for the Cody Field Office (CYFO) and the Washakie RMP (BLM 1988)[6] and Grass Creek RMP (BLM 1998)[7] for the Worland Field Office (WFO). Although these existing plans have been updated since the BLM adopted them, new data have become available, and laws, regulations, and policies regarding management of these public lands have changed. In addition, decisions in the existing plans do not satisfactorily address all new and emerging issues in the planning area. These changes and potential deficiencies created the need to revise the existing plans.

The purpose of this RMP revision project is to ensure that public lands are managed according to the principles of multiple use identified in FLPMA, while maintaining valid existing rights and other obligations already established. The new RMPs will address the changing needs of the planning area and create a management strategy that best achieves a combination of the following planning issues within the framework of the planning criteria.

- Employing a community-based planning approach to seek broadly supported solutions to issues, and collaborate with federal, state, and local cooperating agencies.
- Establishing goals and objectives for managing resources and resource uses in the approximately 3.2 million surface acres and 4.2 million acres of federal mineral estate in the planning area administered by the BLM CYFO and WFO in accordance with the principles of multiple use and sustained yield.
- Identifying land use plan decisions to guide future land management actions and subsequent site-specific implementation decisions.

[5] BLM. 1990. Cody Resource Management Plan. Worland, WY.
[6] BLM. 1988. Washakie Resource Management Plan. Worland, WY.
[7] BLM. 1998. Grass Creek Resource Management Plan. Worland, WY.

- Identifying management actions and allowable uses anticipated to achieve the established goals and objectives and reach desired outcomes.
- Providing comprehensive management direction by making land use decisions for all appropriate resources and resource uses the BLM administers in the planning area.
- Providing for compliance with applicable tribal, federal, and state laws, standards, and implementation plans, and BLM policies and regulations.
- Recognizing the Nation's need for domestic sources of minerals, food, timber, and fiber.
- Retaining flexibility to adapt to new and emerging issues and opportunities and to provide for adjustments to decisions over time based on new information and monitoring.
- Striving to be compatible with the plans and policies of adjacent local, state, tribal, and federal agencies and consistent with federal laws, regulations, and BLM policies; and be flexible enough to adapt to future BLM policy and guidance updates.

This RMP 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 RMPs 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. The proposed action is also intended to provide a consistent framework for managing GRSG and its habitat on BLM-administered land. 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 lands. The Proposed Plan (see **Section ES.6**, Greater Sage-Grouse Habitat Management Proposed Plan and Environmental Effects) represents the agencies' approach for addressing the purpose and need.

ES.4 DEVELOPMENT OF THE RMP/EIS

ES.4.1 Scoping

A Notice of Intent (NOI) published in the Federal Register on October 17, 2008, formally announced the BLM's intent to revise the existing plans and prepare the associated EIS. Publication of the NOI initiated the scoping process and invited affected and interested agencies, organizations, and the general public to participate in determining the scope and issues to be addressed by alternatives and analyses in the EIS. The BLM held six public scoping meetings in Thermopolis, Worland, Greybull, Cody, Powell, and Lovell, Wyoming, between November 5 and 14, 2008. The six scoping meetings provided the public with an opportunity to learn and ask questions about the project and the planning process and to submit their issues and concerns to the BLM. In addition to members of the BLM Interdisciplinary Team, 381 people attended the scoping meetings. The BLM collected comments from the public during the scoping meetings and throughout the scoping period. The final Scoping Summary Report, available online at *http://www.blm.gov/wo/st/en/prog/more/sagegrouse.html*, prepared in conjunction with all the GRSG LUPAs, summarizes the scoping and issue-identification process and describes 13 broad issue categories identified during the scoping process.

ES.4.2 Cooperating Agency Collaboration

The BLM invited local, state, federal, and tribal representatives to participate as cooperating agencies on the Bighorn Basin RMP/EIS. The BLM invited these entities to participate because they have jurisdiction by law or because they could offer special expertise. Big Horn, Hot Springs, Park, and Washakie County Commissions, as well as seven local conservation districts, agreed to participate as cooperating agencies in the RMP revision. The State of Wyoming and the US Department of Agriculture Forest Service accepted cooperating agency status as well. The BLM and cooperating agencies participated in six workshops to formulate alternatives and multiple meetings to keep cooperating agencies informed and to solicit their input. Development of this Proposed RMP and Final EIS considered comments from cooperating agencies on the Draft RMP and Draft EIS and previous administrative drafts.

The BLM also invited Native American tribes to be cooperating agencies as part of the RMP revision and conducted ongoing coordination, including two letters, multiple phone calls, and face-to-face meetings. The BLM held a cooperating agency workshop on January 31, 2013, and sent tribal consultation letters to update cooperators and tribes on the status of the RMP revision process and the need to prepare a Supplement to the Draft RMP and Draft EIS. In addition, the BLM met with tribes in government-to-government consultation throughout the RMP process.

ES.4.3 Development of the Draft RMP/EIS

Development of Management Alternatives

In accordance with NEPA and the CEQ implementing regulations (40 CFR 1500), the planning team considered public input and developed a reasonable range of alternatives for the Draft RMP/EIS.

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

- Address the 16 planning issues
- Fulfill the purpose and need for the RMP
- Meet the multiple-use and sustained-yield mandate of FLPMA
- Respond to USFWS-identified issues and threats to GRSG and its habitat, including specific threats identified in the COT report

Collectively, the three action alternatives (Alternatives B, C, and D) analyzed in the Draft RMP/EIS offered 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 RMP.

Publication of Draft RMP/EIS

Public Comment Period

The Notice of Availability (NOA) for the Bighorn Basin Draft RMP and Draft EIS was published in the Federal Register on April 22, 2011, initiating the 90-day public comment period. At the request of the public and cooperating agencies, the BLM extended the comment period by 45 days, for a total comment period of 135 days. The comment period ended on September 7, 2011. The BLM held six public meetings in Thermopolis, Worland, Greybull, Cody, Powell, and Lovell, Wyoming. Written public comments were reviewed and considered by the BLM.

After release of the Draft RMP/EIS in April 2011, new data, changing circumstances, and emerging issues led the BLM Rocky Mountain Regional Interdisciplinary Team to conclude a Supplement was needed, as listed below. The Proposed RMP and Final EIS integrate content from the Draft RMP/EIS and the Supplement.

- Based on the identified threats to the GRSG and the USFWS timeline for making a listing decision on this species, the BLM announced (August 2011) the National GRSG Planning Strategy Charter. The charter requires the development of new or revised

regulatory mechanisms, through RMPs, to conserve and restore the GRSG and its habitat on BLM-administered lands on a range-wide basis over the long term.

- Three new sources of important data became available: The GRSG NTT Report on National GRSG Conservation Measures; the GRSG Baseline Environmental Report (Manier et al. 2013); and the GRSG Conservation Objectives Team (COT) Final Report.
- In December 2011, a Notice of Availability (NOA) was published in the Federal Register to initiate preparation of EISs and Supplemental EISs to Incorporate GRSG Conservation Measures into Land Use Plans and Land Management Plans in accordance with the BLM National GRSG Planning Strategy.
- In late December 2011, the BLM Washington Office released Instruction Memorandum No. 2012-044, which directed all of the planning efforts across the GRSG range to consider all applicable conservation measures when revising or amending its RMPs in GRSG habitat, including the measures developed by the National Technical Team that were presented in their December 2011 document – A Report on National GRSG Conservation Measures.
- In 2012, the Director of the USFWS asked the COT to produce recommendations regarding the degree to which the threats to GRSG need to be reduced or ameliorated so that the species would no longer be in danger of extinction or likely to become in danger of extinction in the foreseeable future.

Publication of Supplemental Draft RMP/EIS

The BLM published the NOA for a Supplement to the Bighorn Basin Draft RMP/ EIS for public review and comment in the Federal Register on July 12, 2013, initiating the 90-day public comment period. The BLM later extended the comment period for an additional 20 days, ending the comment period on November 1, 2013. During the 110-day comment period, the BLM held six public meetings (in the same locations as meetings on the Draft RMP/ EIS) to discuss the content of the Supplement.

Comment Analysis

During the public comment periods, the BLM received thousands of written comments by mail, email, and submissions at the public meetings. Comments covered a wide spectrum of thoughts, opinions, ideas, and concerns. Upon receipt, the BLM reviewed the comments, grouped similar substantive comments under an appropriate topic heading, and evaluated and crafted summary responses addressing the comment topics. The response indicated whether or not the commenters' points would result in new information or changes being included in the Final RMP/EIS. In many circumstances, public comments prompted such changes to the Draft and Supplemental RMP/EIS.

Appendix A, Comment Analysis, provides a detailed description of the comment analysis methodology and an overview of the public comments received.

ES.5 RMP/EIS ALTERNATIVES AND ENVIRONMENTAL EFFECTS

ES.5.1 Alternative A – No Action

The No Action Alternative represents continuation of current management and provides a baseline from which to identify potential environmental consequences when compared to the action alternatives. The No Action Alternative describes current resource and land management direction as represented in the Cody RMP (BLM 1990) for the CYFO and the Washakie RMP (BLM 1988a) and Grass Creek RMP (BLM 1998a) for the WFO, and associated habitat management plans, maintenance actions, and updates. Current management identifies constraints on mineral leasing in the planning area to protect resource values. Current management includes nine Areas of Critical Environmental Concern (ACECs), one National Back Country Byway, one National Historic Landmark, and one National Historic Trail (NHT). This alternative also includes 20 Wild and Scenic River (WSR) eligible waterways, each with interim protective management, and 10 Wilderness Study Areas (WSAs). The BLM maintains seven Special Recreation Management Areas (SRMAs) under Alternative A and allows livestock grazing on all but 5,008 acres of the planning area.

Current management includes stipulations and seasonal restrictions for surface-disturbing and disruptive activities to protect sensitive wildlife areas, such as occupied GRSG leks and crucial winter range and migration corridors for big game.

ES.5.2 Alternative B

Alternative B is based on the conservation measures developed by the BLM National Technical Team (NTT) planning effort described in Instruction Memorandum (IM) No. WO-2012-044. As directed in the IM, the conservation measures developed by the NTT must be considered and analyzed, as appropriate, through the land use planning and NEPA processes by all BLM state and field offices that contain occupied GRSG habitat. Alternative B emphasizes conservation of physical, biological, heritage, and visual resources, and lands with wilderness characteristics, with constraints on resource uses. Alternative B conserves large areas of land for physical, biological, and heritage resources; designates 17 ACECs; and places a number of restrictions on motorized vehicle use and mineral development. Alternative B retains the current National Back Country Byway, designates two additional back country byways, and applies protective management prescriptions to the Heart Mountain Relocation Center National Historic Landmark, Nez Perce NHT, and other important historic and regional trails. All lands with wilderness characteristics under Alternative B are specifically managed to preserve their wilderness characteristics. Alternative B also applies additional constraints on travel within the 10 WSAs in comparison

to Alternative A. The BLM designates 12 SRMAs under Alternative B and closes 1,984,211 acres to livestock grazing in the planning area. This alternative maintains contiguous blocks of vegetation and habitat on BLM-administered lands.

Alternative B identifies protective measures for GRSG habitat. Restrictions on surface-disturbing and disruptive activities (e.g., oil and gas leasing closures and ROW avoidance areas) in sensitive wildlife habitats are generally more prohibitive under Alternative B than Alternative A, and the size of protective buffers is increased around areas of specific management concern such as occupied GRSG leks.

ES.5.3 Alternative C

Alternative C emphasizes resource uses and reduces constraints on resource uses to protect physical, biological, and heritage and visual resources. Compared to other alternatives, Alternative C conserves the least land area for physical, biological, and heritage resources; designates the fewest ACECs (2) and SRMAs (1); and is the least restrictive to motorized vehicle use and mineral development. The BLM delineates Oil and Gas Management Areas around intensively developed existing fields to be managed primarily for oil and gas exploration and development. Alternative C carries forward the current management of National Back Country Byways and applies similar, but more protective, management to the Heart Mountain Relocation Center National Historic Landmark and Nez Perce NHT than Alternative A. Under this alternative, the BLM manages all 20 WSR eligible waterways as unsuitable for inclusion in the National Wild and Scenic River System and releases these areas to other uses. The BLM manages lands with wilderness characteristics consistent with other resource objectives. Alternative C limits motorized vehicle use to designated roads and trails within the 10 WSAs. The BLM does not maintain contiguous blocks of native plant communities or minimize fragmentation. This alternative exempts Oil and Gas Management Areas and right-of-way (ROW) corridors from discretionary wildlife seasonal stipulations and allows the BLM to manage motorized vehicle use in big game crucial winter range consistent with other resource objectives.

Alternative C identifies protective measures for GRSG habitat. Under Alternative C, the BLM applies the same restrictions (outside of Oil and Gas Management Areas and ROW corridors) on surface-disturbing and disruptive activities for occupied GRSG leks and the same timing restrictions for GRSG winter concentration areas as under Alternative A.

ES.5.4 Alternative D (Proposed Plan)

Alternative D generally increases conservation of physical, biological, and heritage and visual resources compared to current management, including the designation of 1 Special Management Area, 2 Management Areas, and 12 ACECs. Alternative D also emphasizes moderate constraints on resource uses,

while applying specific reclamation and mitigation requirements to reduce impacts to resource values. Alternative D delineates Oil and Gas Management Areas, although smaller in size than Alternative C, to be managed primarily for oil and gas exploration and development. In addition to retaining the current National Back Country Byway, Alternative D would consider the designation of new National Back Country Byways on a case-by-case basis. Alternative D would also provide similar but less protective measures than Alternative B for the Heart Mountain Relocation Center National Historic Landmark, Nez Perce NHT, and other trails. The BLM manages all 20 WSR-eligible waterways as unsuitable for inclusion in the National Wild and Scenic River System. No lands are specifically managed to protect wilderness characteristics under Alternative D. Alternative D limits motorized vehicle use to designated roads and trails within six WSAs and closes four WSAs to motorized vehicle use. Vegetation resources are managed to maintain contiguous blocks of native plant communities. Alternative D exempts Oil and Gas Management Areas from discretionary big game seasonal stipulations, but places additional stipulations on oil and gas-related surface disturbances within the Absaroka Front, Fifteenmile, and Big Horn Front Master Leasing Plan areas.

Alternative D identifies protective measures for GRSG habitat consistent with the State of Wyoming Core Area Strategy. Alternative D generally applies greater restrictions on surface disturbance and disruptive activities to protect sensitive wildlife habitats, including occupied GRSG leks, than Alternative A.

ES.5.5 Alternative E

Management under Alternative E is the same as under Alternative B, except that Alternative E designates GRSG Key Habitat Areas (PHMA) as an ACEC (1,232,583 acres) for the conservation of GRSG priority habitat. Alternative E manages disturbances (e.g., roads, oil and gas wells, and pipelines) in the GRSG Key Habitat Areas ACEC to not exceed 1 disturbance per 640 acres and cover less than 3 percent of the total GRSG habitat. It also requires beneficial reclamation and rehabilitation activities that prioritize reestablishment of native vegetation communities in sagebrush steppe communities.

Due to additional management actions associated with the GRSG Key Habitat Areas ACEC, Alternative E exceeds Alternative B, as well as the other alternatives, in the amount of land conserved for physical, biological, and heritage and visual resources; the number of designated ACECs (18); and restrictions on minerals, ROWs, and renewable energy development.

ES.5.6 Alternative F

Management under Alternative F is the same as under Alternative D, except that Alternative F designates GRSG Core Areas (PHMA) as an ACEC (1,116,698 acres) for the conservation of GRSG priority habitat. Additionally, Alternative F manages nine areas to maintain their wilderness characteristics; the remaining lands with wilderness characteristics under Alternative F would not be

specifically managed to maintain their wilderness characteristics. Management for livestock grazing under Alternative F would be the same as Alternative D, except within the GRSG PHMA ACEC, where additional restrictions on livestock grazing would incorporate GRSG habitat management objectives.

In the GRSG PHMA ACEC, the BLM manages the density of disturbance to not exceed an average of 1 disruptive activity location per 640 acres and cover less than 3 percent of the total GRSG PHMA. Alternative F delineates the same Oil and Gas Management Areas as Alternative D, but applies additional restrictions for the protection of GRSG where these areas overlap the GRSG PHMA ACEC.

ES.6 GREATER SAGE-GROUSE HABITAT MANAGEMENT PROPOSED PLAN AND ENVIRONMENTAL EFFECTS

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

The BLM Proposed Plan addresses threats to GRSG and its habitat identified by the USFWS in the March 2010 listing decision that apply to the Bighorn Basin planning area as well as threats described in the COT report. The Proposed Plan seeks to provide greater regulatory certainty for management actions intended to conserve the GRSG (**Table ES-2**, Key Components of the Bighorn Basin 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 evaluate the degree to which land use planning decisions proposed in this RMP/EIS address threats to GRSG and its habitat.

The Proposed Plan would maintain and enhance GRSG populations and habitat. The Proposed Plan benefits GRSG populations by eliminating disturbance near leks and other key areas.

The Proposed Plan establishes conditions, subject to valid existing rights, for new anthropogenic activities to ensure a net conservation gain to GRSG in PHMA. 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 provides a framework for prioritizing areas in PHMA for wildfire, invasive annual grass, and conifer treatments, which will maintain and enhance GRSG habitat.

The Proposed Plan is built upon the foundation for GRSG management established by and complementary to the Governor's Executive Order 2011-05, Greater Sage Grouse Core Area Protection (Core Area Strategy) (Wyoming

Office of the Governor 2011) by establishing similar conservation measures and focusing restoration efforts in the same key areas most valuable to GRSG.

For a full description of the Proposed Plan, see **Chapter 2**.

Table ES-2
Key Components of the Bighorn Basin Proposed Plan Addressing COT Report Threats

Threats to GRSG and its Habitat (from COT Report)	Key Component of the Bighorn Basin Proposed Plan
All Threats	• Implement the Adaptive Management Plan, which provides regulatory assurance that unintended negative impacts to GRSG habitat will be addressed before consequences become severe or irreversible. • PHMA: 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 Required Design Features (RDFs) when authorizing actions in GRSG habitat. • Prioritize the leasing and development of fluid mineral resources outside GRSG habitat.
All development threats, including mining, infrastructure, and energy development	• PHMA: Implement an anthropogenic disturbance cap of 5% at the project-area scale. • PHMA: Implement a density cap of an average of 1 energy and mining facility per 640 acres. • PHMA: Surface occupancy and surface-disturbing activities would be prohibited on or within a 0.6-mile radius of the perimeter of occupied GRSG leks. • GHMA: Surface occupancy and surface-disturbing activities would be prohibited on or within a 0.25-mile radius of the perimeter of occupied GRSG leks.
Energy Development—Fluid Minerals	• PHMA: Open to fluid mineral leasing subject to No Surface Occupancy (NSO) stipulation within 0.6 miles of an occupied lek, and Timing Limitation (TL) stipulation from March 15 to June 30. • GHMA: Open to fluid mineral leasing subject to NSO within 0.25 miles of an occupied lek and TL stipulations.
Energy Development—Wind Energy	• PHMA: Avoidance area (may be available for wind energy development with special stipulations)
Infrastructure – major Rights-of-Way (ROW)	• PHMA: Avoidance area (may be available for major ROWs with special stipulations)
Infrastructure – minor ROWs	• PHMA: Avoidance area (may be available for minor ROWs with special stipulations)
Mining—locatable minerals	• Apply RDFs to locatable minerals consistent with applicable law.

Table ES-2
Key Components of the Bighorn Basin Proposed Plan Addressing COT Report Threats

Threats to GRSG and its Habitat (from COT Report)	Key Component of the Bighorn Basin Proposed Plan
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 PHMA. • 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. • Prioritize field checks in PHMA to ensure compliance with the terms and conditions of grazing permits.
Free-Roaming Equid Management	• Update Herd Management Area plans to include GRSG objectives.
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.
Recreation	• PHMA: Do not construct new recreation facilities.
Fire	• PHMA: Prioritize suppression immediately after life and property to conserve the habitat. • GHMA: Prioritize suppression where wildfires threaten PHMA.
Nonnative, Invasive Plants Species	• Improve GRSG habitat by treating annual grasses. • Treat sites in PHMA and GHMA that contain invasive species infestations through an integrated pest 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 Ex-Urban Development	• Retain the majority of PHMA in federal management.

ES.7 SUMMARY

Since the release of the Draft and Supplemental Bighorn Basin RMPs/EISs, the BLM has 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 has 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 spanning 11 western states. The Bighorn Basin RMP/EIS achieves the consistent, range-wide conservation objectives as outlined below. Additionally, the Bighorn Basin RMP/EIS aligns with the State of Wyoming's priorities and land management approaches consistent with GRSG conservation.

Minimize additional surface disturbance. The most effective way to conserve the GRSG is to protect existing, intact habitat. The BLM aims to reduce habitat fragmentation and protect key habitat areas. The Bighorn Basin RMP/EIS minimizes surface disturbance on over 3 million acres of BLM-administered lands by allocating lands as PHMA 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 oil and gas 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.

The BLM also updated the Proposed Plan to reflect new GRSG state conservation strategies, including recent State Executive Orders. The objectives of these documents are consistent with the State of Wyoming's Core Area Strategy, which is designed to protect GRSG and its habitat within core areas using a suite of tools and mechanisms that work in concert to conserve GRSG by reducing habitat loss and fragmentation through lek buffers, disturbance limits, excluding activities, and a sophisticated mapping utility to monitor the amount and density of disturbance.

Improve habitat condition. While restoring lost 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 Bighorn Basin RMP/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. For mitigation, the BLM would coordinate with the Wyoming Sage Grouse Implementation Team for application of the "avoid, minimize, compensate" process to ensure anthropogenic activities result in a net conservation gain for GRSG habitat. The Proposed Plan also includes a process for monitoring and adapting to changing

conditions on the landscape. Using monitoring data for population and sagebrush canopy cover, the adaptive management strategy would apply more restrictive management where there is a consistent downward trend. The cause of the downward trend (e.g., anthropogenic disturbance, fire, disease, etc.) would be identified through monitoring data.

Reduce threat of rangeland fire to GRSG and sagebrush habitat. Rangeland fire can destroy sagebrush habitat and lead to the conversion of previously healthy habitat into landscapes dominated by invasive species. The Bighorn Basin RMP/EIS incorporates Secretarial Order 3336 and sets forth protocols to improve the BLM's ability to protect GRSG habitat from damaging wildfire. Prescribed fire would only be used to improve or maintain habitat for GRSG and to meet specific fuels objective standards.

READER'S GUIDE TO THIS DOCUMENT

Note to the Reader: Gray shaded text throughout this Proposed Resource Management Plan (RMP) and Final Environmental Impact Statement (EIS) indicate changes that were made between the Draft and Final versions of the RMP and EIS. These changes do not constitute modifications to the document that would require an additional supplement.

Volume 1

Chapter 1. Purpose and Need for Action. This chapter introduces the Proposed RMP and Final EIS, describes the purpose and need to which the BLM is responding, provides an overview of the BLM planning process, and identifies planning issues and criteria and topics not addressed by this RMP revision.

Chapter 2. Resource Management Alternatives. Chapter 2 describes how the six alternatives (A, B, C, E, F, and D – the Proposed Plan) were developed, the components and content of each alternative, and discusses the alternatives considered but eliminated from further consideration. It also presents a comparative summary of impacts of each alternative. Resource discussions in chapters 2, 3, and 4 are organized according to the following eight resource topics:

1000 Physical Resources – Air Quality, Geologic Resources, Soil, Water, and Cave and Karst

2000 Mineral Resources – Locatable, Leasable, and Salable Minerals

3000 Fire and Fuels Management – Wildfires (Unplanned Ignitions), Prescribed Fires (Planned Ignitions), and Stabilization and Rehabilitation

4000 Biological Resources – Vegetation, Fish and Wildlife, Special Status Species, and Wild Horses

5000 Heritage and Visual Resources – Cultural, Paleontological, and Visual

6000 Land Resources – Lands and Realty, Renewable Energy, Rights-of-Way and Corridors, Comprehensive Travel and Transportation Management, Recreation, Lands with Wilderness Characteristics, and Livestock Grazing Management

7000 Special Designations – Areas of Critical Environmental Concern, National Back Country Byways, National Historic Landmarks, National Historic Trails and Other Historic Trails, Wild and Scenic Rivers, and Wilderness Study Areas

8000 Socioeconomic Resources – Social and Economic Conditions, Health and Safety, Environmental Justice, and Tribal Treaty Rights

Chapter 3. Affected Environment. This chapter describes the Planning Area and the existing environmental conditions that could be impacted by the alternatives.

READER'S GUIDE

Volume 1

Chapter 1 *Purpose and Need for Action*

Chapter 2 *Resource Management Alternatives*

Chapter 3 *Affected Environment*

Volume 2

Chapter 4 *Environmental Consequences*

Volume 3

Chapter 5 *Public Involvement and List of Preparers*

Chapter 6 *References*

Chapter 7 *Cumulative Impacts (Greater Sage-Grouse)*

Glossary

Maps

Volume 4

Appendices

Volume 2

Chapter 4. Environmental Consequences. Chapter 4 forms the scientific and analytic basis for comparing environmental impacts of each alternative, including the No Action Alternative and the Proposed Plan. Impacts generally are described in terms of direct or indirect and short-term or long-term, when applicable. Potential cumulative and unavoidable impacts and irreversible and irretrievable commitments also are discussed in this chapter.

Volume 3

Chapter 5. Public Involvement and List of Preparers. Chapter 5 summarizes the public involvement process and consultation and coordination with other local, state, and federal agencies, as well as Tribes. Chapter 5 also presents the names and qualifications of the people responsible for preparing this Proposed RMP and Final EIS.

Chapter 6. References. This chapter provides full citation information for all references cited within the document.

Chapter 7. Cumulative Impacts (Greater Sage-Grouse). Chapter 7 provides a quantitative cumulative effects analysis that discloses the long-term effects on greater sage-grouse from implementing each alternative in conjunction with other past, present, and reasonably foreseeable future actions.

Glossary. The glossary defines select terms used throughout this document.

Maps. Maps depict the alternatives by resource. For CD versions of the document, maps are provided as separate files on the CD. Electronic copies of the maps are also available on the project website (www.blm.gov/wy/st/en/programs/Planning/rmps/bighorn.html).

Volume 4

Appendices. The appendices include documents that support existing resource conditions or situations, substantiate analyses, provide resource management guidance, explain processes, or provide information directly relevant or supporting conclusions in the Proposed RMP and Final EIS. In hardcopy documents, the appendices can be found on a compact disk (CD) attached to the inside back cover of Volume 3. The 26 appendices include the following:

- Appendix A, Comment Analysis
- Appendix B, Laws, Regulations, Policies, and Guidance
- Appendix C, Monitoring and Evaluation
- Appendix D, Implementation
- Appendix E, Consultation Letters and Cooperating Agency Position Statements
- Appendix F, Special Designations: Wild and Scenic Rivers and Areas of Critical Environmental Concern
- Appendix G, Lease Stipulations including Exception, Modification, and Waiver Criteria
- Appendix H, Wyoming Bureau of Land Management Mitigation Guidelines for Surface-Disturbing and Disruptive Activities
- Appendix I, Standard Oil and Gas Stipulations
- Appendix J, Bighorn Basin Air Resource Management Plan

- Appendix K, Biological Resources
- Appendix L, Required Design Features and Best Management Practices
- Appendix M, Land Disposal and Acquisition
- Appendix N, Wyoming Standards for Healthy Rangelands
- Appendix O, Recreation Management
- Appendix P, Livestock Grazing
- Appendix Q, Economic Impact Analysis Methodology
- Appendix R, Comprehensive Travel and Transportation Management
- Appendix S, Lands with Wilderness Characteristics
- Appendix T, Surface Disturbance and Reasonable Foreseeable Actions
- Appendix U, Technical Support Document for Air Quality
- Appendix V, Water Erosion Prediction Project (WEPP) Technical Support Document
- Appendix W, Utilization Levels in the Planning Area
- Appendix X, Visual Resource Inventory
- Appendix Y, Greater Sage-Grouse Implementation Strategy
- Appendix Z, Federal Oil and Gas Operations on Split-Estate Lands

Geographic Information Systems (GIS)

Maps and data generated through the use of GIS software are intended to provide generalized representations of land use planning resources and decisions. Although every reasonable effort is made to ensure the accuracy and completeness of the data, they should not be construed or used as a "legal description" that meets engineering or surveying standards and, therefore, are not suitable for site-specific decision making. The BLM does not assume any liability for any errors, omissions, or inaccuracies in the information provided, regardless of the cause of such or for any decision made, action taken, or action not taken by the user in reliance upon any data provided herein.

Various errors that may be present in the data include, but are not limited to, inaccurate feature or boundary locations, incorrect overlays between one or more layers, missing or incorrect attribute information, outdated information, and distortions associated with map projections. For these reasons, the total acreage for a given area, as presented in the document, may not equal the sum of its constituent parts. These errors are not anticipated to affect the suitability of the data for characterizing existing conditions in the Planning Area, or performing comparative analysis of the alternatives at the intended scale.

Executive Summary and Chapter 7

Please note that preparation of the Executive Summary and Chapter 7 – Cumulative Impacts (Greater Sage-Grouse), was closely coordinated among the various BLM RMP revision and amendment processes taking place across the west to ensure that the National Greater Sage-grouse Planning Strategy was consistently applied. These sections were prepared largely independently from the remainder of this document. As a result, information presented in the Executive Summary and Chapter 7, including GIS-calculated acreages, may differ slightly than those presented elsewhere in the document. These differences are likely to be minor and do not alter the conclusions of the impact analysis.

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CHAPTER 1 – PURPOSE AND NEED FOR ACTION

1.1 Introduction and Background

This Proposed Resource Management Plan (RMP) and Final Environmental Impact Statement (EIS) describes and analyzes alternatives for the future management of public lands and resources the Bureau of Land Management (BLM) administers in the Bighorn Basin in northwestern Wyoming (Figure 1-1). The Bighorn Basin RMP Revision Project is a combined effort to revise RMPs for the BLM Cody Field Office (CYFO) and BLM Worland Field Office (WFO). This document refers to the combined CYFO and WFO planning areas as the Planning Area (Figure 1-1).

The BLM administers public lands in the Planning Area according to three plans – the Cody RMP (BLM 1990) for the CYFO and the Washakie RMP (BLM 1988a) and Grass Creek RMP (BLM 1998a) for the WFO. The existing plans have been updated and amended since the BLM adopted them. While the BLM is preparing one EIS to address the impacts of revising the three existing plans, each field office will issue a Record of Decision (ROD) and RMP for its jurisdictional area at the end of the planning process. When complete, the Bighorn Basin RMP Revision Project will replace existing RMPs with one Approved RMP and ROD for the CYFO and one Approved RMP and ROD for the WFO. The Bighorn Basin RMP Revision Project is scheduled for completion by July 2015.

The Planning Area covers approximately 5.6 million acres of federal, state, and private lands in four Wyoming counties (Big Horn, Park, Washakie, and Hot Springs). Of the total area, 3.2 million acres are BLM-administered surface lands and 4.2 million acres are federal mineral estate. The CYFO extends west beyond the Bighorn Basin. However, generally, the United States Department of Agriculture (USDA) Forest Service and the National Park Service manage those lands and leasing decisions are deferred to the surface management agency; therefore, this RMP and EIS does not consider them. The BLM Memorandum of Understanding WO-300-2006-07 describes BLMs role in leasing decisions on National Forest Service lands (BLM 2006a).

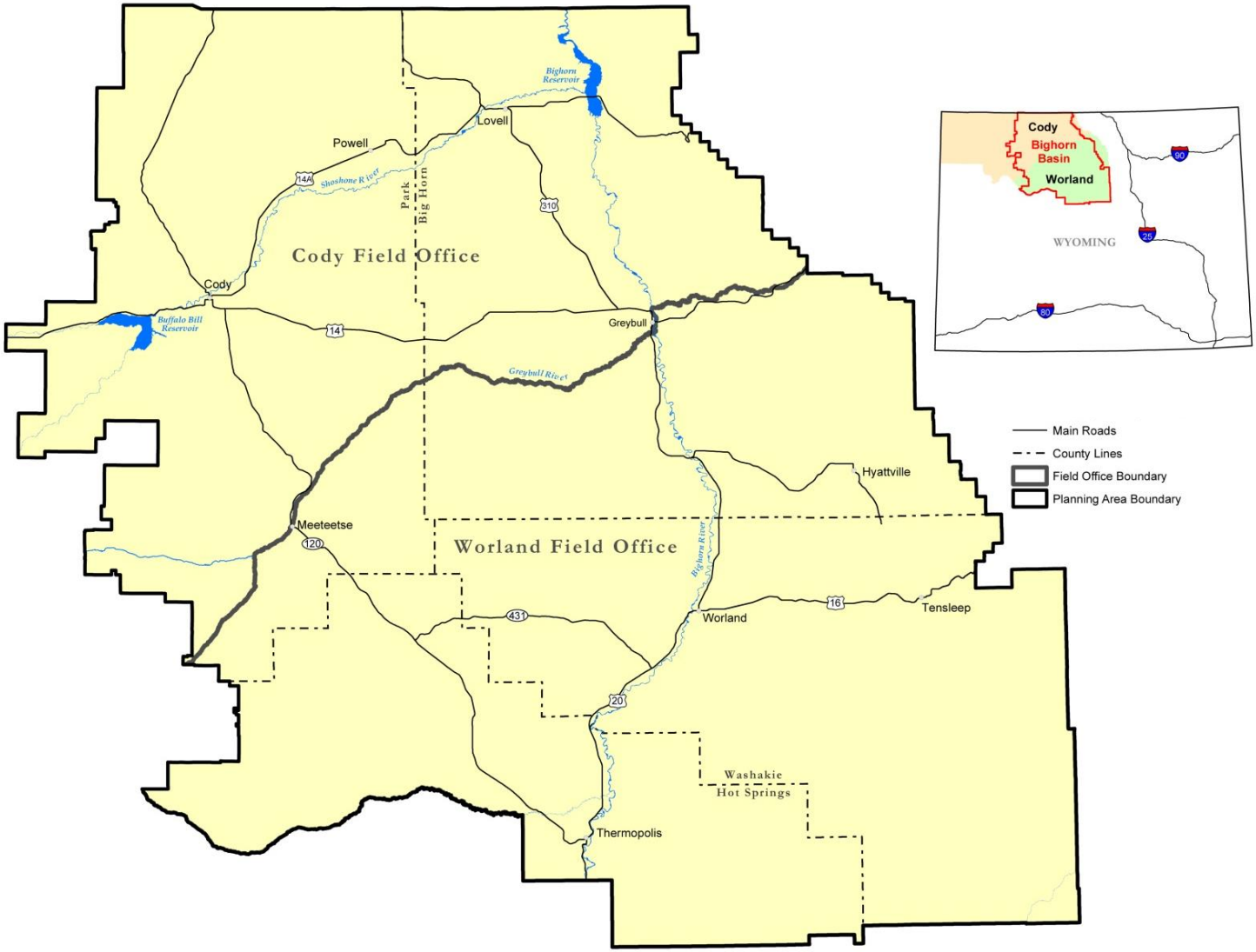
1.1.1 Historical Overview

The foundation for the BLM dates back to the Land Ordinance of 1785, which established the public domain and led to the creation of the General Land Office. In 1946, the United States (U.S.) Grazing Service merged with the General Land Office to form the BLM. Since the passage of the Federal Land Policy and Management Act of 1976 (FLPMA), the BLM has administered public lands according to the principles of multiple use and sustained yield, and to balance increasing and competing demands for resources on public lands.

1.1.1.1 Land Ownership in the Planning Area

As defined in the FLPMA, "… public lands means any land and interest in land owned by the United States within the several States and administered by the Secretary of the Interior through the Bureau of Land Management…." The U.S. Department of the Interior (DOI) BLM CYFO and WFO are responsible for managing most public lands in Wyoming's Big Horn, Park, Washakie, and Hot Springs Counties. County governments are responsible for land use planning for private lands in their jurisdictions.

Figure 1-1. Bighorn Basin Planning Area



BLM-administered surface lands in the Planning Area are mostly large blocks, with some scattered tracts intermingled with state and private lands (see Map 1). There are also areas in which different parties own surface rights and subsurface rights (such as rights to develop minerals) for a given piece of land, including federal minerals under privately owned surface, referred to as split-estate land.

These areas with scattered surface land patterns and varied mineral ownerships affect management options. Intermingled private lands also affect access to BLM-administered lands. Tables 1-1 and 1-2 summarize the surface and mineral ownership and administrative relationships in the Planning Area. The Approved RMP will not include planning and management decisions for private, State of Wyoming, or local government-owned lands or minerals (see Map 2).

Table 1-1. Surface Acreage in Each County of the Planning Area by Jurisdiction

Agency	Big Horn County	Hot Springs County	Park County	Washakie County	Totals
Bureau of Land Management	1,157,920	500,631	624,870	903,846	3,187,267
Bureau of Indian Affairs	0	76	0	0	**76**
Bureau of Reclamation	20,369	0	64,277	1,547	**86,193**
Department of Defense	3,543	0	0	0	**3,543**
U.S. Forest Service	86	40	15	18	**159**
National Park Service	15,645	0	0	0	**15,645**
State of Wyoming	74,944	85,754	157,193	100,768	**418,659**
Private	389,742	396,074	765,570	368,270	**1,919,656**
Water	2,548	1,974	6,721	1,400	**12,643**
Totals	**1,664,796**	**984,429**	**1,618,644**	**1,375,849**	**5,644,868**

Source: BLM 2013a

Table 1-2. Acreage of Subsurface Mineral Ownership in Each County of the Planning Area by Jurisdiction

Agency	Big Horn County	Hot Springs County	Park County	Washakie County	Totals
Bureau of Land Management	1,288,238	741,151	1,049,904	1,123,281	**4,203,213**
Other (state, federal, and private)	376,558	243,278	568,739	252,569	**1,441,655**
Totals	**1,664,796**	**984,429**	**1,618,644**	**1,375,849**	**5,644,868**

Source: BLM 2013a

1.2 Purpose and Need for the Resource Management Plan Revision

Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] 1502.13) require the purpose and need of an EIS to "briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." The purpose and need section of this EIS provides a context and framework for establishing and evaluating the reasonable range of alternatives described in Chapter 2.

1.2.1 Need to Revise Existing Plans

The BLM identified the need, or requirement, to revise the existing plans through formal evaluations, considering the Analysis of the Management Situation (AMS) (BLM 2009a), examining issues identified during the public involvement process known as scoping, and collaborating with cooperating local, state, and federal agencies. Since the RODs for the existing plans were issued, new data have become available, and laws, regulations, and policies regarding management of these public lands have changed. In addition, decisions in existing plans do not satisfactorily address all new and emerging issues in the Planning Area. These changes and potential deficiencies created the need to revise the existing plans.

New Data

Monitoring, the availability of new information, and advances in science and technology provide new data to consider in the Bighorn Basin RMP Revision Project. The following documents and sources provide new data:

- Assessing the Potential for Renewable Energy on Public Lands (BLM and DOE 2003);
- Bighorn Basin Resource Management Plan Revision Project Summary of the Analysis of the Management Situation (BLM 2009a);
- BLM Wyoming Statewide Biological Assessments for Species Regulated by the Endangered Species Act (ESA) (published between 2004 and 2005);
- Cultural Class I Regional Overview (BLM 2009b);
- Energy Policy and Conservation Act of 2000 Scientific Inventory of Onshore Federal Lands Oil and Gas Resources and Reserves and the Extent and Nature of Restrictions or Impediments to their Development (DOI 2006);
- Final Programmatic Environmental Impact Statement for Geothermal Leasing in the Western United States (BLM and USFS 2008a);
- Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States (BLM 2005a);
- Lands with Wilderness Characteristics Inventory – 2011 Update (BLM 2011a);
- National Assessment of Oil and Gas Fact Sheet – Assessment of Undiscovered Oil and Gas Resources of the Bighorn Basin Province, Wyoming and Montana, 2008 (U.S. Geological Survey [USGS] 2008b);
- Oil Shale and Tar Sands Final Programmatic Environmental Impact Statement (BLM 2009c);
- Reasonable Foreseeable Development Scenario for Oil and Gas (BLM 2014a);

- Solid Mineral Occurrence and Development Potential Report for the Bighorn Basin Resource Management Plan Revision Project (BLM 2009d);
- Vegetation Treatments Using Herbicides on BLM lands in 17 Western States Programmatic Environmental Impact Statement (BLM 2007b);
- Visual Resource Inventory for the Cody Field Office (BLM 2009e); and
- Wyoming Greater Sage-Grouse Conservation Plan (Wyoming Sage-grouse Working Group 2003), Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats (Connelly et al. 2004), and Sage-grouse Conservation Plan for the Big Horn Basin, Wyoming (BHBLWG 2007), A Report on National Greater Sage-Grouse Conservation Measures (Sage-grouse NTT 2011), Greater Sage-Grouse Conservation Objectives Team (COT) Final Report (USFWS 2013a), Sage-Grouse Baseline Environmental Report (Manier et al. 2013).

New and Revised Policies

Numerous policies have been either revised or developed since the RODs for the existing plans. Appendix B identifies relevant policies, including new and revised policies, and their effective dates.

The BLM released Handbook H-8320-1 (*Planning for Recreation and Visitor Services*) on August 22, 2014. The handbook assists BLM staff in the planning and management of recreation and visitor services on public land. The release of the handbook coincided with the final development of the Bighorn Basin Proposed RMP and FEIS. Accordingly, not all recreation and visitor services decisions in this Proposed RMP and FEIS follow the recommended format provided in the handbook. However, the Proposed RMP and FEIS complies with the requirements for establishing desired conditions, allowable uses and actions related to the management of recreation and visitor services as discussed in Handbook H-8320-1.

Emerging Issues and Changing Circumstances

Emerging issues and changes in local, regional, and national circumstances to consider when revising the existing plans include the following:

- Increasing and conflicting demands on Planning Area resources.
- Increasing complexity of resource management issues.
- Changes in the legal status of plants and wildlife occurring or potentially occurring in the Planning Area.
- Increasing conflicts between resource uses and protection of specific wildlife and wildlife habitat.
- Changes in greater sage-grouse habitat management.
- Maintaining public access to public lands.
- The spread of invasive plant and animal species on public lands.
- Changing demand for energy and minerals development.
- Changes in oil and gas leasing and the development of Master Leasing Plan analysis (Instruction Memorandum [IM] 2010-117).
- Management of riparian areas and water quality concerns.
- Fire and fuels management practices.
- Changes in livestock grazing practices and rangeland conditions.

- Changes in recreation and visitor use levels and locations.
- Management and protection of recently discovered cultural and paleontological resources.
- Addressing travel management, including increases in off-highway vehicle (OHV) use.
- The appropriateness of certain withdrawals, tenure adjustments, realty leases, and utility corridor rights-of-way (ROW).
- Increased interest in renewable energy development across the Nation.
- Updated inventories of lands with wilderness characteristics in the Planning Area.
- Identifying unique or sensitive areas that meet the criteria for special designation.
- Increasing air quality issues affecting human health and regulatory compliance.
- Cumulative increase in surface disturbance.
- Interest in the management of wild horses and herd levels.
- Increased interest in wind-energy proposals.
- Changes to visual resource classifications.
- Changes in resource- and resource-condition monitoring tasks and the entities performing the monitoring.
- The need to determine the suitability of the eligible waterway corridors within the Bighorn Basin for inclusion into the Wild and Scenic Rivers System.

In March 2010 the U.S. Fish and Wildlife Service (USFWS) published its listing decision for the greater sage-grouse as "Warranted but Precluded" (USFWS 2010). The listing decision identified the inadequacy of existing regulatory mechanisms as a significant threat to greater sage-grouse now and for the foreseeable future. Further, the USFWS identified conservation measures in RMPs as the principal regulatory mechanism for the BLM. Based on the identified threats to the greater sage-grouse and the USFWS timeline for making a listing decision on this species, the BLM announced a National Greater Sage-grouse Planning Strategy Charter in August 2011 requiring the development of new or revised regulatory mechanisms, through RMPs, to conserve and restore the greater sage-grouse and habitat on BLM-administered lands on a range-wide basis over the long-term (Sage-grouse NTT 2011).

This Proposed RMP and Final EIS incorporates appropriate management actions and practices to conserve greater sage-grouse and its habitats on BLM-administered land.

National Greater Sage-Grouse Planning Strategy

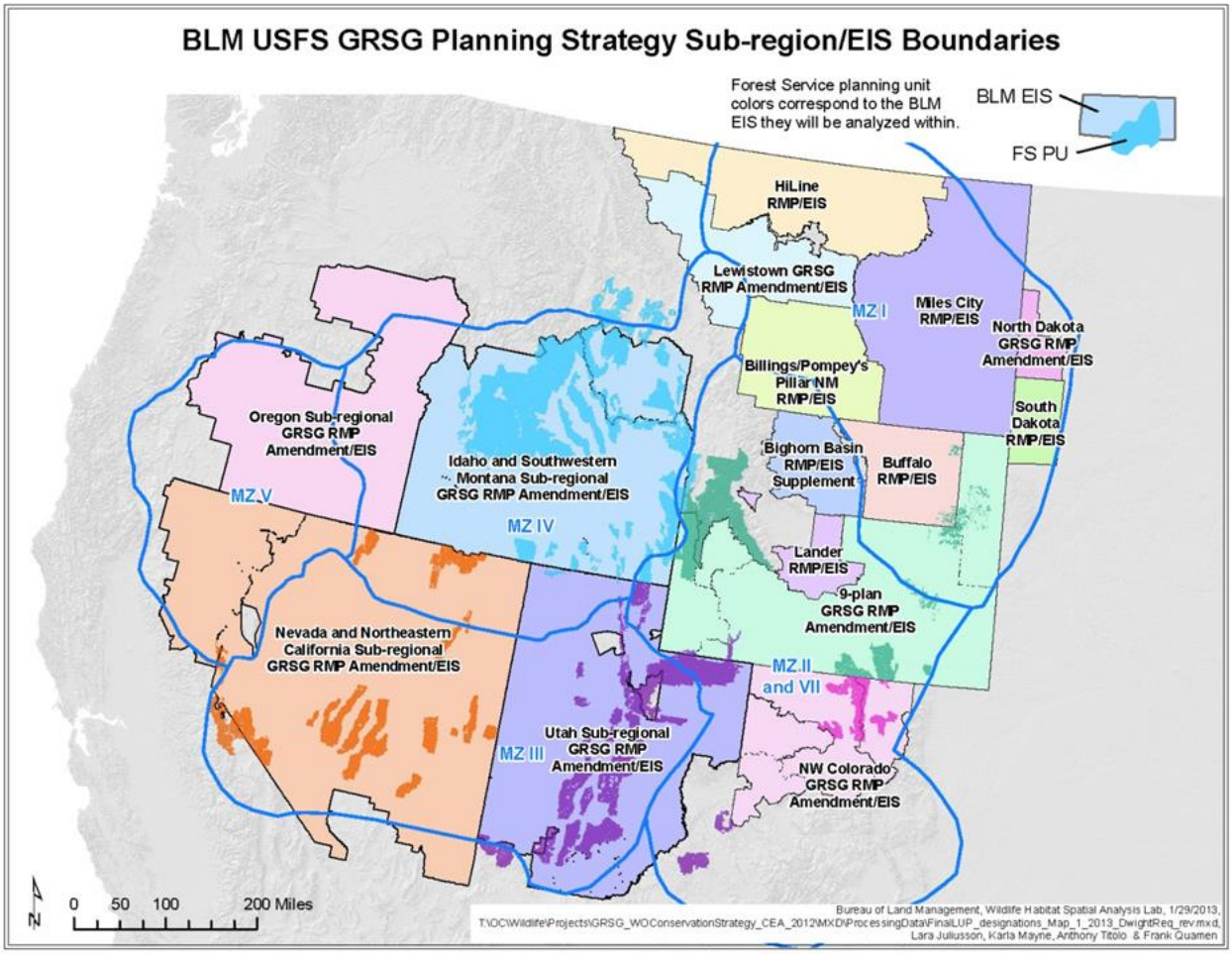
On December 9, 2011, the BLM published a Notice of Intent (NOI) in the *Federal Register* to initiate the BLM and U.S. Forest Service (USFS) greater sage-grouse Planning Strategy across 10 western states, including California, Oregon, Nevada, Idaho, Utah, and Southwest Montana in the Great Basin Region and Northwest Colorado, Wyoming, Montana, South Dakota, and North Dakota in the Rocky Mountain Region (see Figure 1-2). This Proposed RMP and Final EIS is one of 15 separate EISs that are currently analyzing specific conservation measures, in order to incorporate them across the range of the greater sage-grouse, consistent with National BLM and USFS policy.

On December 27, 2011, the BLM Washington Office IM No. 2012-044, which directed all of the planning efforts across the greater sage-grouse range to consider all applicable conservation measures when revising or amending its RMPs in greater sage-grouse habitat, including the measures developed by the National Technical Team that were presented in their December 2011 document – A Report on National Greater Sage-Grouse Conservation Measures. IM-2012-044 directs all planning efforts associated with

the national strategy to consider and analyze (as appropriate) the conservation measures presented in the report.

Along with the applicable measures that were outlined in the National Technical Team Report, planning efforts associated with this National Greater Sage-Grouse Planning Strategy will also analyze applicable conservation measures that were submitted to the BLM and USFS from various state governments and from citizens during the public scoping process.

Figure 1-2. BLM and USFS Greater Sage-Grouse Planning Strategy



Greater Sage-Grouse Conservation Objectives: Priority Areas for Conservation and How They Correlate with Priority and General Habitat Management Areas

In 2012, the Director of the USFWS asked the COT, consisting of state and USFWS representatives, to produce recommendations regarding the degree to which the threats need to be reduced or ameliorated to conserve greater sage-grouse 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 2013a) provides objectives based upon the best scientific and commercial data available at the time of its release. The BLM and USFS planning decisions analyzed in land use plans (LUPs)/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 online at the following address:

> 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 the Western Association of Fish and Wildlife Agencies' (WAFWA) 2006 Greater Sage-grouse Comprehensive Strategy of "reversing negative population trends and achieving a neutral or positive population trend."

The COT Report provides a WAFWA Management Zone 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).

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 (PACs).

Within the Bighorn Basin RMP Revision Project Planning Area, the PACs consist of a total 1,787,109 acres, regardless of ownership. Under the Proposed RMP, the PACs are comprised of 1,117,290 acres of Priority Habitat Management Areas (PHMAs) managed by the BLM (Map 42 and Map 42a), 1,922,194 acres of General Habitat Management Areas managed by the BLM, and 148,330 acres of non-habitat managed by the BLM.

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 greater sage-grouse populations. The BLM has reviewed this information and examined how lek buffer-distances were addressed through land use allocations and other management actions. The State of Wyoming's Core Area Strategy is designed to protect birds and habitat within core areas using a suite of tools and mechanisms that work in concert to conserve greater sage-grouse by reducing habitat loss and fragmentation through lek buffers, disturbance limits, excluded activities, and a sophisticated mapping utility to monitor the amount and density of disturbance. The USFWS has informed the BLM that the combined effect of these overlapping and reinforcing mechanisms give USFWS confidence that the lek buffer distances in the Core Area Strategy will be protective of breeding greater sage-grouse.

Habitat Delineation

The BLM has identified greater sage-grouse habitat in coordination with the State of Wyoming. This habitat falls into one of the following categories:

- Core Habitat Areas (Priority Habitat Management Areas) – The boundaries of the greater sage-grouse areas that were identified as having the highest conservation value to maintaining sustainable greater sage-grouse populations per version 3 of the State of Wyoming Executive Order (EO) Greater Sage-grouse Core Area of Protection (WY EO 2010-4) (Wyoming Office of the Governor 2010). These areas include breeding, late brood-rearing, and winter concentration areas, and correspond to Washington Office IM No. WO-2012-043 as Preliminary Priority Habitat.
- Key Habitat Areas – The boundaries of the greater sage-grouse areas that were identified as having the highest conservation value to maintaining sustainable greater sage-grouse populations per version 2 of the State of Wyoming EO Greater Sage-grouse Core Area of Protection (WY EO 2008-2) (Wyoming Office of the Governor 2008). These areas include breeding, late brood-rearing, and winter concentration areas, and correspond to Washington Office IM No. WO-2012-043 as Preliminary Priority Habitat. Key Habitat Areas were replaced by Core Habitat Areas, except under alternatives B and E which are based on version 2 of the State of Wyoming EO.
- Non-Core Sage Grouse Habitat – Areas of occupied seasonal or year-round habitat not located within Core Habitat. These areas correspond to Preliminary General Habitat as defined in Washington Office IM No. WO-2012-043.

The COT Report identified PACs based upon the data provided by State Fish and Game agencies. The State of Wyoming manages greater sage-grouse and greater sage-grouse habitats consistent with Governor's Executive Order 2011-05, *Greater Sage-Grouse Core Area Protection* (Core Area Strategy) (Wyoming Office of the Governor 2011), which establishes Core Areas.

In October 2014, the BLM updated the habitat category delineation. In the Proposed RMP and Final EIS greater sage-grouse habitat nomenclature has been changed from Core Areas to PHMA and Non-Core Sage Grouse Habitat to GHMA.

As noted above, alternatives B and E are based on Version 2 of the State of Wyoming EO Greater Sage-grouse Core Area of Protection (WY EO 2008-2) (Wyoming Office of the Governor 2008).

1.2.2 Purpose

An RMP is a land use plan that provides broad multiple-use direction for managing BLM-administered public lands. The FLPMA directs the BLM to develop such land use plans to provide for appropriate uses of public land. Decisions in land use plans guide future land management actions and subsequent site-specific implementation decisions. The RMP establishes goals and objectives (desired outcomes) for resource management and the measures necessary to achieve them. These measures are expressed as management actions and allowable uses (that is lands open or available for certain uses [including any applicable restrictions] and lands closed to certain uses).

The purpose of this RMP revision project is to ensure that public lands are managed according to the principles of multiple-use identified in FLPMA, while maintaining the valid existing rights and other obligations already established. The new RMPs will address changing needs of the Planning Area and create a management strategy that effectively responds to the planning issues within the framework of the planning criteria that best achieves a combination of the following:

- Employ a community-based planning approach to seek broadly supported solutions to issues, and collaborate with federal, state, and local cooperating agencies.
- Establish goals and objectives for managing resources and resource uses in the approximately 3.2 million surface acres and 4.2 million acres of federal mineral estate in the Planning Area administered by the BLM CYFO and WFO in accordance with the principles of multiple use and sustained yield.
- Identify land use plan decisions to guide future land management actions and subsequent site-specific implementation decisions.
- Identify management actions and allowable uses anticipated to achieve the established goals and objectives and reach desired outcomes.
- To provide comprehensive management direction, make land use decisions for all appropriate resources and resource uses the BLM administers in the Planning Area or update existing decisions.
- Provide for compliance with applicable tribal, federal, and state laws, standards, and implementation plans, and BLM policies and regulations.
- Recognize the nation's need for domestic sources of minerals, food, timber, and fiber, and incorporate requirements of the Energy Policy Act of 2005 (Public Law 109-58).
- Retain flexibility to adapt to new and emerging issues and opportunities and to provide for adjustments to decisions over time based on new information and monitoring.
- Strive to be compatible with the plans and policies of adjacent local, state, tribal, and federal agencies and consistent with federal laws, regulations, and BLM policies; and be flexible enough to adapt to future BLM policy and guidance updates.

1.3 Planning Process

The planning process is the result of the FLPMA requirement to manage lands under comprehensive plans and the National Environmental Policy Act (NEPA) requirement to analyze alternatives in an EIS and evaluate and disclose impacts for all major federal actions with the potential to result in significant impacts. Revising an existing plan is a major BLM federal action with the potential to result in significant impacts. Therefore, this EIS analyzes six alternatives, including the NEPA-required No Action Alternative.

1.3.1 Bureau of Land Management Planning Process

Figure 1-3 illustrates the planning process BLM uses to develop and revise RMPs, as required by CFR Title 43, Part 1600 and planning program guidance in BLM Handbook H-1601-1, Land Use Planning Handbook (BLM 2005b). The planning process is designed to help the BLM identify the uses of BLM-administered lands the public desires and to consider these uses to the extent they would be consistent with Congressional laws and Executive Branch policies.

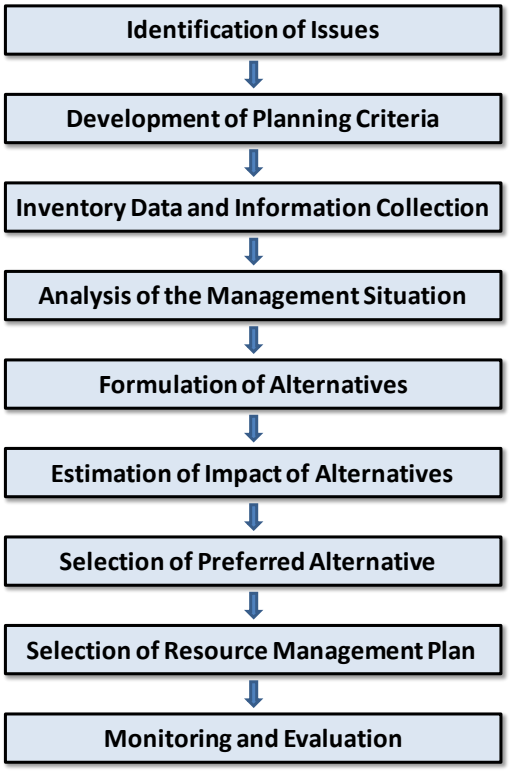
As shown in Figure 1-3, the planning process is issue driven. The BLM utilized the public scoping process (Identification of Issues) to identify planning issues to drive the revision of the existing plans (BLM 2005b). The BLM also used the scoping process to introduce the public to preliminary planning criteria (Development of Planning Criteria), which set limits to the scope of the Bighorn Basin RMP Revision Project.

As appropriate, the BLM collected data to address planning issues and to fill data gaps identified during public scoping (Inventory Data and Information Collection). Using these data, the planning issues, and the planning criteria, the BLM prepared a summary of the Analysis of the Management Situation to describe current management and identify management opportunities to address the planning issues. Current management reflects management under existing plans and management that would continue if the BLM selected the No Action Alternative.

Results of the first steps of the planning process clarified the purpose and need and identified key planning issues the Bighorn Basin RMP Revision Project needs to address. Key planning issues reflect the focus of the Bighorn Basin RMP Revision Project; the Planning Issues section of this chapter describes key planning issues in more detail.

During alternatives formulation, the BLM collaborated with cooperating agencies to identify goals and objectives (desired outcomes) for resources and resource uses in the Planning Area (Formulation of Alternatives). Constrained by the planning criteria, these desired outcomes addressed the key planning issues and incorporated the management opportunities the BLM identified.

Figure 1-3. BLM Planning Process



Source: 43 Code of Federal Regulations 1610.4

The BLM filled in the details of alternatives through the development of management actions and allowable uses anticipated to achieve the desired outcomes. The alternatives represent a reasonable range for managing resources and resource uses in the Planning Area. Chapter 2 of the Proposed RMP and Final EIS describes and summarizes the six alternatives (A, B, C, D, E, and F).

Chapter 4 (Environmental Consequences) includes an analysis of the impacts of each alternative. With input from cooperating agencies and BLM specialists, and considering planning issues, planning criteria, public input, and the impacts of alternatives A through F, the BLM selected Alternative D as the Agency Preferred Alternative (Selection of Preferred Alternative), and published the plan in the Draft RMP and Draft EIS.

A Notice of Availability (NOA) for the Bighorn Basin Draft RMP and Draft EIS was published in the *Federal Register* on April 22, 2011 (76 FR 22721, April 22, 2011). Public comments were solicited for consideration by the BLM review team. Following the closure of the comment period, the BLM published a Notice of Intent (NOI) to begin preparation of EISs and Supplemental EISs to Incorporate Greater Sage-grouse Conservation Measures into Land Use Plans and Land Management Plans

(76 FR 77008, December 9, 2011) in accordance with the BLM National Greater Sage-grouse Planning Strategy Charter released in August 2011 (BLM 2011b). Nominations for greater sage-grouse-related Areas of Critical Environmental Concern (ACEC) were submitted by members of the public in response to the NOI. The BLM reviewed these nominations and found importance and relevance criteria to be met, warranting consideration in the Bighorn Basin RMP Revision Project. Although these ACEC nominations were submitted in response to the December 2011 NOI, ACEC nominations can be submitted by any individual or organization inside or outside of the BLM at any time during the development of a land use plan.

In July 2012, the BLM Rocky Mountain Regional Interdisciplinary Team identified the need to prepare a Supplement to the Bighorn Basin Draft RMP and Draft EIS to consider incorporation of proposed management actions in greater sage-grouse priority habitats and to thoroughly consider the conservation measures identified in the Greater Sage-grouse National Technical Team (NTT) Report on National Greater Sage-Grouse Conservation Measures (Sage-grouse NTT 2011), as referenced in BLM IM 2012-044. These issues were subsequently addressed through the analysis of two additional alternatives (E and F) in the Supplement to the Bighorn Basin Draft RMP and Draft EIS. Alternatives E and F each propose the designation of a greater sage-grouse-related ACEC that simultaneously responds to the needs to consider ACEC nominations submitted by the public and incorporate conservation measures identified in the NTT report. The analysis of alternatives E and F were integrated into this Proposed RMP and Final EIS following receipt and consideration of public comments on the Supplement.

Chapter 5 of this Final EIS describes the public involvement, consultation, and coordination efforts undertaken by the BLM throughout preparation of the Bighorn Basin RMP revision, including public meetings and comment periods on the Draft RMP and Draft EIS and Supplement. The BLM considered all substantive comments received and revised the plan based on certain issues raised in the comments, as presented in this Proposed RMP and Final EIS. The BLM prepared a Comment Analysis Report that summarizes all substantive comments received during the comment periods and the BLM's responses to those comments, including how the RMP and EIS was revised based on the comments. The Comment Analysis Report is presented in Appendix A.

Following review of the public comments on the Draft RMP and Draft EIS and comments on the Supplement to the Draft RMP and Draft EIS, the BLM identified the Proposed RMP. Alternative D is the Proposed RMP and is analyzed in Chapter 4 of this Final EIS.

The publication of the NOA in the *Federal Register* for this Proposed RMP and Final EIS initiated a 30-day protest period and 60-day Governor's consistency review period. The BLM will resolve protests and the Governor's recommended changes and prepare an Approved RMP and ROD for each field office.

Monitoring and evaluation will occur when the selected RMP is being implemented (Monitoring and Evaluation). After the BLM selects the RMP and each affected field office issues a ROD, the BLM will implement the decisions in the RMP and monitor and evaluate RMP decisions, how they have been implemented, and whether they accomplish the desired outcomes identified in the RMP. On a 5-year cycle, the BLM will report the results of monitoring and evaluation to the public. These cyclical evaluations will ensure accountability for implementing RMP decisions and will enable the BLM to propose amendments or revisions to RMP decisions that might be necessary or desirable. Appendix C provides an overview of the Bighorn Basin monitoring and evaluation protocol. The BLM Wyoming State Office (WYSO), in cooperation with the State of Wyoming and the USFWS, has developed a statewide Greater Sage-Grouse adaptive management strategy and monitoring framework (Appendix Y). Refer to Appendix Y for additional details of the Greater Sage-Grouse Monitoring Framework.

1.3.2 Resource Management Plan Implementation

After each field office issues a ROD and Approved RMP, the BLM will develop an Implementation Strategy, which will include an annual coordination meeting between the BLM and the agencies cooperating in the Bighorn Basin RMP Revision Project (Appendix D). The annual coordination meeting will include an update on implementation of the plan, foreseeable activities for the upcoming year, and opportunities for continued collaboration with the RMP cooperating agencies. The BLM could schedule additional coordination meetings as needed. The Implementation Strategy will tie RMP decisions to BLM budget requests, and provide a mechanism through which the BLM can track, fund, and accomplish management actions (Appendix D).

Planning and decision-making for BLM administration of public lands is a tiered, ongoing process. Documents produced during each successive tier are progressively more focused in scope and more detailed in terms of identifying specific measures to be undertaken and their potential impacts. The RMP, the first tier in the process, provides an overall vision of the goals and objectives and includes measurable steps, anticipated management actions, and allowable uses to achieve that vision. Upon RMP approval, the BLM develops activity- or project-level plans to implement RMP decisions. If the BLM develops an activity-level plan, it usually describes multiple projects for a single resource program (such as a habitat management plan) or multiple projects for multiple resource programs. If the BLM develops a project-specific plan, it usually describes a single project or several related projects.

In general, the BLM prepares a planning-level EIS at the RMP tier and prepares a more detailed EIS or Environmental Assessment at the implementation tier. Activity-level or project-level plans reflect management direction and the broad goals and objectives in the Approved RMP. In most cases, activity-level and project-level plans include additional public review and environmental compliance. This Proposed RMP and Final EIS involves only the RMP tier; therefore, it does not further consider activity-level and project-level plans.

The RMP provides basic program direction and establishes goals, objectives, and allowable uses. It focuses on the resource conditions, uses, and visitor experiences the BLM should achieve and maintain over time. The RMP provides a framework for implementation-level decisions for as long as its decisions remain effective, and must take a long-term view that considers the protracted periods associated with natural processes, which can be years, decades, or longer.

1.4 Decision Framework

Identifying planning issues and developing planning criteria are the first steps in narrowing the scope of the RMP revision. Planning issues and planning criteria provide the framework within which the BLM makes RMP decisions (actions determined and established in the Approved RMP). For example, the BLM received nominations (issues) for Areas of Critical Environmental Concern (ACECs) during the scoping process for the Bighorn Basin RMP Revision Project. These issues fall within one of the planning criteria (see Section 1.4.2), the need to identify and analyze areas potentially suitable for ACEC designation. The Bighorn Basin RMP Revision Project will decide whether the BLM will designate any ACECs in the Planning Area. In this example, the land use planning decision is referred to as a special designation.

BLM RMPs provide guidance for land use planning decisions according to the following categories: physical, biological, and heritage resources; resource uses; and special designations. In the context of these categories, the planning team develops management strategies designed to provide viable options for addressing planning issues. Management strategies provide the building blocks upon which the BLM

develops general management scenarios and, eventually, the more detailed resource management alternatives. Resource management alternatives reflect a reasonable range of management options that fall within planning criteria, law, and BLM policy limits. The following sections describe the planning issues and planning criteria the BLM used to revise the existing plans.

1.4.1 Planning Issues

The BLM conducted a public scoping process to determine the scope of issues to be addressed in this RMP and EIS. Scoping is a public involvement process to identify issues to address during the planning process. As part of this public involvement process, the BLM solicited comments and issues (including during six public scoping meetings [see Chapter 5]) from the public, organizations, tribal governments, and federal, state, and local agencies, as well as from BLM specialists. The BLM received 3,367 comment documents, including 291 unique documents and 3,076 form letters. The BLM *Land Use Planning Handbook* (BLM 2005b) defines planning issues as "…disputes or controversies about existing and potential land and resource allocations, levels of resource use, production, and related management practices." Issues identified during scoping for this RMP and EIS comprise two categories:

- Issues within the scope of the EIS and used to develop alternatives or otherwise addressed in the EIS.
- Issues outside the scope of the EIS or that could require policy, regulatory, or administrative actions.

The BLM used issues determined to be within the scope of the EIS to develop one or more of the alternatives or addressed those issues in other parts of the EIS. For example, as it refined planning issues, the BLM collaborated with cooperating agencies to develop a reasonable range of alternatives designed to address or resolve key planning issues, such as which areas should be open to energy and mineral resource development. A reasonable range of alternatives provides various management approaches for the BLM and cooperating agencies to address this and other key planning issues, including management of resources and resource uses in the Planning Area. In other words, key planning issues serve as the rationale for alternatives development. The comment documents provided 1,060 substantive comments that were categorized into the key planning issues the BLM used to develop the alternatives analyzed in this RMP and EIS follow.

Key Planning Issues

Climate Change	How can the BLM incorporate climate change adaptation and/or responses into its land management practices?
Watershed and Air Quality Management	How can the BLM manage the use of public lands while protecting watershed and air quality?
Energy and Minerals Management	Which areas should be open to mineral and energy development, and how should the BLM manage such development while protecting human health and natural and cultural resources?
Fire and Fuels Management	How can the BLM manage fire and fuels to protect public safety and natural and cultural resources?

Invasive and/or Noxious Species	How can the BLM manage the spread of and mitigate impacts associated with invasive species and/or noxious weeds?
Fish, Wildlife, and Special Status Species	How can the BLM manage public land use while maintaining and improving terrestrial and aquatic habitats?
Wild Horses	How can the BLM manage wild horses on public lands while also protecting natural and cultural resources?
Cultural and Paleontological Resources	How can the BLM manage paleontological, cultural, and traditional resources to provide both resource protection and opportunities for public education and study?
Visual Resources	How can the BLM manage public lands for visual qualities?
Lands and Realty	What land tenure and management adjustments are needed to meet access and development needs while also protecting natural and cultural resources?
Comprehensive Travel and Transportation Management, and OHVs	How can the BLM manage travel on public lands?
Lands with Wilderness Characteristics	Should the BLM manage to protect lands with wilderness characteristics? If so, where and how?
Recreation and Visitor Use	How can the BLM provide recreational opportunities on public lands while protecting public safety, and natural and cultural resources?
Livestock Grazing	How can the BLM manage livestock use on public lands while also protecting natural and cultural resources?
Special Designation Management	How can the BLM manage areas that contain unique or sensitive resources?
Socioeconomic Resources	How can the BLM manage public land use with the preservation of local tradition and local economies that rely upon BLM-administered land?

In addition to key planning issues, the BLM identified other issues, themes, and positions during the scoping process. The BLM did not use issues determined to be outside the scope of the EIS or that could require policy, regulatory, or administrative actions to address, to develop alternatives and did not carry such issues forward in this EIS.

The list below summarizes suggestions from the public that the BLM considered but did not carry forward for detailed study in the EIS because they were outside the scope of the Bighorn Basin RMP Revision Project, already required by law or policy, or would require the BLM to exceed its authority.

- Analyze impacts from specific actions or activities that will occur or be addressed during subsequent RMP implementation decisions. See Appendix D for the basic elements of implementing the RMP.

- Adopt or otherwise ensure the revised RMPs are compatible with specific regulations, policies, mandates, guidance, or plans, or integrate one or more of these items into the planning process.
- Change the BLM's planning or public involvement processes.
- Address issues that are outside of the agency's jurisdiction or manage resources outside of the Planning Area.
- Conduct site-specific analyses, inventories, or surveys.
- Vague comments in which the issue or concern was not clear.

For a description of the issues identified during scoping, see the Bighorn Basin RMP Revision Project Scoping Report (BLM 2009f). The scoping report describes the public involvement process and the issues the public identified. The report, which is incorporated here by reference, is available on the Bighorn Basin RMP Revision Project website at the following address: http://www.blm.gov/wy/st/en/programs/Planning/rmps/bighorn/docs.html.

1.4.2 Planning Criteria

Planning criteria are the standards, rules, and guidelines that help guide the RMP planning process. These criteria influence all aspects of the planning process, including inventory and data collection, developing issues to address, formulating alternatives, estimating impacts, and selecting the Agency Preferred Alternative and the Proposed RMP. In conjunction with planning issues, planning criteria ensure that the planning process is focused and incorporates appropriate analyses. The BLM develops planning criteria from appropriate laws, regulations, and policies. The criteria also help guide final RMP selection, and the BLM uses the criteria as a basis for evaluating the responsiveness of planning options.

The planning criteria for the Bighorn Basin RMP Revision Project are as follows:

1. The revised RMPs will recognize valid existing rights.
2. Decisions in the revised RMPs will comply with all applicable laws and regulations. Decisions will comply, as appropriate, with policy and guidance.
3. Impacts from the management alternatives considered in the revised RMPs will be analyzed in an EIS developed in accordance with regulations at 43 CFR 1610 and 40 CFR 1500.
4. The planning process will follow the stages of an EIS-level planning process – conduct scoping, develop an AMS report, formulate alternatives, analyze the alternatives' potential effects, select an agency preferred alternative, publish a Draft RMP and EIS, provide a 90-day public comment period for the draft, prepare and publish a Proposed Plan and Final EIS, provide a 30-day public protest period, and prepare an ROD. For specific information, see the *Land Use Planning Handbook*, H-1601-1.
5. Lands covered in the revised RMPs will be public land and split-estates the BLM administers. The BLM will make no decisions about lands or minerals that are not BLM administered.
6. BLM decisions will not apply to private land with private mineral estate.
7. The impact analysis will include all lands that could affect or be affected by BLM management of public lands in the Planning Area.
8. For program-specific guidance regarding land use planning-level decisions, the process will follow *Land Use Planning Manual* 1601 and *Handbook* H-1601-1, Appendix C.

9. The Bighorn Basin RMP Revision Project planning effort will be collaborative and multi-jurisdictional. The BLM will strive to ensure that its management decisions complement its planning jurisdictions and adjoining properties within the boundaries prescribed by law and regulation.
10. Broad-based public participation will be an integral part of the RMP revision and EIS process.
11. Decisions in the RMP will strive to be compatible with existing plans and policies of adjacent local, state, federal, and tribal agencies as long as the decisions are consistent with the purposes, policies, and programs of federal laws and regulations applicable to public lands.
12. The planning team will work cooperatively and collaboratively with cooperating agencies and all other interested groups, agencies, and individuals.
13. The BLM and cooperating agencies will jointly develop alternatives for resolution of resource management issues and management concerns.
14. The planning process will use the Wyoming BLM Mitigation Guidelines to develop management options and alternatives and analyze their impacts, and as part of the planning criteria for developing the options and alternatives and for determining mitigation requirements.
15. Planning and management direction will focus on the relative values of resources, not on the combination of uses that would give the greatest economic return or economic output.
16. All proposed management actions will be based on current scientific information, research and technology, and existing inventory and monitoring information.
17. Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for the Public Lands Administered by the Bureau of Land Management in the State of Wyoming will apply to all activities and uses.
18. The BLM will provide for public safety and welfare related to fire, hazardous materials, and abandoned mine lands.
19. The BLM will analyze and modify visual resource management (VRM) class designations to reflect present conditions and future needs.
20. The BLM will consider current and potential future uses of public lands through the development of reasonably foreseeable future development and activity scenarios based on technical analysis of historical, existing, and projected levels of use.
21. The BLM will develop reasonable foreseeable action scenarios for all land and resource uses (including minerals) and portray them based on historical, existing, and projected levels for all programs. The BLM will consider existing endangered species recovery plans, including plans for reintroduction of endangered and other species.
22. The planning process will involve Native American tribal governments and will provide strategies for the protection of recognized traditional uses.
23. Planning decisions will comply with the ESA and BLM interagency agreements with the USFWS.
24. The BLM will continue implementing The National Sage-grouse Habitat Conservation Strategy that requires impacts to sagebrush habitat and sagebrush-dependent wildlife species be analyzed and considered in BLM land use planning efforts for public lands with sagebrush habitat in the Planning Area.
25. The BLM applied the relevance and importance criteria for ACEC designation (BLM1988b) to BLM-administered public lands in the Planning Area to identify areas that have the potential for ACEC designation. An ACEC designation alone does not change the allowed uses of public lands involved (FLPMA Section 201(a) and 43 CFR 1601.0-5a). In addition, protective measures for

ACECs are not applied or required simply because of the designation. Any protective measures applied to ACECs are based on what is necessary to protect the relevance and importance criteria for which the ACEC was designated. The only automatic requirement associated with an ACEC designation is that a plan of operations must be submitted for any mining claim development in the area (43 CFR 3809.11(c)(3)).

26. During the preparation of the AMS for the Planning Area, the BLM evaluated free-flowing streams using the criteria established by the Wild and Scenic Rivers Act of 1968 to determine their eligibility and suitability for inclusion in the National Wild and Scenic Rivers System (NWSRS). The BLM developed interim management prescriptions for stream segments passing through public lands deemed Wild and Scenic River eligible. To provide a clear basis for comparisons, the No Action Alternative will not consider or include any of the stream segments evaluated in association with preparing the AMS for the RMP revisions.
27. Off-highway vehicle (OHV) use management decisions in the revised RMPs will be consistent with the BLM 2001 National OHV Strategy, BLM Manual 1626 (BLM 2011c), BLM Handbook H-8342-1, 43 CFR 8340, and IM 2008-014. OHV area designations will be "limited" unless otherwise classified as "open" or "closed" to meet land use plan objectives.
28. The BLM will continue to manage Wilderness Study Areas (WSAs) under BLM Manual 6330 – Management of Wilderness Study Areas (BLM 2012a) until Congress either designates all or portions of the WSA as wilderness or releases the lands from further wilderness consideration. It is no longer BLM policy to designate additional WSAs through the RMP process, or to manage any lands other than existing WSAs in accordance with the non-impairment standard prescribed in BLM Manual 6330.
29. Forest management strategies will be consistent with the Healthy Forests Restoration Act.
30. Fire management strategies will be consistent with the *Guidance for Implementation of the Federal Wildland Fire Policy* (USFS et al. 2009).
31. Geographic Information Systems (GIS) and metadata information will meet Federal Geographic Data Committee standards, as required by Executive Order 12906 Coordinating Geographic Data Access, as amended. The BLM will comply with all other applicable BLM data standards.
32. In accordance with the principles of multiple use and sustained yield, this RMP will provide for monitoring and evaluation of RMP decisions over time. To the extent that Adaptive (http://www.doi.gov/initiatives/AdaptiveManagement/index.html) Management, as defined by DOI or BLM guidance, applies, the BLM will apply and assess Adaptive Management in activity-level and project-level plans. This RMP is not a standalone Adaptive Management project.
33. The BLM will utilize the COT Report (USFWS 2013a), the WAFWA Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats (Connelly et al. 2004), and any other appropriate resources, to identify greater sage-grouse habitat requirements and best management practices.
34. While energy development has been identified as the primary threat to the greater sage-grouse 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 Final Report (USFWS 2013a) as a present and widespread threat in 7 of 13 PACs and as a present but localized threat in the remaining PACs. While fire is a naturally occurring disturbance in the sagebrush steppe and 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 RMP and EIS includes requirements that landscape scale Fire and Invasives 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 the 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, greater sage-grouse 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 RMP and improve BLM's ability to protect sagebrush-steppe from damaging wildfires.

1.4.3 Major Statutes, Limitations, and Guidelines

Numerous federal and state laws and applicable regulations, policies, and actions affect the alternatives analyzed in this Proposed RMP and Final EIS. The FLPMA is the primary authority for BLM administration of public lands. This law provides the overarching policy by which the BLM administers public lands. The law establishes provisions for land use planning, land acquisition, administration, range management, ROW, designated management areas, and the repeal of certain laws and statutes. The FLPMA also requires that the BLM provide food and habitat for fish, wildlife, and domestic species. FLPMA Sections 201 and 202 establish BLM land use planning requirements. BLM Handbook H-1601-1, *Land Use Planning Handbook* (BLM 2005b), provides guidance for implementing BLM land use planning requirements established in FLPMA Sections 201 and 202 and the land use planning regulations pursuant to 43 CFR 1600.

NEPA stipulates the process through which public officials make decisions that consider the environmental consequences of their actions and work to protect, restore, and enhance the human environment. NEPA provides for public input regarding issue identification and consideration of the environmental impacts of major federal actions that affect the quality of the human environment. Revising an existing RMP is a major federal action for the BLM. NEPA requires federal agencies to prepare an EIS for major federal actions; therefore, this Final EIS accompanies the revisions of the existing plans.

NEPA also created the CEQ, which issued regulations (40 CFR 1500-1508) to ensure proper consideration of environmental concerns in federal decision-making. The DOI and the BLM have published their own regulations (43 CFR Part 46) and guidance related to implementation of the NEPA process and CEQ regulations (DOI Manual Part 516 and Handbook H-1790-1).

Many additional laws, regulations, and policies guide the management of public lands and are therefore relevant to the Bighorn Basin RMP Revision Project. Appendix B provides a list of these laws, regulations, and policies.

1.4.4 Other Related Plans

BLM planning policies require that the BLM review approved or adopted resource plans of other federal, state, local, and tribal governments and, when practicable, be consistent with those plans, to the extent their decisions are consistent with the purposes, policies, and programs of federal laws and regulations applicable to public lands. If the other agencies, tribes, and/or governments do not have officially approved or adopted resource-related plans, then the land use plan must, to the maximum extent practicable, be consistent with their officially approved and adopted resource-related policies and programs. Table 1-3 lists plans related to the management of land and resources that apply to this RMP.

Table 1-3. Related Plans

Plan Type	Plan Name
County Land Use Plans	Big Horn County Land Use Plan (Big Horn County 2009)
	Hot Springs County Land Use Plan (Hot Springs County 2002)
	Park County Land Use Plan (Park County 1998)
	Washakie County Comprehensive Plan (Washakie County 2012)
Conservation District Plans	Cody Conservation District Long Range Plan (Cody Conservation District 2007)
	Hot Springs Conservation District Long Range Plan (Hot Springs Conservation District 2006)
	Meeteetse Conservation District Land Use Management and Resource Conservation Plan (Meeteetse Conservation District 2011)
	Powell-Clarks Fork Conservation District Long Range Plan (Powell-Clarks Fork Conservation District 2006)
	Shoshone Conservation District Long Range Plan (Shoshone Conservation District 2005)
	South Big Horn Conservation District Natural Resource and Land Use Long Range Plan (South Big Horn Conservation District 2012)
	Washakie County Conservation District Natural Resource Land Use Plan (Washakie County Conservation District 2010)
Other Plans	Big Horn County Mountain Community Wildfire Protection Plan (Big Horn County 2005)
	Big Horn River Watershed Management Plan (Washakie County Conservation District 2006)
	Bighorn National Forest Revised Land and Resource Management Plan (USFS 2005a)
	Bitter Creek Watershed Plan (Powell-Clarks Fork Conservation District 2004)
	National Fire Plan (USDA and DOI 2000)
	Sage-Grouse Conservation Plan for the Big Horn Basin, Wyoming (BHBLWG 2007)
	Final Environmental Impact Statement for the Shoshone National Forest Land and Resource Management Plan (USFS 1986)
	Shoshone River Watershed Draft Plan (Shoshone River Watershed Plan Steering Committee 2008)
	South Big Horn County, Wyoming Watershed Plan (South Big Horn Conservation District 2006)
	U.S. Environmental Protection Agency Region 8 Wyoming State Implementation Plans (EPA 1989; EPA 1993; EPA 1999; EPA 2007)
	U.S. Fish and Wildlife Service Mountain Prairie Region Strategic Plan – Wyoming (USFWS 2009)
	Wyoming Department of Agriculture Strategic Plan (WDA 2008)
	Wyoming Game and Fish Commission Final Wyoming Gray Wolf Management Plan (Wyoming Game and Fish Commission 2011)
	Wyoming Greater Sage-Grouse Conservation Plan (Wyoming Sage-grouse Working Group 2003)
	Wyoming Greater Sage-Grouse Core Area Protection Strategy (Wyoming Office of the Governor 2011 and 2013)
	Wyoming State Wildlife Action Plan (WGFD 2010a)
	Wyoming Strategic Habitat Plan (WGFD 2009a)
	Wyoming's Comprehensive Statewide Historic Preservation Plan, 2007-2015 (Wyoming SHPO 2007)
	Wind/Bighorn River Basin Plan Final Report (Wyoming Water Development Commission 2010)
	Wyoming Statewide Comprehensive Outdoor Recreation Plan 2009-2013 (Wyoming Department of State Parks and Cultural Resources 2009)
	Wyoming Statewide Trails Plan 2004 (Wyoming Department of State Parks and Cultural Resources – Trails Program 2004)
	Yellowstone National Park Fire Management Plan (NPS 2004)

The BLM is aware that there are specific state laws and local plans relevant to aspects of public land management that are discrete from, and independent of, federal law. However, BLM is bound by federal law. As a consequence, there may be inconsistencies that cannot be reconciled. The FLPMA and its implementing regulations require that BLM's land use plans be consistent with officially-approved state and local plans only if those plans are consistent with the purposes, policies, and programs of federal laws and regulations applicable to public lands. Where officially-approved state and local plans or policies and programs conflict with the purposes, policies, and programs of federal law applicable to public lands, there will be an inconsistency that cannot be resolved. With respect to officially-approved state and local policies and programs (as opposed to plans), this consistency provision only applies to the maximum extent practical. While county and federal planning processes, under FLPMA, are required to as integrated and consistent as practical, the federal agency planning process is not bound by or subject to state or county plans, planning processes, policies, or planning stipulations.

1.5 Topics Not Addressed in this Analysis

Laws, regulations, policies, and Executive Orders require the examination of specific resource topics during the NEPA process. In some cases, initial evaluation identifies topics not relevant to the Planning Area or that do not require further analysis.

The initial evaluation for the Bighorn Basin RMP Revision Project identified prime and unique farmlands as a topic that does not need further analysis. In accordance with the Farmland Protection Policy Act, the BLM determined that no prime or unique farmlands or farmland of statewide or local importance occur on public lands in the Planning Area. Furthermore, none of the actions proposed would disturb farmlands. Therefore, the Bighorn Basin RMP Revision Project planning process does not analyze impacts to prime and unique farmlands.

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CHAPTER 2 – RESOURCE MANAGEMENT ALTERNATIVES

This chapter presents six alternative resource management plans (RMPs) (A, B, C, D, E, and F) for management of the Bighorn Basin Planning Area. Alternative A, the No Action Alternative, represents the continuation of current management direction. Alternatives E and C represent the "bookends" or the range of action alternatives. The Bureau of Land Management (BLM) identified Alternative D as its Agency Preferred Alternative in the Draft RMP and Draft Environmental Impact Statement (EIS). Based on comments received during the public comment period on the Draft RMP and Draft EIS, the BLM revised the Agency Preferred Alternative. As modified, Alternative D is now presented as the Proposed RMP in the Final EIS. Alternative E is the same as Alternative B outside of greater sage-grouse Key Habitat Areas. Within greater sage-grouse Key Habitat Areas, Alternative E includes additional management actions and designates the area as an Area of Environmental Concern (ACEC). Similarly, Alternative F is the same as Alternative D outside of greater sage-grouse Priority Habitat Management Areas (PHMAs). Within greater sage-grouse PHMAs, Alternative F includes additional management actions and designates these areas as an ACEC. Each alternative has a different emphasis for managing public lands and resources in the Planning Area, and represents a complete and reasonable land use plan that meets the purpose and need described in Chapter 1.

2.1 Alternatives Development Process

To comply with National Environmental Policy Act (NEPA) requirements in the development of alternatives for this RMP and Environmental Impact Statement (EIS), the BLM sought public input and analyzed a reasonable range of alternatives, including the No Action Alternative (Alternative A). Alternative formulation considered existing land use plan decisions and issues and concerns developed internally and solicited from the public during the scoping process. Broadly, the BLM followed six steps to develop alternatives:

Step 1. Receive public input (scoping).

Step 2. Identify current management (Alternative A, No Action Alternative).

Step 3. Develop the range of alternatives (Alternatives B and C).

Step 4. Analyze the effects of the alternatives (Alternatives A, B, and C).

Step 5. Develop the Agency Preferred Alternative (Alternative D).

Step 6. Develop additional alternatives in response to the identified need for a Supplement to the Draft RMP and Draft EIS (Alternatives E and F).

2.1.1 Step 1 – Receive Public Input

The BLM collected and considered public input during the scoping process to develop the alternatives and their management actions. The BLM considers public input throughout the alternatives development process. Chapter 1 and the project Scoping Report (available on the RMP Revision website at http://www.blm.gov/wy/st/en/programs/Planning/rmps/bighorn.html) summarize the results of the public scoping process and opportunities for future public involvement.

2.1.2 Step 2 – Identify Current Management

The Cody RMP (BLM 1990), Washakie RMP (BLM 1988a), and Grass Creek RMP (BLM 1998a) (the existing land use plans) are the basis for the No Action Alternative (Alternative A), or current management direction. The BLM Interdisciplinary (ID) Team brought the management decisions from these three plans into one combined table (see Section 2.7 *Detailed Descriptions of Alternatives by Resource*) as Alternative A – Current Management. Alternative A, in conjunction with the planning criteria and the key issues identified during the scoping process, then set the stage for developing the range of alternatives.

2.1.3 Step 3 – Develop the Range of Alternatives

The BLM conducted a series of six alternatives development workshops with an ID Team (BLM and cooperating agency personnel). During the initial workshop, the ID Team shared their knowledge and expertise and collaborated to identify goals and objectives (desired outcomes) for each resource. Each subsequent workshop refined management actions in each alternative and narrowed the scope of alternatives to a reasonable range limited by the planning criteria (see Chapter 1, Planning Criteria). Table 2-1 lists the dates and locations of each workshop. Before each workshop, the BLM specialists prepared preliminary draft alternatives for each resource to be discussed during the upcoming workshop. These preliminary draft alternatives served as the starting point for alternative formulation and the basis for ID Team discussions during the workshops.

Table 2-1. Alternatives Development Workshops

Workshop Number	Dates	Location	Focus
1	March 25 – 27, 2009	Cody, Wyoming	Goals and Objectives
2	April 29 – May 1, 2009	Worland, Wyoming	Range of Alternatives
3	May 27 – 29, 2009	Worland, Wyoming	Range of Alternatives
4	June 24 – 26, 2009	Cody, Wyoming	Range of Alternatives
5	July 29 – 31, 2009	Thermopolis, Wyoming	Range of Alternatives
6	February 17 – 19, 2010	Cody, Wyoming	Agency Preferred Alternative

The ID Team formulated the range of alternatives (alternatives B and C), which was subsequently augmented through the development of the Supplement to the Draft RMP and Draft EIS (alternatives E and F) as discussed in Section 2.1.6, to meet the purpose and need of this RMP and EIS using different approaches to resource use. Broadly put, the alternatives represent the opposite ends of a continuum of resource use from the least (alternatives B and E) to the most (Alternative C). The BLM considered, but did not carry forward for detailed analysis, alternatives that did not meet the planning criteria or the purpose and need (see Chapter 1).

2.1.4 Step 4 – Analyze the Effects of the Alternatives

The fourth step in the process is to analyze the effects of the range of alternatives. This task involved analyzing the impacts of one set of resource management actions on other resources and resource uses. The BLM compiled these data into Chapter 4 and considered them in step five.

2.1.5 Step 5 – Develop the Agency Preferred Alternative

The BLM developed Alternative D, the Agency Preferred Alternative, by considering the impacts analysis (Chapter 4) for alternatives A through C; knowledge of specific issues raised throughout the planning process; planning criteria; and recommendations from cooperating agencies, BLM specialists, and resource experts.

The BLM developed the Agency Preferred Alternative using the following selection criteria:

1. Satisfies statutory requirements (true for all alternatives).
2. Reflects what the BLM believes to be the best combination of decisions to achieve its goals and policies.
3. Represents the best solution for the purpose and need as described in Chapter 1.
4. Provides the best approach to address key planning issues.
5. Considers cooperating agencies' and BLM specialists' recommendations.

2.1.6 Step 6 – Develop Additional Alternatives in Response to the Identified Need for a Supplement to the Draft RMP and Draft EIS

As discussed in Chapter 1 (Purpose and Need for Action), the BLM completed a Supplement to the Bighorn Basin Draft RMP and Draft EIS in July 2013 after the BLM Rocky Mountain Regional Interdisciplinary Team identified the need to consider incorporation of additional management actions for the conservation of greater sage-grouse. Nominations for greater sage-grouse-related ACECs were submitted by members of the public in response to the Notice of Intent (NOI). The BLM reviewed these nominations and found importance and relevance criteria to be met, warranting consideration in the Bighorn Basin RMP Revision Project. These proposed ACECs were subsequently analyzed by incorporating two additional alternatives (E and F) in the Supplement. This Proposed RMP and Final EIS integrates content from the Draft RMP and Draft EIS (alternatives A through D) and the Supplement (alternatives E and F), and incorporates revisions based on comments received during the public comment periods for each of the aforementioned documents.

The Agency Preferred Alternative was identified as the BLM's preliminary preference in the Draft RMP and EIS. Following publication of the Draft RMP and EIS, and the Supplemental RMP and EIS, the BLM revised the Agency Preferred Alternative based on comments received during both public comment periods. As modified, Alternative D is now presented as the Proposed RMP in the Final EIS. Following resolution of protests and the Governor's consistency review, the BLM will prepare two separate RODs and Approved RMPs.

2.2 Alternatives Components

Each alternative comprises two categories of land use planning decisions – (1) goals and objectives (desired outcomes) and (2) allowable uses and management actions.

2.2.1 Goals and Objectives

Goals and objectives direct BLM actions to most effectively meet legal mandates, regulations, and agency policy, as well as local and regional resource needs. Goals are broad statements of desired outcomes that are usually not quantifiable. Objectives identify more specific desired outcomes for

resources and might include a measurable component. Objectives are generally expected to achieve the stated goals. Section 2.7 *Detailed Alternative Descriptions by Resource* describes management goals and objectives for each resource.

2.2.2 Allowable Uses and Management Actions

The BLM developed allowable uses and management actions to achieve the goals and objectives defined for each resource.

Allowable Uses

Allowable uses identify uses that are allowed, restricted, or excluded on BLM-administered surface lands and federal mineral estate. Alternatives can include specific land use restrictions to meet goals and objectives and can exclude certain land uses (such as mineral leasing, locatable mineral development, recreation, forest management, utility corridors, and livestock grazing) to preserve resource values. For example, alternatives considered in this RMP and EIS prohibit surface disturbance (a controlled surface use [CSU] stipulation to prohibit surface-disturbing activities) during development of oil and gas leases within occupied greater sage-grouse leks and associated buffers. Allowable uses often contain a spatial component because the alternatives identify whether particular land uses are allowed, restricted, or excluded. Maps of the Planning Area illustrate these spatial components and define the geographical extent of the management actions.

Management Actions

Management actions are proactive measures (for example, measures the BLM will implement to enhance watershed function and condition), or limitations intended to guide BLM activities in the Planning Area. An example of this type of management action is to prohibit surface-disturbing activities near riparian/wetland areas to achieve proper functioning condition (PFC). The allowable distance (buffer) of surface-disturbing activities from riparian/wetland areas varies by alternative, whereas all alternatives include the action (in this case, limiting surface-disturbing activities near riparian/wetland areas).

Organization of Allowable Uses and Management Actions in the Alternatives

For simplicity, the remainder of this chapter uses the term “management action” to include both allowable uses and management actions. Therefore, when text refers to management actions, it includes both categories. The alternatives include two types of management actions – *management actions common to all alternatives*, which apply regardless of alternative, and *management actions by alternative*, which represent the choice(s) considered across alternatives. Management actions by alternative represent the range of land use management decisions considered. Management actions vary among the alternatives and represent a reasonable range of management options the BLM considered to meet the stated goals and objectives and purpose and need for the Bighorn Basin RMP Revision Project. RMPs are strategic in nature, and, while they provide an overarching vision for managing resources in the Planning Area, they also must be flexible enough to accommodate changing priorities, information, and circumstances.

2.3 Greater Sage-Grouse Habitat Management

On December 9, 2011, a Notice of Intent was published in the Federal Register to initiate the BLM and U.S. Forest Service (USFS) Greater Sage-Grouse Planning Strategy across ten 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 EIS is one of fifteen separate EISs analyzing incorporation of specific conservation measures across the range of the greater sage-grouse, consistent with BLM policy.

The BLM Washington Office (WO) issued a National Greater Sage-Grouse Planning Strategy on December 27, 2011. Wyoming BLM issued Instruction Memorandum (IM) 2012-019 on February 10, 2012, which provides guidance on greater sage-grouse habitat management and projects proposals until the RMP revision is complete. These policies have been incorporated into the Bighorn Basin Proposed RMP and Final EIS. In August 2011, the BLM convened the Sage-Grouse National Technical Team (NTT), which brought together resource specialists and scientists from the BLM, state fish and wildlife agencies, the U.S. Fish and Wildlife Service (USFWS), the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS), and the U.S. Geological Survey. The NTT developed a series of science-based conservation measures to be considered and analyzed through the land use planning process. WO IM 2012-044 provides direction to the BLM on how to consider the NTT conservation measures in the land use planning process. The WO IM requires that the applicable and appropriate conservation measures in the NTT report be analyzed in at least one alternative in the land use planning EIS and that a "hard look" be given to the conservation measures, as applicable to local ecological site variability. Alternatives E and F incorporate the national strategy (WO IM-2012–044).

2.3.1 BLM Programs Addressing Greater Sage-Grouse Habitat Threats

The direction for managing greater sage-grouse habitat in this document is focused on responding to the threats identified by the USFWS in their 2010 "warranted but precluded" finding on listing the greater sage-grouse, as well as their Conservation Objectives Team (COT) Report. The USFWS threats do not necessarily align with BLM or USFS resource program areas, and are often integrated into several different resource program areas. Table 2-2 provides a cross-walk between the 2010 warranted but precluded finding, COT identified threats, and the BLM program areas addressing these threats, with references to specific sections of the proposed plan.

Table 2-2. USFWS Threats to Greater Sage-Grouse and Their Habitat, Applicable BLM Resource Program Areas Addressing these Threats

USFWS-Identified Threats to Greater Sage-Grouse and Its Habitat (2010 warranted but precluded finding)	COT Report-Identified Threats to Greater Sage-Grouse and Its Habitat (2013)	Applicable BLM Programs Addressing Threat
Wildland Fire	Fire	Wildland Fire Management (see section 3000)
Invasive Species	Nonnative, Invasive Plants Species	Vegetation Management(see section 4000), Range Management (see section 6000), Wildland Fire Management (see section 3000), and Recreation (see section 6000)
Oil and Gas For wind-energy development, see Infrastructure – Powerlines/pipelines, Roads (below)	Energy Development	Lands and Realty (see section 6000) and Fluid Minerals (see section 2000)
Prescribed Fire	Sagebrush Removal	Vegetation Management (see section 4000) and Wildland Fire Management (see section 3000)
Grazing	Grazing	Range Management (see section 6000), Wild Horse and Burro Management (see section 4000), Special Status Species (see section 4000), and Vegetation Management (see section 4000)
See Grazing (above)	Range Management Structures	Range Management (see section 6000)
No similar threat identified	Free-Roaming Equid Management	Wild Horse and Burro Management (see section 4000)
Conifer Encroachment	Pinyon and/or Juniper Expansion	Wildland Fire Management (see section 3000) and Vegetation Management (see section 4000)
Agriculture and Urbanization	Agricultural Conversion and Ex-Urban Development	Lands and Realty (see section 6000)
Hard Rock Mining	Mining	Lands and Realty (see section 6000), Locatable Minerals (see section 2000), Salable Minerals (see section 2000), and Non-energy Leasable Minerals (see section 2000)
See Infrastructure, Roads	Recreation	Recreation (see section 6000) and Trails and Travel Management (see section 6000)
Infrastructure Powerlines/pipelines Roads Communication sites Railroads Range Improvements (see below)	Infrastructure	Lands and Realty (see section 6000) and Trails and Travel Management (see section 6000)

Table 2-2. USFWS Threats to Greater Sage-Grouse and Their Habitat, Applicable BLM Resource Program Areas Addressing these Threats (Continued)

USFWS-Identified Threats to Greater Sage-Grouse and Its Habitat (2010 warranted but precluded finding)	COT Report-Identified Threats to Greater Sage-Grouse and Its Habitat (2013)	Applicable BLM Programs Addressing Threat
Infrastructure – Range Improvements	Range Management Structures	Range Management (see section 6000)
Water Developments	No similar threat identified	All applicable programs
Climate Change	No similar threat identified	There are no BLM programs in the proposed plan addressing this threat
Weather	No similar threat identified	There are no BLM programs in the proposed plan addressing this threat
Predation	No similar threat identified	All applicable programs
Disease	No similar threat identified	All applicable programs
Hunting	No similar threat identified	There are no BLM programs in the proposed plan addressing this threat
Contaminants	No similar threat identified	Public Health and Safety (see section 8000)

Sources: USFWS 2010, USFWS 2013a

2.3.2 Range of Alternatives for Greater Sage-Grouse Habitat Management

The action alternatives (B, C, D, E, and F) in the Proposed RMP and Final EIS offer a range of management approaches to maintain or increase greater sage-grouse abundance and distribution by conserving, enhancing, or restoring the sagebrush ecosystem upon which greater sage-grouse populations depend in collaboration with other conservation partners. The relative emphasis given to particular resources and resource uses differs by alternative, 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 Table 2-3. This section also provides a complete description of the goals, objectives, and management actions for each alternative. In some instances, varying levels of management of PHMAs and General Habitat Management Areas (GHMAs) 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.

Table 2-3. Comparative Summary of Allocation Decisions of the Proposed Plan and Draft Alternatives for Greater Sage-Grouse Habitat Management

Resources/Resource Uses	Alternative A (No Action)	Alternative B (Key Area Boundary)	Alternative C	Alternative D Proposed Plan	Alternative E (Key Area Boundary)	Alternative F
Leasable Minerals – Oil and Gas						
Oil and Gas Leasing – Closed (acres)	PHMA: NA GHMA: 224,525	PHMA: 1,220,209 GHMA: 770,963	PHMA: NA GHMA: 142,859	PHMA: 58,842 GHMA: 190,315	PHMA: 1,220,209 GHMA: 779,131	PHMA: 58,842 GHMA: 172,108
Oil and Gas Leasing – Open with Major Constraints (acres)	PHMA: NA GHMA: 675,137	PHMA: 0 GHMA: 583,712	PHMA: NA GHMA: 56,855	PHMA: 685,921 GHMA: 242,143	PHMA: 0 GHMA: 590,772	PHMA: 685,922 GHMA: 242,200
Oil and Gas Leasing – Open with Moderate Constraints (acres)	PHMA: NA GHMA: 673,190	PHMA: 0 GHMA: 249,838	PHMA: NA GHMA: 1,007,438	PHMA: 366,613 GHMA: 892,003	PHMA: 0 GHMA: 255,373	PHMA: 366,613 GHMA: 862,184
Oil and Gas Leasing – Open with Standard Constraints (acres)	PHMA: NA GHMA: 1,057,255	PHMA: 0 GHMA: 284,172	PHMA: NA GHMA: 295,733	PHMA: 0 GHMA: 712,245	PHMA: 0 GHMA: 280,882	PHMA: 0 GHMA: 708,561
Salable Minerals						
Open (acres)	PHMA: NA GHMA: 1,841,405	PHMA: 401,966 GHMA: 625,430	PHMA: NA GHMA: 2,842,829	PHMA: 1,050,700 GHMA: 1,789,793	PHMA: 0 GHMA: 625,430	PHMA: 1,083,174 GHMA: 1,854,755
Closed (acres)	PHMA: NA GHMA: 266,775	PHMA: 820,575 GHMA: 1,268,033	PHMA: NA GHMA: 266,420	PHMA: 61,915 GHMA: 275,507	PHMA: 1,222,540 GHMA: 1,254,950	PHMA: 27,892 GHMA: 143,938
Locatable Minerals						
Open (acres)	PHMA: NA GHMA: 1,906,610	PHMA: 1,146,299 GHMA: 1,733,393	PHMA: NA GHMA: 2,995,631	PHMA: 1,105,380 GHMA: 1,978,937	PHMA: 0 GHMA: 1,728,724	PHMA: 1,056,404 GHMA: 1,918,147
Existing Withdrawals (acres)	PHMA: NA GHMA: 83,163	PHMA: 24,777 GHMA: 21,605	PHMA: NA GHMA: 106,453	PHMA: 1,441 GHMA: 17,611	PHMA: 24,777 GHMA: 21,605	PHMA: 49,521 GHMA: 59,471
Recommended Withdrawals (acres)	PHMA: NA GHMA: 14,281	PHMA: 52,652 GHMA: 139,373	PHMA: NA GHMA: 7,204	PHMA: 5,263 GHMA: 42,887	PHMA: 1,197,763 GHMA: 143,135	PHMA: 5,955 GHMA: 21,965
Land Resources -- Lands and Realty						
Disposal (acres)	PHMA: NA GHMA: 85,792	PHMA: 1,897 GHMA: 21,699	PHMA: NA GHMA: 109,101	PHMA: 0 GHMA: 54,109	PHMA: 1,897 GHMA: 21,699	PHMA: 11,331 GHMA: 52,477
Retention (acres)	PHMA: NA GHMA: 1,936,145	PHMA: 1,224,697 GHMA: 1,892,900	PHMA: NA GHMA: 3,024,609	PHMA: 1,112,593 GHMA: 2,011,309	PHMA: 1,224,697 GHMA: 200,600	PHMA: 1,101300 GHMA: 1,973,687

Table 2-3. Comparative Summary of Allocation Decisions of the Proposed Plan and Draft Alternatives for Greater Sage-Grouse Habitat Management (Continued)

Resources/Resource Uses	Alternative A (No Action)	Alternative B (Key Area Boundary)	Alternative C	Alternative D Proposed Plan	Alternative E (Key Area Boundary)	Alternative F
Land Resources – Rights-of-Way						
Open (acres)	PHMA: NA GHMA: 2,161,303	PHMA: 31 GHMA: 245,500	PHMA: NA GHMA: 1,961,517	PHMA: 0 GHMA: 743,533	PHMA: 0 GHMA: 245,500	PHMA: 0 GHMA: 747,635
Avoidance Areas (acres)	PHMA: NA GHMA: 912,927	PHMA: 1,094,914 GHMA: 1,580,334	PHMA: NA GHMA: 1,164,657	PHMA: 1,112,895 GHMA: 1,292,083	PHMA: 0 GHMA: 1,580,333	PHMA: 1,112,003 GHMA: 1,236,780
Exclusion Areas (acres)	PHMA: NA GHMA: 59,493	PHMA: 131,401 GHMA: 88,518	PHMA: NA GHMA: 7,549	PHMA: 2,087 GHMA: 35,001	PHMA: 1,226,345 GHMA: 88,518	PHMA: 289 GHMA: 37,520
Land Resources – Rights-of-Way and Corridors						
Existing (acres)	PHMA: NA GHMA: 782,240	PHMA: 264,050 GHMA: 518,251	PHMA: NA GHMA: 782,184	PHMA: 31,144 GHMA: 100,331	PHMA: 264,050 GHMA: 518,251	PHMA: 200,874 GHMA: 581,368
Proposed (acres)	PHMA: NA GHMA: NA	PHMA: 28,356 GHMA: 61,495	PHMA: 132,420 GHMA: NA	PHMA: 0 GHMA: 0	PHMA: 28,356 GHMA: 61,495	PHMA: 31,144 GHMA: 100,331
Land Resources – Renewable Energy						
Open (acres)	PHMA: NA GHMA: NA	PHMA: 31 GHMA: 245,500	PHMA: NA GHMA: 1,378,109	PHMA: 0 GHMA: 1,313,371	PHMA: 31 GHMA: 245,500	PHMA: 0 GHMA: 598,443
Avoidance Areas (acres)	PHMA: NA GHMA: NA	PHMA: 698,821 GHMA: 963,966	PHMA: NA GHMA: 1,595,036	PHMA: 1,002,408 GHMA: 493,843	PHMA: 698,821 GHMA: 963,966	PHMA: 1,035,097 GHMA: 1,209,990
Exclusion Areas (acres)	PHMA: NA GHMA: NA	PHMA: 527,494 GHMA: 704,887	PHMA: NA GHMA: 147,692	PHMA: 110,207 GHMA: 225,085	PHMA: 527,494 GHMA: 704,887	PHMA: 77,195 GHMA: 214,530
Land Resources – Travel and Transportation						
Open (acres)	PHMA: NA GHMA: 1,310	PHMA: 0 GHMA: 3,132	PHMA: NA GHMA: 14,829	PHMA: 0 GHMA: 5,884	PHMA: 0 GHMA: 3,132	PHMA: 0 GHMA: 5,884
Limited (acres)	PHMA: NA GHMA: 3,065,695	PHMA: 1,177,366 GHMA: 1,791,531	PHMA: NA GHMA: 3,095,898	PHMA: 1,109,645 GHMA: 1,996,971	PHMA: 1,177,366 GHMA: 1,791,531	PHMA: 1,109,645 GHMA: 1,958,504
Closed (acres)	PHMA: NA GHMA: 67,749	PHMA: 49,214 GHMA: 120,142	PHMA: NA GHMA: 9,274	PHMA: 2,746 GHMA: 58,567	PHMA: 49,038 GHMA: 120,142	PHMA: 2,746 GHMA: 57,899

Table 2-3. Comparative Summary of Allocation Decisions of the Proposed Plan and Draft Alternatives for Greater Sage-Grouse Habitat Management (Continued)

Resources/Resource Uses	Alternative A (No Action)	Alternative B (Key Area Boundary)	Alternative C	Alternative D Proposed Plan	Alternative E (Key Area Boundary)	Alternative F
Livestock Grazing Management						
Open for all classes of livestock grazing (acres)	PHMA: NA GHMA: NA	PHMA: 0 GHMA: 1,184,047	PHMA: NA GHMA: NA	PHMA: 1,111,970 GHMA: 2,056,377	PHMA: 0 GHMA: 1,184,047	PHMA: 1,111,970 GHMA: 2,017,277
Not allocated to livestock grazing (acres)	PHMA: NA GHMA: NA	PHMA: 1,226,343 GHMA: 730,304	PHMA: NA GHMA: NA	PHMA: 322 GHMA: 4,661	PHMA: 1,226,343 GHMA: 730,305	PHMA: 322 GHMA: 4,660

Source: USFWS 2013a

Note: The BLM National Operations Center calculated the acreages in this table.

ACEC Area of Critical Environmental Concern
BLM Bureau of Land Management
GHMA General Habitat Management Area
NA Not applicable
PHMA Priority Habitat Management Area

2.3.3 Development of the Proposed Plan for Greater Sage-Grouse Habitat Management

Changes Between the Draft RMP and Draft EIS and the Proposed RMP and Final EIS

As a result of public comments, best science, cooperating agency coordination, and internal review of the Draft EIS and the Supplement, the BLM has developed the Proposed RMP and Final EIS for managing BLM-administered land within the Bighorn Basin Planning Area. The Proposed RMP and Final EIS focuses on addressing public comments, while continuing to meet the BLM's legal and regulatory mandates. The Proposed RMP and Final EIS is a variation of the Preferred Alternative (D) and is within the range of alternatives analyzed in the Draft RMP and Draft EIS and Supplement.

Changes made to the Proposed RMP and Final EIS from the Preferred Alternative (D) in the Draft RMP and Draft EIS and Supplement are the following:

- Allocations for PHMAs and GHMAs – allocations in the Proposed RMP and Final EIS provide more opportunities for uses in GHMAs, while still maintaining conservation management by establishing screening criteria for project/activity review in greater sage-grouse habitat. Examples of changes made from the Preferred Alternative (D) to the Proposed RMP (D) include:
    - The Draft EIS Alternative D analyzed the application of a CSU stipulation within 0.6 mile of an occupied or undetermined lek. The FEIS has been updated to establish a No Surface Occupancy (NSO) stipulation within 0.6 mile of an occupied lek, as analyzed in Alternative F of the SEIS.
    - Timing limitation stipulations (TLS) have been updated for nesting and early brood-rearing habitat. The Draft EIS utilized dates from March 1-June 30. The FEIS has updated those dates to March 15-June 30. In addition, the TLS for winter concentration habitats has been updated from November 15-March 14 in the Draft EIS to December 1-March 14 in the FEIS.
- 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 greater sage-grouse populations. The BLM has reviewed this information and examined how lek buffer distances were addressed through land use allocations and other management actions. The State of Wyoming's Core Area Strategy is designed to protect birds and habitat within core areas using a suite of tools and mechanisms that work in concert to conserve greater sage-grouse by reducing habitat loss and fragmentation through lek buffers, disturbance limits, excluded activities, and a sophisticated mapping utility to monitor the amount and density of disturbance. The USFWS has informed the BLM that the combined effect of these overlapping and reinforcing mechanisms give USFWS confidence that the lek buffer distances in the Core Area Strategy will be protective of breeding greater sage-grouse.
- Adaptive management – Identification of hard and soft adaptive management triggers for population and habitat and identified appropriate management responses. Chapter 2 of the Draft EIS identified that the BLM 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.
- Monitoring and Disturbance – The monitoring framework was further refined in the Proposed RMP and Final EIS, and further clarification as to how disturbance cap calculations would be

measured were developed for the Proposed RMP and Final EIS. During the public comment periods, BLM received comments on how monitoring and disturbance cap calculations would occur at implementation. The Draft EIS outlined the major components of the monitoring strategy, as well as provided a table portraying a list of anthropogenic disturbances that would count against the disturbance cap. A BLM Disturbance and Monitoring Sub-team further enhanced the two Appendices (Appendix L and Y) in the Proposed RMP and Final EIS.

- Mitigation Strategy; Net Conservation Gain – The net conservation gain strategy is in response to the overall landscape-scale goal which is to enhance, conserve, and restore greater sage-grouse and its habitat. All of the action alternatives provided management actions to meet the landscape-scale goal (see Chapter 2, Management Actions 6061 and 6017).
- Western Association of Fish and Wildlife (WAFWA) Management Zone Cumulative Effects Analysis on Greater Sage-Grouse – a quantitative cumulative effects analysis for greater sage-grouse is included in the Proposed RMP and Final EIS. This analysis was completed to analyze the effects of management actions on greater sage-grouse at a biologically significant scale which as determined to be at the WAFWA Management Zone. The Supplement, in Chapter 4, included a qualitative analysis and identified that a quantitative analysis would be completed for the Proposed RMP and Final EIS at the WAFWA Management Zone.
- Public Comment on the Draft RMP and Draft EIS and Supplement – The Proposed RMP and Final EIS were updated based on public comment received on the Draft RMP and Draft EIS and Supplement (see Appendix A, Comment Analysis Report.)

The BLM has reviewed each of these subsequent publications, and determined that none constitute "significant new information relevant to environmental concerns and bearing on the proposed action or its impacts" such that supplementation of the Bighorn Basin RMP Final EIS is required. See 40 CFR 1502.9(c)(1).

NEPA requires agencies to prepare a supplement to the Draft 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 EIS.

The Proposed Land Use Plan (LUP) Amendments include components of the alternatives analyzed in the Draft EIS. Taken together, these components present a suite of management decisions that present a minor variation of alternatives identified in the Draft LUP Amendments/Draft EIS and are qualitatively within the spectrum of alternatives analyzed.

As such, the BLM has determined that the Proposed LUP Amendments is a minor variation of the preferred alternative and that the impacts of the Proposed LUP Amendments 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 LUP Amendments/Final EIS are similar or identical to those described Draft LUP Amendments/Draft EIS.

In developing the Proposed Plan for greater sage-grouse management, the BLM made modifications to the Agency Preferred Alternative identified in the Draft RMP and Draft EIS. The modifications are based on public comments received on the Draft RMP and Draft EIS, internal BLM review, new information and best available science, the need for clarification in the plans, and ongoing coordination with stakeholders across the range of the greater sage-grouse. As a result, the Proposed Plan provides

consistent greater sage-grouse habitat management across the range, prioritizes development outside of greater sage-grouse habitat, and focuses on a landscape-scale approach to conserving greater sage-grouse habitat.

The BLM modified the Agency Preferred Alternative identified as Alternative D in the Draft RMP and Draft EIS, which is now considered the Proposed RMP for managing BLM-administered lands within the Bighorn Basin RMP Planning Area.

Since release of the Draft RMP and Draft EIS, the BLM has continued to work closely with a broad range of governmental partners, including Governors, state fish and game agencies, the USFWS, Indian tribes, county commissioners, and many others. Through this cooperation, the BLM has developed a Proposed Plan that is consistent with state, Tribal, and local strategies in accordance with applicable law and contributes to the long-term conservation of the greater sage-grouse. The BLM also received many substantive public comments on the Draft RMP and Draft EIS (see Appendix A), which greatly informed the BLM's development of the Proposed Plan for greater sage-grouse management.

The BLM's Proposed Plan considers documents related to the conservation of Greater Sage-Grouse that were released after the publication of the Draft RMP and Draft EIS. For example, this Proposed Plan considers the USGS' 2014 report *"Conservation Buffer Distance Estimates for Greater Sage-Grouse—A Review"* (Manier et al. 2014). The State of Wyoming's Core Area Strategy is designed to protect greater sage-grouse and its habitat within core areas using a suite of tools and mechanisms to reduce habitat loss and fragmentation through lek buffers, disturbance limits, excluded activities, and a sophisticated mapping utility to monitor the amount and density of disturbance. The BLM also updated the Proposed Plan to reflect new greater sage-grouse state conservation strategies, including executive orders.

The BLM has refined the Proposed Plan to provide a layered management approach that offers the highest level of protection for greater sage-grouse in the most valuable habitat. Land use allocations in the Proposed Plan would limit or eliminate new surface disturbance in PHMAs, while minimizing disturbance in GHMA. In addition to establishing protective land use allocations, the Proposed Plan for greater sage-grouse management would implement a suite of management tools, such as disturbance limits (see Table 2-9, Management Action 4119), greater sage-grouse habitat objectives and monitoring (see Table 2-9, Management Actions 7178, and 7287), mitigation approaches (see Table 2-9, Management Action 7178), adaptive management triggers and responses (see Table 2-9, Management Action 7287), and lek buffer-distances (see Table 2-9, Management Actions 4116, 4117, and 4121). These overlapping and reinforcing conservation measures are intended to work in concert to improve greater sage-grouse habitat condition and provide clarity and consistency on how the BLM will manage activities in greater sage-grouse use habitat.

2.3.4 BLM Proposed Plan for Greater Sage-Grouse Habitat Management

Many of the proposed plan goals, objectives, management actions and allowable uses identified in this section originate from specific BLM resource and/or program areas (e.g., Physical Resources) and have been determined to be applicable to the proposed management of greater sage-grouse habitat. The record numbers in Table 2-4 are the same as those presented in the Detailed Alternative Descriptions (Table 2-9) of this chapter and have simply been consolidated in Table 2-4 to depict how the agency proposes to manage greater sage-grouse habitat.

Table 2-4. BLM Proposed Plan for Greater Sage-Grouse Habitat Management

Record #	Alternative D (Proposed RMP)
MANAGEMENT ACTIONS COMMON TO ALL RESOURCES	
0001	Surface-disturbing activities are subject to the *Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities, the Wyoming BLM Reclamation Policy, and the Wyoming DEQ*-WQD's Storm Water Permitting Program.
0002	The BLM may pursue a withdrawal from appropriation under the mining laws for locatable minerals within ACECs, recommended WSR suitable waterway segments, and special status species habitat on a case-by-case basis.
0003	Utilize recommendations found in WGFD documents Recommendations for Development of Oil and Gas Resources within Crucial and Important Wildlife Habitats (WGFD 2010b), *Wildlife Protection Recommendations for Wind Energy Development in Wyoming* (WGFD 2010c), and similar documents updated over time where determined applicable and consistent with valid existing rights.
PHYSICAL RESOURCES – SOIL	
GOAL PR:3	Maintain or improve soil health (e.g., chemical, physical, and biotic properties) while focusing on making significant progress toward meeting the *Wyoming Standards for Healthy Rangelands* (Appendix N). **Objective:** **PR:3.** Apply guidelines and appropriate measures to all management actions (including reclamation) affecting soil health to decrease erosion and sedimentation, to achieve and maintain stability, and to support the hydrologic cycle by providing for water capture, storage, and release.
1008	Develop appropriate mitigation for surface-disturbing and disruptive activities associated with wildlife and fish management through use of the mitigation guidelines described in Appendix H.
1016	Allow seeding of areas disturbed by surface-disturbing activities (as part of interim and final reclamation) and areas not meeting resource objectives using approved BLM seed mixtures.
1017	In disturbed areas, reestablish healthy native or desired plant communities based on pre-disturbance/desired plant species composition.
1019	Interim and final reclamation will begin at the earliest feasible time. Successful final reclamation of the desired vegetative cover will be considered achieved if conditions are equal to or better than pre-disturbance site condition. Require reclamation in compliance with BLM policy, including Wyoming BLM Reclamation Policy and similar guidance updated over time.

Table 2-4. BLM Proposed Plan for Greater Sage-Grouse Habitat Management (Continued)

Record #	Alternative D (Proposed RMP)
MINERAL RESOURCES	
GOAL MR:1	Provide opportunities for mineral extraction and energy exploration and development to meet national and local needs, while avoiding or mitigating impacts on other resources.
	Objective:
	MR:1.2 Encourage sound, balanced exploration and development of mineral resources in the Planning Area.
GOAL MR:2	Manage leasable fluid mineral resources (oil, gas, CBNG, geothermal) in the Planning Area to meet the Nation's energy needs, without compromising long-term health and diversity of public lands and resources.
	Objectives:
	MR:2.1 Provide opportunities to explore and develop federal oil and gas resources and other leasable minerals.
	MR:2.2 Provide opportunities for collection of subsurface geological (geophysical) data to aid in the exploration of oil and gas resources in areas open to leasing.
	MR:2.3 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 greater sage-grouse, priority will be given to development in non-habitat areas first and then in the least suitable habitat for greater sage-grouse. The implementation of these priorities will be subject to valid existing rights and any applicable law or regulation, including, but not limited to, 30 U.S.C. 226(p) and 43 C.F.R. 3162.3-1(h).
	MR:2.4 Where a proposed fluid mineral development project on an existing lease could adversely affect greater sage-grouse 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 APD for the lease to avoid and minimize impacts to sage-grouse or its habitat and will ensure that the best information about the Greater Sage-Grouse and its habitat informs and helps to guide development of such Federal leases.
GOAL MR:3	Manage solid leasable mineral resources (coal, oil shale, tar sands, phosphate, sodium, etc.) to help meet local and regional needs, while avoiding or mitigating effects on other resources.
	Objective:
	MR:3.1 Provide opportunities for exploration, leasing, and development of solid leasable minerals consistent with goals and objectives of other natural and cultural resources and values.
GOAL MR:4	Manage salable mineral materials to meet local and regional needs, while avoiding or mitigating effects on other resources.
	Objective:
	MR:4.2 Provide opportunities for exploration and development of salable minerals in suitable locations while avoiding or mitigating effects to other resources.
GOAL MR:5	Manage locatable minerals activities on lands open to mineral entry, while preventing unnecessary and undue degradation of public lands as defined in 43 CFR 3809.5, and while avoiding or mitigating effects of exploration and production on other resources.
	Objective:
	MR:5.1 Provide opportunities for exploration and development of locatable minerals while reducing and mitigating effects of mining on other natural resources.
LEASABLE MINERALS – COAL	
2004	Consider interest in exploration for, or leasing of, federal coal (Map 6), if any on a case-by-case basis. Allow coal exploration licenses subject to the regulations of 43 CFR 3410, and subject to guidance mitigating for surface-disturbing activities in the Wyoming BLM Standard Oil and Gas-Lease Stipulations (Appendix I). Before issuing a coal exploration license, require the authorized officer to prepare an environmental assessment or environmental impact statement, if necessary, of the potential effects of the proposed exploration on the natural and socio-economic environment of the affected area. If an application for a federal coal lease is received, conduct an appropriate land use and environmental analysis, including the coal screening process, to determine whether the area(s) proposed for leasing is (are) acceptable for coal development and leasing (as per 43 CFR 3425). If public lands are determined to be acceptable for further consideration for coal leasing, amend the land use plan as necessary. Only accept federal coal lease applications on those federal coal lands with development potential identified as suitable for further leasing consideration, after application of the coal screens and unsuitability criteria. 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 Greater Sage-Grouse for purposes of the suitability criteria set forth at 43 CFR 3461.5(o)(1).

Table 2-4. BLM Proposed Plan for Greater Sage-Grouse Habitat Management (Continued)

Record #	Alternative D (Proposed RMP)
LEASABLE MINERALS – GEOTHERMAL	
2005	Unless otherwise noted, BLM-administered land in the Planning Area that is open to oil and gas leasing is open to geothermal leasing, subject to appropriate mitigation developed through use of the mitigation guidelines described in Appendix H. Unless otherwise noted, those lands identified as closed to oil and gas leasing are closed to geothermal leasing.
2007	Protect important resources, including in areas closed to leasing on existing leases (Map 7) to the extent this restriction does not violate the leaseholder/operator lease rights, by applying an NSO restriction and prohibiting surface-disturbing activities. In areas identified as available for leasing, additional planning, analysis, and decision making may be necessary prior to lease issuance under the following criteria: 1) when oil and gas development is resulting in unacceptable multiple-use or natural/cultural resources conflicts, 2) new information evidences increased oil and gas development densities or surface disturbance, or 3) at the discretion of the Field Manager, District Manager, or State Director. Areas closed for oil and gas leasing may be leased with a NSO stipulation to deal with drainage of these resources from federal mineral estate.
LEASABLE MINERALS – OIL AND GAS/CBNG EXPLORATION AND DEVELOPMENT	
2008	Determine the routing of access roads and location of well pads after considering the views of the surface owner on split-estate lands (private surface-federal minerals/oil and gas), where possible. Where the federal government owns the mineral estate, and the surface is in non-federal ownership, apply the same stipulations, COAs, and/or conservation measures and RDFs 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. Where the federal government owns the surface and the mineral estate is in non-federal ownership, apply appropriate surface use COAs, stipulations, and mineral RDFs through ROW grants or other surface management instruments, to the maximum extent permissible under existing authorities, in coordination with the mineral estate owner/lessee.
2010	Unless otherwise noted, areas that are open to oil and gas leasing are open to geophysical exploration subject to appropriate mitigation developed through use of the mitigation guidelines described in Appendix I. Areas closed to oil and gas leasing are closed to geophysical exploration. However, geophysical exploration may be permitted on a case-by-case basis so long as the resource goals and objectives under which the area was closed are not compromised.
2011	In cases where federal oil and gas leases are or have been issued without stipulated restrictions or requirements that are later found to be necessary, or with stipulated restrictions or requirements that are later found to be insufficient, consider their inclusion before approving subsequent exploration and development activities. Include these restrictions or requirements only as reasonable measures or as conditions of approval in authorizing APDs or Master Development Plans. Conversely, in cases where leases are or have been issued with stipulated restrictions or requirements that are later found to be excessive or unnecessary, the stipulated restrictions or requirements may be appropriately modified, excepted or waived in authorizing actions. Both the application of reasonable measures or COAs and the modification, exception, or waiver of stipulated restrictions or requirements must first be based upon site-specific analysis including the necessary supporting NEPA compliance.
2013	Utilize BMPs in the exploration, development, production, and abandonment of oil and gas resources.
LEASABLE MINERALS – OTHER SOLID LEASABLE MINERALS	
2015	Lease solid minerals such as phosphates or sodium, consistent with other resources, on a case-by-case basis.
SALABLE MINERALS	
2016	Existing BLM-approved mineral material sites (Map 8) are open to mineral materials disposal. New mineral material disposal sites in areas open to mineral materials disposal are subject to site-specific analysis prior to approval. Ensure that each community pit has an updated site-specific reclamation fee based on a current mining and reclamation plan. Ensure that reclamation occurs in mined-out areas of community pits.
2017	Dispose of mineral materials on a case-by-case basis, subject to site-specific analysis and appropriate mitigation prior to approval, in areas open to mineral materials disposal.

Table 2-4. BLM Proposed Plan for Greater Sage-Grouse Habitat Management (Continued)

Record #	Alternative D (Proposed RMP)
LEASABLE MINERALS – OIL AND GAS MANAGEMENT AREAS, MASTER LEASING PLAN AREAS, AND OTHER AREAS	
2029	Delineate Oil and Gas Management Areas (Map 25) (441,662 acres of federal mineral estate) around the existing intensively-developed fields, applying a 2-mile buffer from the outer boundary of the existing field (Map 26); adding enhanced oil recovery areas identified by the Governor's Office Enhanced Oil Recovery Institute and excluding greater sage-grouse PHMAs. Manage these areas primarily for oil and gas exploration and development. Oil and gas development within Oil and Gas Management Areas is allowed to take place at the same level and density of the existing field development and will include enhanced oil recovery research and development operations, except in the Oregon Basin Oil Field, where new development will not exceed the current disturbance levels. Levels and densities beyond the existing field development may require additional NEPA analysis, reclamation, or compensatory off-site mitigation. As oil and gas fields expand or exploration reaches beyond the Oil and Gas Management Areas depicted on Map 25, Oil and Gas Management Areas may be enlarged as appropriate. To enlarge Oil and Gas Management Areas, the expansion area would: i) have to be adjacent to the field and under valid oil and gas lease(s) with stipulations allowing surface occupancy and development; ii) have to have a surface density of, on average, at least four well pads per 640-acres; a determination that additional well density is required to efficiently and adequately produce the oil or gas resource; iii) have a project-specific environmental analysis prepared to analyze the impacts and determine operating methods, mitigation, and BMPs to be used in the efficient and comprehensive development of the field; and iv) need surface resources to be satisfactorily mitigated; v) need commitment to accelerate reclamation as required by the authorized officer.
FIRE AND FUELS MANAGEMENT	
GOAL FM:1	Reducing risk to firefighters and the public is the first priority in every fire management activity. Protect life, property, and resource values by responding to wildland fires based on ecological and social consequences of the fire and the circumstances under which it occurs. **Objectives:** **FM:1.3** Manage fuels to restore and maintain landscapes, and promote fire-adapted communities and infrastructure. Fire and fuels management actions will focus on restoring natural fire regimes and frequencies, and accomplishing DPC objectives. **FM:1.5** Following wildland fires, conduct appropriate emergency stabilization and rehabilitation when and where needed. In priority sage-grouse habitat areas, prioritize suppression immediately after life and property to conserve the habitat. In general sage-grouse habitat, prioritize suppression where wildfires threaten priority sage-grouse habitat.
GOAL FM:2	Restore natural fire regimes and frequencies to the landscape, and utilize fire and vegetation treatments to accomplish DPC objectives. **Objectives:** **FM:2.1** Consult and cooperate with adjacent landowners, state and local governments, and other stakeholders to plan and implement prescribed fire and other vegetation treatments across the landscape. In areas of general sage-grouse habitat, design and implement fuels treatments with an emphasis on protecting existing sagebrush ecosystems. **FM:2.2** Implement and maintain a FMP for the Planning Area; the FMP identifies the site-specific fire management practices and fuels treatment actions needed to meet this RMP's goals and objectives and includes a focus on restoring natural fire regimes and frequencies or accomplishing DPC objectives.
3002	Implement the BLM Emergency Stabilization and Rehabilitation standards located in the *BLM Burned Area Emergency Stabilization and Rehabilitation Handbook* (BLM 2007a).

Table 2-4. BLM Proposed Plan for Greater Sage-Grouse Habitat Management (Continued)

Record #	Alternative D (Proposed RMP)
3008	Suppress fires threatening greater sage-grouse habitats and crucial winter wildlife habitat within Wyoming big sagebrush communities. Where fire would be utilized to meet resource objectives, work closely with resource specialists to protect and improve greater sage-grouse habitat. If prescribed fire is used in Greater Sage-Grouse habitat, the NEPA analysis for the Burn Plan will address: • why alternative techniques were not selected as a viable option; • how Greater Sage-Grouse goals and objectives would be met by its use; • how the COT Report objectives would be addressed and met; and • a risk assessment to address how potential threats to Greater Sage-Grouse 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 Greater Sage-Grouse habitat in PHMAs (e.g., creation of 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, 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 and/or in the winter range and designed to protect winter range habitat quality.
3015	Utilize wildland fires (wildfires managed for resource benefit and prescribed fires) and other vegetation treatments to restore fire-adapted ecosystems, reduce hazardous fuels, and accomplish resource management objectives.
BIOLOGICAL RESOURCES – VEGETATION - FORESTS, WOODLANDS, AND FOREST PRODUCTS	
GOAL BR:2	Manage vegetation resources to meet DPC objectives. **Objectives:** **BR:2.1** Manage native plant communities to restore, maintain, or enhance vegetation community health, composition, and diversity to provide a mix of successional stages that incorporate diverse structure and composition into the desired vegetation types. **BR:2.2** Maintain, improve, enhance, or restore native plant communities to facilitate the conservation, recovery, and maintenance of populations of native and desirable nonnative plant species and wildlife habitat. **BR:2.3** Maintain, improve, or enhance areas of ecological importance, priority plant species and habitats, and unique plant associations with native plant communities. **BR:2.4** Manage native plant communities across landscapes through cooperation with adjacent landowners, state and local governments, and other stakeholders. **BR:2.5** Coordinate with local, state, and federal agencies, and stakeholders to protect and recover native plant communities, and their included vegetative resources and habitat components affected by extreme environmental conditions. **BR:2.6** In PHMAs, the desired condition is to maintain a minimum of 70% of lands capable of producing sagebrush with 10 to 30% sagebrush canopy cover. The attributes necessary to sustain these habitats are described in Interpreting Indicators of Rangeland Health (BLM Technical Reference 1734-6 [BLM2005c]).
4014	Manage species including limber pine, subalpine fir, whitebark pine, cottonwood, willow, Rocky Mountain juniper, Utah juniper, and aspen, to enhance resources or resource uses, such as wildlife habitat, recreation opportunities, livestock grazing, watersheds, and scenic values.
4028	Manage native plant communities (Map 36) in accordance with Wyoming Standards for Healthy Rangelands. Continue to use ecological site descriptions, resource objectives, and specific management practices to maintain or achieve the standards that consider all reasonable and practical options available to achieve desired results.
4029	Continue to monitor and evaluate climatic and vegetative data. Compile and share data with other land management agencies and partners within the Planning Area using a cooperative collaborative approach. Should the analysis of data indicate that the vegetative resource is either not meeting or making significant progress towards meeting the Wyoming Standards for Healthy Rangelands or other site specific vegetative objectives, specific management practices will be developed and would consider all reasonable and practical options available to achieve desired results.

Table 2-4. BLM Proposed Plan for Greater Sage-Grouse Habitat Management (Continued)

Record #	Alternative D (Proposed RMP)
4030	In plant communities determined to be meeting Wyoming Standards for Healthy Rangelands, manage to maintain or improve those communities. The appropriate functional structural plant groups must be present for the site. Potentially manage some areas for a higher plant community state or phase (based on state and transition models in ESDs) where site-specific management objectives determine that a higher plant community state or phase is desirable. In these areas the desired plant community states or phases will be determined on a site-specific basis at the implementation level. Potentially manage some areas for lower plant community states or phases to provide preferred habitat for species.
4031	Manage to maintain contiguous blocks of native plant communities and minimize fragmentation; allow for appropriate mosaic of interrelated plant communities while allowing for other resource uses.
CONIFER ENCROACHMENT	
4106	Reintroduce appropriate fire regimes to limit conifer encroachment into the sagebrush plant communities. Take into account invasive herbaceous species and Fire Regime Group and FRCC (measure of departure from historic fire regime) with treatments. Where possible, achieve a balance between treating areas that have significantly departed from the historic fire regime (Condition Class 3) and areas that are functioning within an appropriate fire regime (Condition Class 1).
4107	Remove conifers encroaching into sagebrush habitats. Prioritize treatments closest to occupied sage-grouse 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.
4024	Manage conifer encroachment to improve wildlife habitat and forest health conditions, use Ecological Site Descriptions to help determine potential natural communities.
BIOLOGICAL RESOURCES – INVASIVE SPECIES AND PEST MANAGEMENT	
GOAL BR:4	Manage for healthy native plant communities by reducing, preventing expansion of, or eliminating the occurrence of undesirable invasive, nonnative species, undesirable, nonnative, or noxious weeds (predatory plant pests or disease) by implementing management actions consistent with national guidance and state and local weed management plans.
4038	Manage invasive plant species in the Planning Area in conjunction with local counties and other stakeholders consistent with the ROD for the Final PEIS addressing Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM 2007b), and current with policy and similar guidance updated over time.
4039	Manage invasive plant species using an Integrated Pest Management approach consistent with DOI Manual 517, Integrated Pest Management (DOI 2007).
4042	Use certified noxious weed-seed free vegetation products on all BLM-administered land in the Planning Area.
4045	Reduce and prevent the expansion of cheatgrass through cooperation with other agencies, organizations, and interested stakeholders.
4044	Develop and maintain an invasive species and pest management plan. If necessary, review and update this plan annually based on available funding and input from other agencies, organizations, and interested stakeholders.
BIOLOGICAL RESOURCES – VEGETATION - RIPARIAN/WETLAND RESOURCES	
GOAL BR:3	Manage riparian/wetland areas to provide a natural combination of vegetation and landform to provide the habitat and the water conditions necessary for aquatic and terrestrial species. **Objectives:** **BR:3.1** Manage vegetation, soil, landform, and water to meet PFC. **BR:3.2** Manage priority riparian/wetland areas to attain desired future conditions unique to the landscape setting.
4035	Manage all riparian/wetland areas to meet or make progress towards PFC giving priority to those areas that are functioning at risk with a downward trend or that are in non-functioning condition, plus manage streams with unique recreational or aquatic values to obtain PFC.
4036	Prohibit surface-disturbing activities within 500 feet of surface water and riparian/wetland areas (70,715 acres) except when such activities are necessary and when their impacts can be mitigated.

Table 2-4. BLM Proposed Plan for Greater Sage-Grouse Habitat Management (Continued)

Record #	Alternative D (Proposed RMP)
BIOLOGICAL RESOURCES – FISH AND WILDLIFE RESOURCES - WILDLIFE	
4060	Maintain or improve important wildlife habitats through vegetative manipulations, habitat improvement projects, livestock grazing strategies and the application of The Wyoming Guidelines for Managing Sagebrush Communities with Emphasis on Fire Management (Wyoming Interagency Vegetation Committee 2002) and the Wyoming BLM Standard Mitigation Guidelines for Surface-Disturbing Activities (Appendix H), and similar guidance updated over time.
4071	In cooperation with the WGFD and other stakeholders, work to develop water sources for wildlife and special status species in coordination with the WGFD and the BLM Water Development Handbook (H-1741-2).
4073	Modify identified hazard fences, and analyze and construct new fences in accordance with appropriate wildlife needs, the BLM Fencing Handbook 1741-1, and WO IM 2010-022 Managing Structures for the Safety of Sage-grouse, Sharp-tailed grouse, and Lesser Prairie-chicken, and similar guidance and policy as updated over time.
4075	Pursue exchanges to enhance public access or improve management of important wildlife habitat areas by consolidating public land. Emphasize the acquisition of access to public lands on the Bighorn, Shoshone, Clarks Fork of the Yellowstone, and Greybull rivers; Gooseberry Creek; the upper portions of Cottonwood and Grass Creeks; and on lands where other riparian areas occur. Plus in cooperation with willing sellers and other stakeholders, pursue all land tenure adjustment authorities for the acquisition of, and interest in, lands for the improved management of important wildlife habitat.
4078	Allow water development projects in crucial elk winter range and in greater sage-grouse nesting habitat with 10 inches or less annual precipitation only when adverse effects can be avoided or mitigated based on site-specific analysis. Allow existing uses pending site-specific analysis on a priority basis.
4082	Avoid wind energy projects in big game crucial winter range and raptor concentration areas. Wind-energy development would be avoided in sage-grouse PHMAs (Map 42), unless it can be sufficiently demonstrated that the development activity would not result in declines of sage-grouse PHMA populations. Sufficient demonstration of "no declines" should be coordinated with the WGFD and USFWS.
4083	At the discretion of the BLM and its stakeholders, use produced water to develop and enhance waterfowl, special status species, and other wildlife habitats in accordance with federal, state, and local laws and regulations.
BIOLOGICAL RESOURCES – FISH AND WILDLIFE RESOURCES – SPECIAL STATUS SPECIES	
4085	Postpone or modify projects that may affect special status species to protect these species. Consult with USFWS in such cases, as required by the Endangered Species Act.
4086	Consult with stakeholders early in the permitting process to design projects in a manner that would minimize or avoid potential adverse effects to special status species.
4087	Assist authorized agencies in the restoration, reintroduction, augmentation, or re-establishment of threatened, endangered, and other special status species populations and/or habitats.
BIOLOGICAL RESOURCES – GREATER SAGE-GROUSE	
4089	Discourage the use of broad-spectrum insecticides where insect control is required. Target pest control toward key problem areas and schedule applications to be effective in minimum doses in greater sage-grouse brood-rearing areas. Field Offices may implement treatments within sage-grouse habitat utilizing reduced agent-area treatments (RAATS) protocols.
4090	Avoid aerial pesticide spraying in favor of ground applications to minimize drift into non-target areas in greater sage-grouse habitat unless benefits of treatments are likely to outweigh impacts.
4091	Avoid applying pesticides to greater sage-grouse breeding habitat during the nesting and early brood-rearing season (March 15 through June 30) to reduce the loss of food supply to chicks and avoid the chance of secondary poisoning unless benefits of treatments are likely to outweigh impacts.
4092	Maintain seeps, springs, wet meadows, and riparian vegetation in a functional and diverse condition for young greater sage-grouse and other species that depend on forbs and insects associated with these areas. Consider management actions if desirable green vegetation associated with these wet areas is not available, accessible, or cannot be maintained with current livestock, wildlife, or wild horse use, and the impacts are outweighed by the improved habitat quality.

Table 2-4. BLM Proposed Plan for Greater Sage-Grouse Habitat Management (Continued)

Record #	Alternative D (Proposed RMP)
4093	Restore greater sage-grouse brood-rearing habitats in riparian/wetland areas.
4094	Restore lost riparian functioning systems by repairing abnormally incised drainages to raise water tables and increase water storage and brood-rearing habitats within greater sage-grouse habitat.
4095	Manage vegetation diversity and structure to provide suitable habitat and adequate cover for greater sage-grouse during nesting periods, determined by ecological site description.
4096	Maintain sagebrush and understory diversity (relative to ecological site description) in crucial seasonal greater sage-grouse habitats unless such removal is necessary to achieve greater sage-grouse habitat management objectives. For example, thinning small patches of dense sagebrush may increase desirable forbs in early brood-rearing habitat.
4097	Increase the composition and canopy cover of Wyoming big sagebrush, within existing nonnative grass seedings with less than 5 percent sagebrush canopy cover, to greater than or equal to neighboring sagebrush communities or historical levels. (See Shrubland-Salt Desert/Salt Bottom on Map 36; deeper soiled, and gentler sloped portions of the Shrubland-Salt Desert/Salt Bottom, colored in pink, would be those areas where sagebrush restoration efforts could be conducted.)
4098	Investigate opportunities to increase sagebrush in lower precipitation zones.
4099	Plan and construct mining and mineral development activities, to the degree possible given state water rights, to minimize disturbances that would result in alterations to springs and riparian greater sage-grouse habitat. Alternative water sources may be developed to replace natural sources that have been affected or destroyed during these development activities.
4100	Treat constructed or non-natural water storage impoundments to control mosquito breeding (and the associated spread of West Nile virus), to prevent disease spread to greater sage-grouse on priority basis.
4101	In cooperation with stakeholders, manage to promote the growth and persistence of native shrubs, grasses, and forbs needed by greater sage-grouse for seasonal food and concealment.
4102	In cooperation with stakeholders, design and locate fences so as not to disturb important greater sage-grouse habitat areas. Increase the visibility of existing fences in these areas to reduce hazards to flying greater sage-grouse.
4103	Conduct fire management activities to minimize overall wildfire size and frequency in sagebrush plant communities where greater sage-grouse habitat objectives are at risk. General priorities for habitat protection: Priority # 1 - Protection of greater sage-grouse PHMAs. Priority # 2 - Wyoming big sagebrush communities outside greater sage-grouse PHMAs and habitats recovering from disturbance within or adjacent to greater sage-grouse PHMAs.
4104	Annually Maintain FMPs to incorporate updated sagebrush habitat information as well as fire suppression priorities in sagebrush habitats. Incorporate fire management objectives for the management of sagebrush ecosystems into FMPs. Provide fire management objectives for sagebrush ecosystems to initial attack personnel at the beginning of each fire season.
4105	Establish fuels treatment projects at strategic locations to minimize size of wildfires and limit loss of greater sage-grouse habitat.
4106	Reintroduce appropriate fire regimes to limit conifer encroachment into late brood-rearing habitats within Mountain sagebrush plant communities. Take into account invasive herbaceous species and Fire Regime Group and FRCC (measure of departure from historic fire regime) with treatments. Where possible, achieve a balance between treating areas that have significantly departed from the historic fire regime (Condition Class 3) and areas that are functioning within an appropriate fire regime (Condition Class 1).
4107	Remove conifers encroaching into sagebrush habitats. Prioritize treatments closest to occupied sage-grouse 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.
4108	The BLM will collaborate with appropriate Federal agencies, and the State of Wyoming as contemplated under Governor Executive Order 2013-3, to: 1) develop appropriate conservation objectives; 2) define a framework for evaluating situations where greater sage-grouse conservation objectives are not being achieved on federal land, to determine if a causal relationship exists between improper grazing (by wildlife or wild horses or livestock) and greater sage-grouse conservation objectives; and 3) identify appropriate site-based action to achieve Greater Sage-Grouse conservation objectives within the framework.

Table 2-4. BLM Proposed Plan for Greater Sage-Grouse Habitat Management (Continued)

Record #	Alternative D (Proposed RMP)
4117	**Inside PHMAs** The BLM's goal inside sage-grouse PHMAs is to maintain or enhance seasonal habitats thereby providing support for sage-grouse population management objectives of the State of Wyoming. Surface occupancy and surface-disturbing activities would be prohibited on or within 0.6-mile radius of the perimeter of occupied sage-grouse leks. The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of greater sage-grouse (Map 42). Leases should be a minimum of 640 contiguous acres of federal mineral estate. Smaller parcels may be leased only when 640 contiguous acres of federal mineral estate is not available and leasing is necessary to remain in compliance with laws, regulations and policy; for example, to protect the federal mineral estate from drainage or to commit the federal mineral estate to unit or communitization agreements. Preliminary parcels reviewed for possible offering in a lease sale should comply with this minimum lease size. Expressions of interest that are less than this minimum lease size would be evaluated and modified by the BLM to meet the minimum lease size, where possible, prior to review for possible offering in a lease sale. **Outside PHMAs** Outside sage-grouse PHMAs, the BLM's goal is to sustain important habitats that support core populations and to maintain lek persistence over the long term in sufficient proportions of the sage-grouse population to facilitate movement and genetic transfer between core populations, including those found in adjacent states. Apply a NSO stipulation to prohibit or restrict surface-disturbing activities or surface occupancy within ¼-mile radius of the perimeter of occupied sage-grouse leks (Map 42).
4118	**Inside PHMAs** Apply a TLS to restrict disruptive activity within 0.6-mile radius of the perimeter of occupied sage-grouse leks from March 15 to June 30. **Outside PHMAs** Apply a TLS to restrict disruptive activity within ¼ mile of occupied sage-grouse leks from March 15 to June 30. **Inside PHMAs** Apply a TLS to prohibit or restrict surface-disturbing and/or disruptive activities in sage-grouse nesting and early brood-rearing habitat within PHMAs, regardless of distance from the lek from March 15 to June 30. **Outside PHMAs** Apply a TLS to prohibit or restrict surface-disturbing and/or disruptive activities in sage-grouse nesting and early brood-rearing habitat within 2 miles of the lek or lek perimeter of any occupied lek from March 15 to June 30.
4119	Apply a TLS to prohibit or restrict surface-disturbing and disruptive activities in mapped sage-grouse winter habitats/concentration areas from December 1 to March 14.

Table 2-4. BLM Proposed Plan for Greater Sage-Grouse Habitat Management (Continued)

Record #	Alternative D (Proposed RMP)
4120	**Density of Disturbances** In greater sage-grouse PHMAs, the density of disturbance of energy or mining facilities would be limited to an average of one site per square mile (640 acres) within the DDCT, subject to valid existing rights. The one location and cumulative value of existing disturbances would not exceed 5 percent of habitat. Utilize the greater sage-grouse density disturbance calculation tool as described in Appendix Y. Inside PHMA, all suitable habitat disturbed (any program area) will not exceed 5% within the DDCT area using the DDCT process. Consolidate anthropogenic features from development and transmission on the landscape. Allow on a case-by-case basis high profile structures within greater sage-grouse nesting habitat. Manage PHMAs (1,232,583 acres) as ROW avoidance areas. Work with proponents to design ROW applications to protect greater sage-grouse. Buried utilities constructed in designated utility corridors would not require that a DDCT be conducted. Sagebrush Treatment: Sagebrush eradication is considered disturbance and will contribute to the 5% disturbance factor. In stands with less than 15% cover, treatment should be designed to maintain or improve sagebrush habitat. Sagebrush treatments that maintain sagebrush canopy cover at or above 15% total canopy cover within the treated acres will not be considered disturbance. Treatments that reduce sagebrush canopy cover below 15% will be allowed if all such treated areas make up less than 20% of the suitable sagebrush habitat within the DDCT, and any point within the treated area is within 60 meters of sagebrush habitat with 5% or greater canopy cover. Treatments to enhance sagebrush/grassland will be evaluated based upon the existing habitat quality and the functional level post-treatment. Wildfire burns will be treated as disturbed if sagebrush is reduced below 5 percent unless there is an implementation plan outlining restoration efforts and 3 years of data showing a trend back to suitable habitat. Although seasonal restrictions on activities may apply, vegetation treatments that do not make the habitat unsuitable for greater sage-grouse are not considered in the density calculation.
4121	The BLM would work with proponents to limit project-related noise where it would be expected to reduce functionality of habitats that support PHMA populations. The BLM would evaluate the potential or limitation of new noise sources on a case-by-case basis as appropriate. The BLM's near-term goal would be to limit noise sources that would be expected to negatively impact PHMA sage-grouse populations and to continue to support the establishment of ambient baseline noise levels for occupied PHMA leks. As additional research and information emerges, specific new limitations appropriate to the type of projects being considered would be evaluated and appropriate limitations would be implemented where necessary to minimize potential for noise impacts on sage-grouse PHMA population behavioral cycles. As new research is completed, new specific limitations would be coordinated with the WGFD and partners. Noise levels at the perimeter of the lek should not exceed 10 dBA above ambient noise.
4122	Allow motorized vehicle use in greater sage-grouse PHMAs consistent with other resource objectives, and locate new roads that will have relatively high levels of activity (i.e., accessing multiple wells, housing developments, etc.) greater than 1.9 miles from the perimeter of occupied sage-grouse leks within PHMAs. Locate other new roads greater than 0.6 miles from the perimeter of occupied sage-grouse leks within PHMAs. Construct roads to minimum design standards needed for production activities.
BIOLOGICAL RESOURCES – RAPTORS	
4110	Work with proponents to design powerlines following USFWS guidelines to protect raptors from electrocution and to reduce predation on other special status species. Work with ROW holders to retrofit existing lines.
BIOLOGICAL RESOURCES – WILD HORSES	
GOAL BR:11	Manage and maintain healthy wild horses and herds inside HMAs in a thriving natural ecological balance within the productive capacity of their habitat while preserving multiple use relationships.
4145	Base future adjustments to the appropriate management level on monitoring information and multiple use considerations through development of and/or revisions to HMA Plans. Update HMA plans to include greater sage-grouse objectives.
4146	Manage BLM-administered land within the Fifteenmile and McCullough Peaks HMAs to maintain or enhance conformance with the *Wyoming Standards for Healthy Rangelands*.

Table 2-4. BLM Proposed Plan for Greater Sage-Grouse Habitat Management (Continued)

Record #	Alternative D (Proposed RMP)
LAND RESOURCES – LANDS AND REALTY	
GOAL LR:1	Manage the acquisition, disposal, withdrawal, and use of public lands to meet the needs of internal and external customers and to preserve important resource values. **Objectives:** **LR:1.2** Use appropriate actions such as disposal and acquisition to resolve issues related to intermixed land-ownership patterns and to acquire non-federal land having high resource/recreation value(s). **LR:1.3** Maintain availability of public lands to meet the habitation, trade, mineral development, recreation, and manufacturing needs of external customers and the general public.
6001	Consider land use authorizations (permits, leases, etc.) on a case-by-case basis consistent with other resource objectives. Do not classify, open, or make available any BLM-administered lands for agricultural leasing or agricultural entry under the Desert Land Entry for one of more of the following reasons: unsuitable topography, presence of sensitive resources or resource conflicts, lack of water or access, small parcel size, or unsuitable soils.
6010	Acquire private or state lands or interest in land from willing sellers on a case-by-case basis to consolidate land ownership and enhance the ability to manage important recreation opportunities and wildlife habitats such as migration corridors, crucial big game habitat, and riparian/wetland areas. Except for lands acquired using monies from the Westside Irrigation project conveyance described below, exchange is the preferred method of acquisition.
6017	Retain approximately 3,121,558 acres of BLM-administered land. 66,363 acres of BLM-administered land are available for disposal by sale, exchange or other means (Map 54) (Appendix M). Disposal can include none, some, or all of the mineral estate as allowed by 43 CFR 2720 and FLPMA Section 209(b)(1). A mineral potential report would determine if a surface estate disposal includes none, some, or all of the mineral estate. Lands classified as PHMA for Greater Sage-Grouse will be retained in federal management unless: (1) the agency can demonstrate that disposal of the lands will provide a net conservation gain to the Greater Sage-Grouse or (2) the agency can demonstrate that the disposal of the lands will have no direct or indirect adverse impact on conservation of the Greater Sage-Grouse. 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 plan, including, but not limited to, the land use plan objective to maintain or increase greater sage-grouse abundance and distribution. Note: All land actions to acquire or dispose of lands would require a site-specific analysis under NEPA.
LAND RESOURCES – RIGHTS-OF-WAY AND CORRIDORS	
6033	Designate ROW corridors as shown on Map 66. In PHMA, major overhead powerlines will not be authorized unless co-located with an existing 115 kilovolt or greater powerline, as close as technically feasible, not to exceed 0.5 miles or within a designated corridor authorized for overhead powerlines. Distribution lines may be authorized when effectively mitigated to protect greater sage-grouse and the Authorized Officer determines that overhead installation is the action alternative with the fewest adverse impacts. Agricultural and residential lines will be considered to be adequately mitigated for greater sage-grouse if constructed at least 0.6 mile from the lek perimeter with appropriate timing constraints and installation of raptor deterrents. These ROW authorizations will be subject to approval by the State Director.
6036	Avoid placement of above-ground powerlines within one mile on each side of the Greybull Highway (14-16-20) from the City of Cody to the intersection with Highway 32 near the community of Emblem. Avoid placement of above-ground powerlines within one mile on each side of Highway 32 between Emblem and the BLM-BOR boundary to the north. Avoid placement of above-ground powerlines within one mile on each side of Highway 120 between the City of Cody and the Wyoming-Montana state line. Avoid placement of above-ground powerlines within one mile on each side of Highway 120 between the City of Cody and the Meeteetse Rim to the south. Avoid placement of above-ground powerlines within one mile on each side of Highway 14-16-20 between the City of Cody and the community of Wapiti.

Table 2-4. BLM Proposed Plan for Greater Sage-Grouse Habitat Management (Continued)

Record #	Alternative D (Proposed RMP)
LAND RESOURCES – COMPREHENSIVE TRAVEL AND TRANSPORTATION MANAGEMENT	
6038	Unless otherwise specified in other management actions, motorized vehicle use on BLM-administered land is limited to existing roads and trails on an interim basis until completion of travel management planning. Designation changes from "limited to existing roads and trails" to "limited to designated roads and trails" upon the completion of a travel management plan. Terms "interim existing roads and trails", or "existing roads and trails" are used throughout the document to identify areas of low travel management planning priority. Interim existing roads and trails may be maintained for continued access until completion of a travel management plan.
6047	Allow temporary closures to motorized vehicle use in areas that pose public health and safety risks, and/or where resource damage is imminent. In PHMA and GHMA, temporary closures will be considered in accordance with 43 CFR subpart 8364 (Closures and Restrictions); 43 CFR subpart 8351 (Designated National Area); 43 CFR subpart 6302 (Use of Wilderness Areas, Prohibited Acts, and Penalties); 43 CFR subpart 8341 (Conditions of Use). Temporary closure or restriction orders under these authorities are enacted at the discretion of the authorized officer to resolve management conflicts and protect persons, property, and public lands and resources. Where an authorized officer determines that off-highway vehicles are causing or will cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources, the affected areas shall be immediately closed to the type(s) of vehicle causing the adverse effect until the adverse effects are eliminated and measures implemented to prevent recurrence. (43 CFR 8341.2) A closure or restriction order should be considered only after other management strategies and alternatives have been explored. The duration of temporary closure or restriction orders should be limited to 24 months or less; however, certain situations may require longer closures and/or iterative temporary closures. This may include closure of routes or areas.
6051	To protect resource values, until each route is designated as open or closed in a corresponding travel management plan, motorized vehicle use is limited to existing roads and trails on approximately 1,955,943 acres of BLM-administered land in the Planning Area (Map 72).
LAND RESOURCES – RECREATION	
6059	Manage recreational use to maintain or improve wetland habitat conditions along intensively used streams and reservoirs, consistent with the *Wyoming Standards for Healthy Rangelands* or other guidance (see Appendix N).
6061	Design recreational sites, recreation facility development, and recreational access to avoid riparian habitat areas or develop and manage them in a manner that minimizes effects on riparian habitats. In PHMAs, do not construct new recreation facilities (e.g., campgrounds, trails, trailheads, staging areas) unless the development would have a net conservation gain to Greater Sage-Grouse habitat (such as concentrating recreation, diverting use away from important habitat areas, etc.), or unless the development is required for visitor health and safety or resource protection.
LAND RESOURCES – LIVESTOCK GRAZING MANAGEMENT	
6267	In cooperation, consultation, and coordination with permittees/lessees, cooperators, and interested public, develop and implement appropriate livestock grazing management actions to enhance land health, improve forage for livestock, and meet other multiple use objectives by using the Wyoming Guidelines for Livestock Grazing Management, other appropriate BMPs (see Appendices L and W), and development of appropriate range improvements. 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 PHMAs. 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 (ex., fire) and legal obligations.
6271	Utilize a rangeland health assessment, resource monitoring, or analysis to determine if livestock grazing adjustments in amounts, kinds, or season are necessary. The NEPA analysis for renewals and modifications of livestock grazing permits/leases that include lands within PHMAs will include specific management thresholds based on Greater Sage-Grouse Habitat Objectives Table and Land Health Standards (43 CFR 4180.2) and one or more defined responses that will allow the authorizing officer to make adjustments to livestock grazing that have already been subjected to NEPA analysis.
6274	Vary the intensity of livestock grazing monitoring, with higher priority given to "I" category allotments and those allotments not meeting land health standards due to livestock grazing.
6276	Apportion additional sustained yield forage, based on monitoring, to satisfy suspended permitted use of permittees/lessees in the allotment and to meet multiple-use objectives where the forage is available.

Table 2-4. BLM Proposed Plan for Greater Sage-Grouse Habitat Management (Continued)

Record #	Alternative D (Proposed RMP)
6277	On a case-by-case basis, allow issuance of permits/leases for livestock grazing for parcels that are not included in a grazing allotment, and where such permits/leases are not issued, allocate forage on such parcels to meet other multiple-use objectives.
6278	Establish and manage future reserve common allotments as opportunities arise within the Planning Area on a voluntary basis, plus establish and manage reserve common allotments on abandoned allotments on a case-by-case basis and attempt to utilize each allotment at least every five years. 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.
6279	Prohibit the placement of salt, mineral, or forage supplements within ¼ mile of water, wetlands, riparian areas, reclaimed or reforested areas, or as determined by the authorized officer.
6281	Design range improvement projects, including vegetation treatments, to meet multiple-use objectives, mitigate impacts to other resource values, and meet allotment management objectives.
6283	Allotments within PHMAs, focusing on those containing riparian areas, including wet meadows, will 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.
SPECIAL DESIGNATIONS – ACECS – PROPOSED GREATER SAGE-GROUSE PRIORITY HABITAT AREA ACECS	
7179	No ACEC would be designated, however, implement mitigation and minimization guidelines and required design features, including specific measures for greater sage-grouse (refer to Appendix L). Incorporate greater sage-grouse specific measures into project proposals as required design features or mitigation for any authorized federal action, regardless of surface ownership. Require the development of a wildlife resource monitoring and mitigation plan to address potential impacts from mineral development on wildlife populations and/or habitat on a case-by-case basis.
7230	No ACEC would be designated, except using the following travel management criteria: • During subsequent travel management planning, all routes within PHMAs would undergo a route evaluation to determine its purpose and need and the potential resource and/or user conflicts from motorized travel. Where resource and/or user conflicts outweigh the purpose and need for the route, the route would be considered for closure or considered for relocation outside of sensitive greater sage-grouse habitat. • During implementation-level travel planning, threats to greater sage-grouse and their habitat would be considered when evaluating route designations and/or closures. • During subsequent travel management planning, routes within PHMAs that do not have a purpose or need would be considered for closure. • During subsequent travel management planning, routes within PHMAs that are duplicative parallel, or redundant would be considered for closure. • During subsequent travel management planning, OHV timing limitations would be considered in important seasonal habitats where OHV use is a threat. • During subsequent travel management planning, consider limiting snow machine travel to designated routes or consider seasonal closures in greater sage-grouse wintering areas from November 1 through March 31. • During subsequent travel management planning, routes in PHMAs not required for public access or recreation with a current administrative/agency purpose or need would be evaluated for administrative access only. • During subsequent travel management planning, prioritize restoration of routes not designated in a Travel Management Plan within PHMAs. • During subsequent travel management planning, consider using seed mixes or transplant techniques that will maintain or enhance greater sage-grouse habitat when rehabilitating linear disturbances. • During subsequent travel management planning, consider scheduling road maintenance to avoid disturbance during sensitive periods and times to the extent practicable. Use time of day limits (after 10:00 AM to 7:00 PM) to reduce impacts on greater sage-grouse during breeding and nesting periods.

Table 2-4. BLM Proposed Plan for Greater Sage-Grouse Habitat Management (Continued)

Record #	Alternative D (Proposed RMP)
7287	The Greater Sage-Grouse adaptive management plan provides regulatory assurance that unintended negative impacts to Greater Sage-Grouse habitat will be addressed before consequences become severe or irreversible. Adaptive management triggers are essential for identifying when potential management changes are needed in order to continue meeting Greater Sage-Grouse conservation objectives. With respect to sage-grouse, all regulatory entities in Wyoming, including the BLM and FS, use soft and hard triggers. Soft and hard triggers are focused on three metrics: 1) number of active leks, 2) acres of available habitat, and 3) population trends based on annual lek counts. See Appendix Y for more information on soft and hard triggers. **Soft Triggers Response** Soft triggers require immediate monitoring and surveillance to determine causal factors and may require curtailment of activities in the short or long term, as allowed by law. The project level adaptive management strategies will identify appropriate responses where the project's activities are identified as the causal factor. The management agency (BLM and/or FS) and the adaptive management working group will implement an appropriate response strategy to address causal factors not attributable to a specific project or to make adjustments at a larger regional or statewide level. **Hard Trigger Response** Upon determination that a hard trigger has been tripped, the BLM and/or USFS will immediately defer issuance of discretionary authorizations for new actions within the Biologically Significant Unit for a period of 90 days. In addition, within 14 days of a determination that a hard trigger has been tripped, the AMWG will convene to develop an interim response strategy and initiate an assessment to determine the causal factor or factors (hereafter called the causal factor assessment).

ACEC	Area of Critical Environmental Concern	GHMA	General Habitat Management Area
APD	Application for Permit to Drill	HMA	Herd Management Area
BLM	Bureau of Land Management	NEPA	National Environmental Policy Act
BOR	Bureau of Reclamation	NSO	no surface occupancy
CBNG	coalbed natural gas	OHV	off-highway vehicle
CFR	Code of Federal Regulations	PFC	Proper Functioning Condition
COA	Conditions of Approval	PHMA	Priority Habitat Management Area
COT	Conservation Objectives Team	TLS	timing limitations
DDCT	Density of Disturbance Calculation Tool	U.S.C.	United States Code
DEQ	Department of Environmental Quality	USFS	United States Forest Service
DOI	Department of the Interior	USFWS	United States Fish and Wildlife Service
DPC	desired plant community	WGFD	Wyoming Game and Fish Department
FMP	Fire Management Plan	WQD	Water Quality Division
FRCC	Fire Regime Condition Class	WSR	Wild and Scenic River

2.3.5 Adaptive Management Strategy for Greater Sage-Grouse Habitat Management

Adaptive Management is a decision process that promotes flexible resource management 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 advances scientific understanding and guides subsequent refinements in resource management 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. On February 1, 2008, the Department of the Interior (DOI) published its Adaptive Management Implementation Policy (522 DM 1).

In relation to the BLM's National Greater Sage-grouse Planning Strategy, adaptive management will help identify if greater sage-grouse conservation measures presented in this EIS contain the needed level of certainty for effectiveness. Principles of adaptive management have been incorporated into the conservation measures provided in this EIS, thereby increasing the likelihood that they will be effective in reducing threats to greater sage-grouse in light of changing environmental and regulatory conditions. Appendix Y and Management Action 7287 provide the BLM's adaptive management strategy for the Bighorn Basin RMP.

In making amendments to this plan, the BLM will coordinate with the USFWS as BLM continues to meet its objective of conserving, enhancing and restoring greater sage-grouse habitat by reducing, minimizing or eliminating threats to that habitat.

2.3.5.1 Adaptive Management and Monitoring

This EIS contains a monitoring framework plan (Appendix Y) 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 plan and other range-wide conservation strategies (BLM 2004a; Stiver et al. 2006; USFWS 2013a). The information collected through the Monitoring Framework Plan outlined in Appendix Y will be used by the BLM to determine when hard and soft adaptive management triggers, as described below, have been met.

Adaptive Management Triggers

Adaptive management triggers are essential for identifying when potential management changes are needed in order to continue meeting greater sage-grouse conservation objectives. With respect to greater sage-grouse, all regulatory entities in Wyoming, including the BLM and USFS, use soft and hard triggers. Soft and hard triggers are focused on three metrics: 1) number of active leks, 2) acres of available habitat, and 3) population trends based on annual lek counts.

Soft Triggers

Soft triggers are indicators that management or specific activities may not be achieving the intended results of conservation action or that unanticipated changes to populations or habitats have occurred that have the potential to place habitats or populations at risk. The soft trigger is any deviation from normal trends in habitat or population in any given year. Metrics include, but are not limited to, annual lek counts, wing counts, aerial surveys, habitat monitoring, and DDCT evaluations. BLM and/or USFS

field offices, with the assistance of their respective land and resource management plan implementation groups, local Wyoming Game and Fish Department offices, and local sage-grouse working groups will evaluate the metrics with the Adaptive Management Working Group (AMWG) on an annual basis. The purpose of these strategies is to address localized greater sage-grouse population and habitat changes by providing the framework in which management will change if monitoring identifies negative population and habitat anomalies in order to avoid crossing a hard trigger threshold.

Hard Triggers

Hard triggers are indicators that management is not achieving desired conservation results. Hard triggers would be considered a catastrophic indicator that the species is not responding to conservation actions, or that a larger-scale impact or set of impacts is having a negative effect.

Within the range of normal population variables, hard triggers shall be determined to take effect when two of the three metrics exceeds 60 percent of normal variability for the area under management in a single year, or when any of the three metrics exceeds 40 percent of normal variability for a three year time period within a five-year range of analysis. A minimum of three consecutive years in a five-year period is used to determine trends (i.e., years 1-2-3, years 2-3-4, years 3-4-5).The hard trigger and the proposed management response to this trigger are presented in Management Action 7287 and in Appendix Y.

Adaptive Management Response

Soft Triggers Response

Soft triggers require immediate monitoring and surveillance to determine causal factors and may require curtailment of activities in the short- or long-term, as allowed by law. The project level adaptive management strategies will identify appropriate responses where the project's activities are identified as the causal factor. The management agency (BLM and/or USFS) and the AMWG will implement an appropriate response strategy to address causal factors not attributable to a specific project or to make adjustments at a larger regional or state-wide level.

Hard Trigger Response

Upon determination that a hard trigger has been tripped, the BLM and/or USFS 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 AMWG will convene to develop an interim response strategy and initiate an assessment to determine the causal factor or factors (hereafter called the causal factor assessment).

An interim response strategy will be developed, and implemented to the extent permitted by law, within 90 days of determination that a hard trigger has been tripped. The technical team (see Appendix Y) will be consulted to identify the scope and scale of the interim strategy. Based on the recommendation of the AMWG, the BLM and/or USFS will implement an interim response strategy through an Instruction Memorandum or other management mechanisms to direct management until the causal factor(s) and appropriate response(s) can be determined. The interim response strategy will consist of appropriate management measures undertaken at the project stage, supported by the best available science, to address the specific metric which has been tripped and may include deferral of some activities as appropriate. Measures that were analyzed in this EIS and the COT, NTT reports, and National Policy Team guidance will be reviewed in addition to current science to identify the most appropriate measures to be implemented as part of the interim response strategy. The BLM and/or

USFS will comply with all applicable law in implementing such response(s), and, if applicable, will undertake a plan amendment or revision under BLM and/or USFS's planning regulations and policies.

2.3.6 Regional Mitigation for Greater Sage-Grouse Habitat Management

Consistent with the proposed plan's goal outlined in Table 2-4 – BLM Proposed Plan for Greater Sage-Grouse Habitat Management, the intent of the Proposed Plan is to provide a net conservation gain to the species. To do so, in undertaking BLM management actions, and, consistent with valid existing rights and applicable law, in authorizing third party actions that result in habitat loss and degradation in PHMA, 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. 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 (BLM2008e)."

2.3.6.1 Mitigation Standards

In implementing BLM management actions, and, consistent with valid existing rights and applicable law, in authorizing third party actions that result in habitat loss and degradation in PHMA, 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 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 Appendix Y).

2.3.6.2 Greater Sage-Grouse Conservation Team

The BLM will establish a WAFWA Management Zone Greater Sage-Grouse Conservation Team (hereafter, Team) to help guide the conservation of greater sage-grouse within 90 days of the issuance of the Record of Decision. This Team will develop a WAFWA Management Zone 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 Management Zone (see Monitoring section). Subsequently, the Team will use these data to either modify the appropriate Regional Mitigation Strategy or recommend adaptive management actions (see Adaptive Management section).

The BLM will invite governmental and Tribal partners to participate in this Team, including the State Wildlife Agency and U.S. Fish and Wildlife Service, in compliance with the exemptions provided for committees defined in the Federal Advisory Committee Act and the regulations that implement that Act. The BLM will strive for a collaborative and unified approach between Federal agencies (e.g., FWS, BLM,

and USFS), Tribal governments, state and local government(s), and other stakeholders for greater sage-grouse conservation. The Team will provide advice, and will not make any decisions that impact Federal lands. The BLM will remain responsible for making decisions that affect Federal lands.

2.3.6.3 Developing a Regional Mitigation Strategy

The Team will develop a Regional Mitigation Strategy to inform the mitigation components of NEPA analyses for BLM 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. 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/ USFS-administered land within the WAFWA Management Zone'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; additionally, timeliness, and durability) and further explained in Appendix Y.

In the time period before the Regional Mitigation Strategy is developed, 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.

2.3.6.4 Incorporating the Regional Mitigation Strategy into NEPA Analyses

The BLM will include the avoidance, minimization, and compensatory recommendations from the Regional Mitigation Strategy in one or more of the NEPA analysis' alternatives for BLM management actions and third party actions that result in habitat loss and degradation. The appropriate mitigation actions will be carried forward into the decision.

2.3.6.5 Implementing a Compensatory Mitigation Program

Consistent with the principles identified above, the BLM needs 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 Management Zone, a BLM Field Office, or USFS-administered land), in collaboration with our partners (e.g., federal, tribal, and state agencies).

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

2.3.7 Greater Sage-Grouse Habitat Objectives

The Habitat Objectives for Greater Sage-Grouse (Table 2-5) are a list of indicators and values that describe greater sage-grouse seasonal habitat conditions. The values for the indicators were derived using a synthesis of current local and regional greater sage-grouse 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 will be assessed based on the range of values for the indicators in the habitat objectives table. The habitat objectives table is one component of greater sage-grouse multi-scale habitat assessment (see Monitoring Framework, Appendix Y). The results of the habitat assessment will be used during the land health evaluation to ascertain if the land health standard applicable to greater sage-grouse habitat (e.g., special status species habitat standard) is being met.

When authorizing activities in greater sage-grouse habitat, the BLM will 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 will determine the causal factor(s) and make the necessary management adjustments to address the causal factor(s), following current BLM regulations and policy.

Incorporate Greater Sage-Grouse Seasonal Habitat Objectives (Table 2-5) into the design of projects or activities, as appropriate, based on ecological site potential unless the NEPA analysis associated with the specific project can demonstrate other appropriate habitat conditions based on other factors such as:

- A specific objective is not applicable to the site-specific conditions of the project or activity;
- An alternative objective is determined to provide equal or better protection for greater sage-grouse or its habitat (based on appropriate scientific findings);
- Analysis concludes that following a specific objective would provide no more protection to greater sage-grouse or its habitat than not following it, for the project being proposed; or
- Achievement of fuels management objectives require additional reduction in sagebrush cover to meet strategic protection of greater sage-grouse habitat and conserve habitat quality for the species.

The habitat objectives in Table 2-5 summarize the characteristics that research has found represent the seasonal habitat needs for greater sage-grouse. The specific seasonal components identified in Table 2-5 were adjusted based on local science and monitoring data to define the range of characteristics used in this subregion. Thus, the habitat objectives provide the broad vegetative conditions we strive to obtain across the landscape that indicate the seasonal habitats used by sage-grouse. These habitat indicators are consistent with the rangeland health indicators used by the BLM.

The habitat objectives will be part of the sage-grouse habitat assessment to be used during land health evaluations (see Monitoring Framework, Appendix Y). These habitat objectives are not obtainable on every acre within the designated greater sage-grouse habitat management areas. Therefore, the determination on whether the objectives have been met will be based on the specific site's ecological ability to meet the desired condition identified in the table.

All BLM use authorizations will contain terms and conditions regarding the actions needed to meet or progress toward meeting the habitat objectives. If monitoring data show the habitat objectives have not been met nor progress being made towards meeting them, there will be an evaluation and a determination made as to the cause. If it is determined that the authorized use is a cause, the use will be adjusted by the response specified in the instrument that authorized the use.

This information should not be viewed as providing standards by which to judge the overall quality of sagebrush habitats. Instead, these sage-grouse habitat characteristics should be used as one tool for assessing habitats and guiding management actions. There is a tendency to review each indicator and its suitability category independently, but site suitability is determined by the relationship among the several indicator values in each matrix and the relative abundance of habitat types across the landscape. It is important to understand that the desired conditions described for these habitat types are based on average plant productivity and structural data and expert opinion relative to sage-grouse use of a subset of sagebrush communities and they may not apply to all sagebrush communities in the planning area variation (Davies et al. 2006). These measures also do not account for inter-annual climate variation (Davies et al. 2006). Individual indicator values do not define site suitability and overall site suitability descriptions require an interpretation of the relationships between the indicators and other factors. Professional expertise and judgment are required. Measurement of these objectives will follow the steps described in the Habitat Assessment Framework for Fourth Order Habitat Descriptions (Appendix Y).

As described above the identified habitat objectives are averages and will vary based on the individual ecological sites and their potential. Ecological sites are the basic component of a land-type classification system that describes ecological potential and ecosystem dynamics of land areas. All land/land use types are identified within the ecological site system, including rangeland, pasture, and forest land. An ecological site is defined as a distinctive kind of land with specific soil and physical characteristics that differ from other kinds of land in its ability to produce a distinctive kind and amount of vegetation and its ability to respond similarly to management actions and natural disturbances. Lands are classified considering discrete physical and biotic factors. Physical factors include soils, climate, hydrology, geology, and physiographic features. Biotic factors include plant species occurrence, plant community compositions, annual biomass production, wildlife-vegetation interactions, and other factors. Ecological dynamics, primarily disturbance regimes, such as grazing; fire; drought; management actions; and all resulting interactions are also a primary factor of ecological sites. Information and data pertaining to a particular ecological site is organized into a reference document known as an Ecological Site Description (ESD). ESDs function as a primary repository of ecological knowledge regarding an ecological site. ESDs are maintained on the NRCS Ecological Site Information System, which is the repository for information associated with ESDs and the collection of all site data (https://esis.sc.egov.usda.gov/Welcome/pgESDWelcome.aspx). The ESD can help interpret if a site's potential is less than or greater than the identified habitat objectives.

In addition to the references identified in Table 2-5, the Conservation Plans developed for each of the Wyoming Local Sage-Grouse Working Groups will be consulted to identify specific habitat objectives appropriate for site-specific conditions. The Conservation Plans, updated in March 2014, are available on the Wyoming Game and Fish Department website at: https://wgfd.wyo.gov/web2011/wildlife-1000817.aspx.

Table 2-5. Greater Sage-Grouse Seasonal Habitat Objectives

Attribute	Indicators	Desired Condition	Reference
Breeding and Nesting (Seasonal Use Period March 1-June 15)			Doherty. 2008. Sage-grouse and Energy Development: Integrating Science with Conservation Planning to Reduce Impacts. Holloran and Anderson. 2005. Spatial Distribution of Greater Sage-grouse nests in relatively contiguous sagebrush habitats.
Lek Security	Proximity of trees	Trees absent or uncommon on shrub/grassland ecological sites within 1.8 miles (approximately 3 km) of occupied leks.	Baruch-Mordo, S., J.S. Evans, J.P. Severson, D.E. Naugle, J.D. Maestas, J.M. Kiesecker, M.J. Falkowski, C.A. Hagen, and K.P. Reese. 2013. Saving sage-grouse from trees. Stiver, S.J., E.T. Rinkes, D.E. Naugle, P.D. Makela, D.A. Nance, and J.W. Karl. In Press. Sage-Grouse Habitat Assessment Framework: Multi-scale Habitat Assessment Tool. Bureau of Land Management and Western Association of Fish and Wildlife Agencies Technical Reference XXXX-X. U.S. Bureau of Land Management, Denver, Colorado.
	Proximity of sagebrush to leks	Adjacent protective sagebrush cover within 330 feet (approx. 100 m) of an occupied lek.	Stiver, S.J., E.T. Rinkes, D.E. Naugle, P.D. Makela, D.A. Nance, and J.W. Karl. In Press. Sage-Grouse Habitat Assessment Framework: Multi-scale Habitat Assessment Tool. Bureau of Land Management and Western Association of Fish and Wildlife Agencies Technical Reference XXXX-X. U.S. Bureau of Land Management, Denver, Colorado.
Cover	Percent of seasonal habitat meeting desired conditions	Greater than 80 percent of the nesting habitat meets the recommended vegetation characteristics, where appropriate (relative to ecological site potential, etc.).	Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28:967-985.
	Sagebrush cover[2]	5 to 25 percent	Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28:967-985. Connelly, J.W., K.P. Reese, and M.A. Schroeder. 2003. Monitoring of Greater sage-grouse habitats and populations. University of Idaho College of Natural Resources Experiment Station Bulletin 80. University of Idaho, Moscow, ID. Hagen, C.A., J.W. Connelly, and M.A. Schroeder. 2007. A meta-analysis of greater sage-grouse *Centrocercus urophasianus* nesting and brood-rearing habitats. Wildlife Biology 13 (Supplement 1):42-50.
	Sagebrush height Arid sites[3] Mesic sites[4]	4-31 inches (10.6-80 cm) 12-31 inches (30.5-80 cm)	Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28:967-985.
	Predominant sagebrush shape	Predominantly spreading shape[5]	Stiver, S.J., E.T. Rinkes, D.E. Naugle, P.D. Makela, D.A. Nance, and J.W. Karl. In Press. Sage-Grouse Habitat Assessment Framework: Multi-scale Habitat Assessment Tool. Bureau of Land Management and Western Association of Fish and Wildlife Agencies Technical Reference XXXX-X. U.S. Bureau of Land Management, Denver, Colorado.

Table 2-5. Greater Sage-Grouse Seasonal Habitat Objectives (Continued)

Attribute	Indicators	Desired Condition	Reference
	Perennial grass cover[2] Arid sites[3] Mesic sites[4]	Greater than or equal to 10 percent Greater than or equal to 15 percent Cool-season bunchgrasses preferred	Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28:967-985. Stiver, S.J., E.T. Rinkes, D.E. Naugle, P.D. Makela, D.A. Nance, and J.W. Karl. In Press. Sage-Grouse Habitat Assessment Framework: Multi-scale Habitat Assessment Tool. Bureau of Land Management and Western Association of Fish and Wildlife Agencies Technical Reference XXXX-X. U.S. Bureau of Land Management, Denver, Colorado. Cagney J., E. Bainter, B. Budd, T. Christiansen, V. Herren, M. Holloran, B. Rashford, M. Smith and J. Williams. 2010. Grazing influence, objective development, and management in Wyoming's greater sage-grouse habitat. University of Wyoming College of Agriculture Extension Bulletin B-1203. Laramie.
	Perennial grass and forb height	Adequate nest cover greater than or equal to 6 inches or as determined by ESD site potential and local variability.	Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28:967-985. Connelly, J.W., K.P. Reese, and M.A. Schroeder. 2003. Monitoring of Greater sage-grouse habitats and populations. University of Idaho College of Natural Resources Experiment Station Bulletin 80. University of Idaho, Moscow, ID. Doherty, K.E., D.E. Naugle, J.D. Tack, B.L Walker, J.M. Graham and J.L. Beck. 2014. Linking Conservation Actions to Demography: Grass Height Explains Variation in Greater Sage-grouse Nest Survival. Wildlife Biology, 20(6): 320-325. Hagen, C.A., J.W. Connelly, and M.A. Schroeder. 2007. A meta-analysis of greater sage-grouse Centrocercus urophasianus nesting and brood-rearing habitats. Wildlife Biology 13 (Supplement 1):42-50. Stiver, S.J., E.T. Rinkes, D.E. Naugle, P.D. Makela, D.A. Nance, and J.W. Karl. In Press. Sage-Grouse Habitat Assessment Framework: Multi-scale Habitat Assessment Tool. Bureau of Land Management and Western Association of Fish and Wildlife Agencies Technical Reference XXXX-X. U.S. Bureau of Land Management, Denver, Colorado.
	Perennial forb cover[2] Arid sites[3] Mesic sites[4]	Greater than or equal to 5 percent Greater than or equal to 10 percent	Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28:967-985.

Table 2-5. Greater Sage-Grouse Seasonal Habitat Objectives (Continued)

Attribute	Indicators	Desired Condition	Reference
Brood Rearing/Summer (Seasonal Use Period June 16-October 31)[1]			
Cover	Percent of seasonal habitat meeting desired condition	Greater than 40 percent of the summer/brood habitat meets recommended brood habitat characteristics where appropriate (relative to ecological site potential, etc.).	Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28:967-985.
	Sagebrush cover[2]	5-25 percent	Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28:967-985.
	Sagebrush height	4 to 32 inches (10.6-80 cm)	Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28:967-985.
	Perennial grass cover and forbs[2]	Greater than or equal to 5 percent arid sites Greater than or equal to 10 percent mesic sites	Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28:967-985.
	Riparian areas/mesic meadows[2]	Proper Functioning Condition	Preferred forbs are listed in Stiver et al. In press. Overall total forb cover may be greater than that of preferred forb cover since not all forb species are listed as preferred.
	Upland and riparian perennial forb availability	Preferred forbs are common with several preferred species present	Stiver, S.J., E.T. Rinkes, D.E. Naugle, P.D. Makela, D.A. Nance, and J.W. Karl. In Press. Sage-Grouse Habitat Assessment Framework: Multi-scale Habitat Assessment Tool. Bureau of Land Management and Western Association of Fish and Wildlife Agencies Technical Reference XXXX-X. U.S. Bureau of Land Management, Denver, Colorado.
Winter (Seasonal Use Period November 1-February 28)[1]			
Cover and Food	Percent of seasonal habitat meeting desired conditions	Greater than 80 percent of the wintering habitat meets winter habitat characteristics where appropriate (relative to ecological site, etc.).	Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28:967-985.
	Sagebrush cover above snow[2]	Greater than 5 percent	Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28:967-985. Stiver, S.J., E.T. Rinkes, D.E. Naugle, P.D. Makela, D.A. Nance, and J.W. Karl. In Press. Sage-Grouse Habitat Assessment Framework: Multi-scale Habitat Assessment Tool. Bureau of Land Management and Western Association of Fish and Wildlife Agencies Technical Reference XXXX-X. U.S. Bureau of Land Management, Denver, Colorado.
	Sagebrush height above snow	Greater than 10 inches (greater than 25cm)	Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28:967-985.

Table 2-5. Greater Sage-Grouse Seasonal Habitat Objectives (Continued)

Attribute	Indicators	Desired Condition	Reference

Note: All Desired Conditions will be dependent upon site capability and local variation (e.g., weather patterns, localized drought, ESD state, etc.)

[1]Seasonal dates can be adjusted by local unit according to geographic region.
[2]Absolute cover is the actual recorded cover and can exceed 100% when recorded across all species and all layers. It is not relative cover, which is the proportions of each species, and equals 100%. Note that cover is reported for only those species (e.g., sagebrush, preferred forbs) that are sampled to determine suitability of habitat for sage-grouse. Overall cover at the site will be greater than that sampled for sage-grouse habitat, due to other species present.
[3]Arid corresponds to the 10 – 12 inch precipitation zone; *Artemisia tridentata wyomingensis* is a common big sagebrush sub-species for this type site (Stiver et al. *In Press*).
[4]Mesic corresponds to the ≥12 inch precipitation zone; *Artemisia tridentata vaseyana* is a common big sagebrush sub-species for this type site (Stiver et al. *In Press*).
[5]Collectively the indicators for sagebrush (cover, height, and shape), perennial grass and perennial forb (cover, height and/or availability) represent the desired condition range for nesting/early brood rearing habitat characteristics, consistent with the breeding habitat suitability matrix identified in Stiver et al. *In Press*. Sagebrush plants that are more tree or columnar-shaped provide less protective cover near the ground than sagebrush plants with a spreading shape (Stiver et al. *In Press*). Some sagebrush plants are naturally columnar (e.g., Great Basin big sagebrush), and a natural part of the plant community. However, a predominance of columnar shape arising from animal impacts may warrant management investigation or adjustments at site specific scales.
[6]Preferred forbs are listed in Stiver et al. *In press*. Overall total forb cover may be greater than that of preferred forb cover since not all forb species are listed as preferred.

>	greater than
cm	centimeter
km	kilometer
m	meter

2.3.8 Monitoring Framework for Greater Sage-Grouse Habitat Management

The BLM's planning regulations, specifically 43 Code of Federal Regulations (CFR) 1610.4-9, require that land use plans establish intervals and standards for monitoring based on the sensitivity of the resource decisions. Land use plan monitoring is the process of tracking the implementation of land use plan decisions (implementation monitoring) and collecting data/information necessary to evaluate the effectiveness of land use plan decisions (effectiveness monitoring). For greater sage-grouse, 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 Habitat Conservation Strategy (BLM 2004a) is that "the Bureau is committed to sage-grouse and sagebrush conservation and will 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 2013a), the BLM and USFS will monitor implementation and effectiveness of conservation measures in greater sage-grouse 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, USFS, and other conservation partners use the resulting information to guide implementation of conservation activities.

Monitoring strategies for greater sage-grouse 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). Because state fish and wildlife agencies have primary responsibility for population-level wildlife management, including population monitoring, population efforts will continue to be conducted in partnership with state fish and wildlife agencies. The BLM and USFS have finalized a monitoring framework, which can be found in Appendix Y. This framework describes the process that the BLM and USFS will use to monitor implementation and effectiveness of RMP and/or 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 USFS will monitor and track implementation and effectiveness of planning decisions (e.g., tracking of waivers, modifications, site-level actions). The two agencies will monitor the effectiveness of RMP and/or 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 USFS will measure and track attributes of, priority habitat, and general habitat at a broad scale, and attributes of habitat availability, patch size, connectivity, linkage/connectivity habitat, edge effect, and anthropogenic disturbances at a mid-scale. Disturbance monitoring will measure and track changes in the amount of sagebrush in the landscape and changes in the anthropogenic footprint, including changes in 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.

2.4 Alternatives Considered But Not Carried Forward for Detailed Analysis

The BLM considered several alternatives and management options as possible methods for resolving resource management issues and conflicts, but after further review and consideration, did not carry all of those forward for detailed analysis. The BLM did not carry forward for detailed analysis alternatives described in the following sections because (1) they would not fulfill requirements of the Federal Land Policy and Management Act (FLPMA) or other existing laws or regulations, (2) they would 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. The alternatives considered but not carried forward are grouped by resource topic, although several might apply to more than one resource.

2.4.1 Physical Resources

None of the alternatives considered and subsequently eliminated from detailed analysis addressed this resource.

2.4.2 Mineral Resources

Recommend Mineral Withdrawals across the Planning Area

The BLM considered, but eliminated from detailed analysis alternatives to recommend a withdrawal from appropriations under the mining laws for a large portion of the Planning Area because it found those alternatives to be overly restrictive and not reasonable in those areas. By law, an RMP cannot close an area to the operation of the Mining Laws – this can only be accomplished by withdrawal, which is a separate action BLM can recommend but must ultimately be taken at the Secretarial level. Moreover, withdrawing the entire Planning Area would eliminate development in areas where conflicts can be mitigated or where conflicts do not exist, which would be inconsistent with the policy objectives of the Planning Area. Withdrawals should be justified in accordance with U.S. Department of the Interior's (DOI) 603 Departmental Manual 1 and withdrawal regulations at 43 CFR Part 2300. Withdrawing a large portion of the Planning Area would conflict substantially with the goals and objectives for mineral resources and would require an extensive inventory and evaluation outside the

scope of this RMP and EIS of the current natural uses and values of the site and adjacent land, as well as an analysis of how those uses and values would be affected.

Suspend or Eliminate all Existing Federal Minerals Leasing

The BLM considered, but eliminated from detailed analysis, suspending or eliminating all existing federal minerals leasing and development operations and cancelling existing oil and gas leases. Under the FLPMA, the BLM must recognize all valid existing rights. The BLM can impose reasonable measures to the manner and pace of development; the BLM evaluates measures of this type under alternatives analyzed in detail. Alternatives analyzed in detail also evaluate locations in the Planning Area where the BLM would recommend a withdrawal from mineral entry.

Require Directional Drilling

Directional wells generally are used to complete zones not directly below the drilling rig. Current technologies, along with large reserves, make it possible, based on geological structure, to drill to a bottom hole location several miles from the surface location (for example, the Bakken formation found in parts of Montana and North Dakota).

In the Planning Area, circumstances might result in the need to drill a directional and/or horizontal well. Those circumstances could include, but are not limited to, the following:

- Adverse geologic and topographical features.
- The need to access more of the mineral resource.
- A high density of cultural and historic material requiring in-depth testing and excavation.
- National Historic Trails (NHTs) and Other Historic Trails viewshed considerations.
- Avoid critical habitats of threatened, endangered, or other special status species.
- To develop leases with a NSO restriction.

BLM considered an alternative that would require directional and/or horizontal drilling of all oil and gas wells in the Planning Area. The BLM eliminated that alternative from further consideration and detailed analysis for the following reasons:

- The BLM retains the authority to require directional and/or horizontal drilling or pad drilling from federal surface on a site-specific basis under all alternatives, when consistent with valid existing rights.
- The risk of losing the borehole due to technical drilling difficulties is higher for directional and/or horizontal wells than for vertical wells. In addition, directional and/or horizontal drilling technology requires precise control of target locations in three dimensions. In exploratory areas this information is usually not available. A requirement to drill directional and/or horizontal wells under these conditions would result in additional drilling costs, the loss of some wellbores, and more uneconomical wells drilled.
- Drilling and completion costs for directional and/or horizontal boreholes are higher than for conventional vertical boreholes and can substantially reduce a well's economic viability. Eustes (2003) identified these additional costs. The advantages and disadvantages of requiring directional and/or horizontal boreholes would need to be assessed well by well. In some circumstances, the potential for increased productivity of directional and/or horizontal

boreholes can offset their additional drilling costs and risks, making these types of boreholes the preferable drilling option.

- Some of the oil and gas reservoirs now being developed in the Planning Area are multiple, vertically stacked, and discontinuous sandstones. These reservoirs are not good candidates for horizontal completion practices because their geology is such that a horizontal borehole might contact only one of the productive horizons, while a vertical borehole might be able to contact multiple horizons (depending on factors such as how the well is completed and the areal extent of the pool). A mandate requiring horizontal drilling would make many of these wells uneconomical to drill.

Experience and improved efficiency have caused the additional costs attributed to directional drilling and/or horizontal drilling to decrease. However, exclusive use of directional and/or horizontal drilling is not always necessary and could result in wells not being drilled and reserves not being recovered. This does not meet either the Nation's energy needs or result in the maximum ultimate recovery of the oil and gas resources with minimum waste, as required by regulation (43 CFR 3161.2).

Remove All Stipulations and Restrictions from Oil and Gas Leases

The BLM considered a request to remove all stipulations and restrictions from oil and gas leases. This alternative is unreasonable because it conflicts with the FLPMA Section 102(8) policy to manage the public lands to protect resource values**.** The BLM's mission is to sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations. This includes encouraging the use of sound resource management practices to restore and maintain land conditions. The BLM assesses and monitors resource conditions and trends and considers the best available information to either maintain or improve the health of the land to fulfill this mandate. Removing all stipulations and restrictions from oil and gas leases would impair the BLM's ability to fulfill its mission by eliminating its primary tool for managing potential effects from oil and gas development on public lands; such an alternative is, therefore, not consistent with the policy objectives of the area or feasible. For these reasons, the BLM eliminated this alternative from detailed analysis.

Phased Oil and Gas Development

The BLM considered an alternative that would regulate the rate of oil and gas development in the Planning Area, but determined that the holders of federal oil and gas leases have the right to develop those leases on the schedules they deem appropriate within regulatory limits. Federal regulations at 43 CFR 3160.1-2 state that "the lessee shall have the right to use so much of the leased lands as is necessary to explore for, drill for, mine, extract, and dispose of all the leased resource in a leasehold …." The 43 CFR 3160 regulations also require lessees to attain maximum economic recovery of the leased resource and to conduct their operations in a manner that prevents undue and unnecessary damage to the environment. It is not possible at the RMP or leasing stages to determine whether a lease would actually be developed, or what well spacing or level of development would be necessary to achieve maximum economic recovery. Well spacing can vary from development area to development area, with some well fields efficiently developed at 1 well per square mile while others require up to 128 wells per square mile. Given the wide range of potential well spacing, the pace of development a lessee must maintain to meet the regulatory requirement of maximum economic recovery also greatly varies. Setting reduced or limited rates of development is more appropriately analyzed in project-/wellfield-specific NEPA documents; therefore, the BLM eliminated this alternative from detailed analysis.

Phased Oil and Gas Leasing

The BLM considered an alternative of phased leasing, especially along areas where conflict with other resources are anticipated to occur, such as bentonite and gypsum mine development or wildlife habitat. The BLM found this alternative unreasonable as 48 percent of the Planning Area is leased or non BLM-administered minerals. The scattered ownership pattern in the Bighorn Basin lends itself to drainage, and the BLM has responsibility to address drainage issues. Leasing is a discretionary action therefore the right to phase leases is retained under all alternatives.

No New Oil and Gas Leasing

The BLM considered closing the entire Planning Area to new leasing of federal minerals, specifically oil and gas, as a method to resolve conflicts with other resource values and uses. The federal mineral estate in much of the Planning Area has already been leased (approximately 960,000 acres), and large portions of the area are developed (BLM 2008a). Although conflicts between oil and gas leasing and other resource values and uses do occur, closing the entire Planning Area to new oil and gas leasing would eliminate development and production activities in areas where conflicts can be effectively mitigated or where there would be no conflicts. The purpose of this RMP revision project is to ensure that public lands are managed according to the principles of multiple use identified in FLPMA while maintaining the valid existing rights and other obligations already established to address the changing needs of the Planning Area and resource conflicts. This alternative would eliminate development and production in areas where conflicts can be mitigated or where conflicts do not exist, which is inconsistent with the multiple-use policy objectives of the Planning Area. Public scoping comments indicate a growing level of concern with the rate and scale of oil and gas leasing and development in the Planning Area. Alternatives analyzed in detail address making portions of the Planning Area closed to oil and gas leasing in response to other identified resource needs. Over 59 percent (2,464,745 acres) of the federal mineral estate in the Planning Area was analyzed as closed to oil and gas leasing under alternatives B and E.

Require Reinjection of all Produced Water

The BLM considered requiring reinjection of all produced water. Under this alternative all produced water from both new and existing sources would be required to be captured and re-injected into an underground stratum. The BLM considered this alternative, but eliminated it from detailed analysis for several reasons, including responding to issues such as potential impacts to aquifers, soils, and the quantity and quality of surface water in and downstream of produced water discharges. The feasibility of an all reinjection alternative is unreasonable as produced water surface discharge from numerous oil and gas fields in the Planning Area has been authorized in the past and such authorizations remain valid. Further, not all stratum are of a type or quality that would permit reinjection. Requiring such reinjection of produced waters wholesale would also be outside of BLM's regulatory authority because all water in the state of Wyoming is owned by the state, and discharge of produced water is therefore under the jurisdiction of the Wyoming Department of Environmental Quality (DEQ), Wyoming State Engineer's Office, and/or the Wyoming Oil and Gas Conservation Commission. BLM Instruction Memorandum (IM) WY-2005-14 addresses water disposal and land application. Under Alternative B, the BLM did analyze a management action prohibiting the authorization of new activities resulting in the surface discharge of produced water on BLM-administered land.

2.4.3 Fire and Fuels Management

None of the alternatives considered and subsequently eliminated from detailed analysis addressed this resource.

2.4.4 Biological Resources

Emphasize the Protection of Resources by Removing Human Uses

The BLM considered, but eliminated from further analysis, an alternative to emphasize the protection of resources by removing most, if not all, human uses because it would not respond to the purpose and need for the RMP revision. FLPMA requires the BLM to manage public lands and resources according to the principles of multiple use and sustained yield. Included in this requirement are human uses, such as mineral development or livestock grazing, that must be managed so as to account for other resource values, such as wilderness or wildlife resources. Alternatives considered in detail address management actions that include closure or prohibition of various resource uses over portions of the Planning Area.

Manage Herd Areas for Wild Horses within the Original Herd Area Boundaries

At present, the BLM manages only two Herd Management Areas (HMAs) for wild horses in the Planning Area: Fifteenmile and McCullough Peaks. In the remaining Herd Areas, the BLM has removed the wild horses and does not manage these areas for wild horses. Analysis for previous decisions determined that managing wild horses in these Herd Areas resulted in management issues or conflicts that were most appropriately resolved by the removal of wild horses. These decisions and findings remain valid because the resource conditions have not changed; information about the issues and conflicts associated with individual Herd Areas are available at the BLM Cody Field Office (CYFO) and Worland Field Office (WFO), and are summarized in Chapter 3 of this document. Management issues and conflicts that resulted in the removal of horses from these areas included horse trespass due to unfenced boundaries, forage and/or water competition with domestic livestock, and private landowner requests.

HMAs are the only administrative units the CYFO and WFO currently use to manage wild horses in the Planning Area. Alternatives considered in detail do include changing the administrative boundary of the existing HMAs without an increase in the number of horses.

Designation of a Wild Horse or Burro Range

The BLM considered, but eliminated from further analysis, the designation of the McCullough Peaks HMA as a Wild Horse or Burro Range in the Bighorn Basin RMP. BLM Handbook H-1601-1 states that an HMA may be considered for designation as a Wild Horse or Burro Range when there is a significant public value present, such as unique characteristics in a herd or an outstanding opportunity for public viewing. The McCullough Peaks HMA does not provide outstanding opportunities for public viewing or have significant public value present. Further, the BLM can achieve needed funding, additional protections, management opportunities, and additional public awareness of this resource under the existing HMA designation. Alternatives considered in detail do address viewing opportunities and additional protections for wild horses within the existing Fifteenmile and McCullough Peaks HMAs.

2.4.5 Heritage and Visual Resources

None of the alternatives considered and subsequently eliminated from detailed analysis addressed this resource.

2.4.6 Land Resources

Prohibit or Exclude Wind-Energy Development, Oil and Gas Leasing, Off-Highway Vehicle Use, and Livestock Grazing

The BLM considered requests to prohibit or exclude part or all of the Planning Area from wind-energy development, oil and gas leasing, off-highway vehicle (OHV) use, and livestock grazing. However, FLPMA requires that BLM manage public lands and resources according to the principles of multiple use and sustained yield, and the BLM eliminated from detailed review alternatives inconsistent with this multiple use mandate. However, alternatives analyzed in detail include limitations and restrictions on wind-energy development, oil and gas leasing, OHV use, and livestock grazing. Specifically, alternatives B and E include wind-energy development right-of-way (ROW) exclusion (1,244,948 acres) and avoidance (1,691,663 acres) areas, areas closed to oil and gas leasing (2,464,745 acres), and areas closed to livestock grazing (1,984,211 acres). The BLM recognizes that there are conflicts between resources and resource uses and considered these conflicts during alternatives development.

No Net Gain in BLM-administered Public Lands

The BLM considered an alternative with no net gain in BLM-administered public lands in the Planning Area. However, the BLM cannot guarantee there would be no net gain of public land, because individual land exchanges are based on equal monetary values of the land, not equal land acreages. Over the past 20 to 30 years in the Bighorn Basin and Wyoming in general, conveyances of various kinds have resulted in a net loss of public land. The BLM coordinates with affected counties and the public on all acquisitions. Current BLM policy establishes exchange as the favored method of land disposal/acquisition (BLM 1995) to minimize spending of taxpayer money and minimize effects to local tax base.

Limit Travel Only to Existing Roads and Trails

The BLM considered an alternative limiting travel to only existing roads and trails within the entire Planning Area, but eliminated it from detailed analysis. The BLM comprehensive travel and transportation management (CTTM) program is guided by resource values and user needs. A broad travel designation for the entire Planning Area would not fulfill the BLM's responsibility per 43 CFR 8341.1 to base travel management designations on the protection of the resources of the public lands, the promotion of the safety of all the users of the public lands, and the minimization of conflicts among the various uses of the public lands. In addition, such an approach is inconsistent with BLM policy, specifically 1626—Travel and Transportation Manual (BLM2011c) and Handbook 8342.1; therefore such an alternative would not meet the purpose and need of the RMP revision. The BLM analyzes a reasonable range of travel management designations in the alternatives considered in detail.

No Livestock Grazing

Livestock grazing is a well-established use within the BLM's multiple-use mandate. The BLM considered an alternative that would make all 3.2 million acres of BLM-administered surface lands in the Planning

Area unavailable for livestock grazing. This alternative was not analyzed in detail because such an alternative is not reasonable, viable, or necessary. Instead, and in accordance with BLM's Land Use Planning Handbook and BLM IM No. 2012-169, the BLM considered a range of alternatives with respect to both areas that are available or unavailable for livestock grazing on an area-wide basis. The range of alternatives considered includes a meaningful reduction in livestock grazing through a reduction in areas available to livestock grazing and forage allocation.

As discussed above, the BLM developed a range of alternatives that sharply defines the issues and provides a clear basis for choice among options by the decision-maker. The BLM analyzed closing 1,984,211 acres to livestock grazing under alternatives B and E to address identified unresolved conflicts concerning various uses of available resources including within elk and bighorn sheep winter range areas and the Greater Sage-Grouse Key Habitat Areas ACEC.

In addition, all alternatives would allow the reduction or elimination of livestock grazing in specific situations where livestock grazing causes or contributes to conflicts with the protection or management of other resource values or uses. Such determinations would be made during site-specific activity planning and associated environmental review. These determinations would be based on several factors, including monitoring studies, review of current range management science, input from livestock operators and interested publics, and the ability to meet the standards in Appendix N.

In summary, current resource conditions on BLM-administered land, including range vegetation, watershed, and wildlife habitat, as reflected in land health assessments, do not warrant prohibition of livestock grazing throughout the entire Planning Area. Such a blanket prohibition, in the absence of resource conflicts, would not meet the purpose and need and would be inconsistent with the policy objectives of the area. However, as described above, the range of alternatives does include a meaningful reduction in grazing throughout the Planning Area.

No Net Loss of Grazing Animal Unit Months

The BLM considered an alternative that would ensure or require no net loss of grazing animal unit months (AUMs), but eliminated it from detailed analysis. The commitment to manage for no net loss of AUMs would conflict with 43 CFR 4110.3, which requires the BLM to periodically review permitted use specified in grazing permits or leases and make changes in the permitted use as needed to manage, maintain, or improve rangeland productivity, to assist in restoring ecosystems to PFC, to conform with land use plans, or to comply with the provisions of 43 CFR 4100, Subpart 4180-Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration. In addition, there could be grazing reductions as a result of land being conveyed out of federal ownership.

Close all Big Game Crucial Winter Range to Livestock Grazing

The BLM considered, but eliminated from detailed analysis, an alternative to remove livestock grazing from all big game crucial winter range. When livestock and big game share the same habitat, there can be competition for forage. However, although big game and livestock might share the same habitat, they do not necessarily compete for the same forage. For species that do not compete for forage with livestock there are no forage-related conflicts between livestock grazing and these species that would be resolved by closing big game crucial winter range to livestock grazing. The BLM did analyze in detail an alternative to eliminate livestock grazing from bighorn sheep and elk crucial winter range because of competing forage needs between these species and livestock.

Open Off-Highway Vehicle "Play" Areas

The BLM evaluated proposals for designating areas as open to OHV use. Motorized vehicle travel is permitted year-round anywhere within an area designated as open to OHV use. Open designations are used for intensive OHV use areas where there are no special restrictions or where there are no compelling resource protection needs, user conflicts, or public safety issues to warrant limiting cross-country travel (see 43 CFR 8340.0-5) (BLM 2011c).

The BLM evaluated the following areas:

- Red Lake/Diamond Basin Area
- North Oregon Basin
- Garland Slopes Area
- McCullough Peaks Area
- Polecat Bench Area
- Bentonite Hills "Darnell's Area"
- Lovell Motocross Track
- Cowley Hill Climb "Monsters Area"

The BLM identified user conflicts, public safety issues, and compelling resource protection needs including threatened and endangered species, greater sage-grouse habitat, cultural and historic features, crucial winter range, valid existing rights such as mining claims or active mining, and ongoing reclamation activities, all of which preclude an open designation for most of these areas at this time. A portion of the Red Lake, Bentonite Hills, and Lovell Motocross Track areas are included within the range of alternatives analyzed in detail. Should the issues listed above be resolved, the BLM may consider R&PP leases or amend the RMP.

2.4.7 Special Designations and Other Management Areas

Remove Existing Areas of Critical Environmental Concern

The BLM considered, but eliminated from detailed analysis, the removal of all existing ACECs in the Planning Area. The WFO and CYFO currently manage nine ACECs in the Planning Area under the existing plans. Additional areas were nominated for consideration as ACECs during the public and internal scoping process for this Proposed RMP and Final EIS. The BLM individually evaluated all existing and newly nominated areas to determine if they met the importance and relevance criteria required for ACEC designations. Based on this evaluation, consideration of planning issues, and input from the public and cooperating agencies, the BLM carried forward two of the existing ACECs in all alternatives (Brown/Howe Dinosaur Area and Spanish Point Karst). Reasons for these ACECs designation and management have not changed since their original designation, and no specific comments addressing issues with their current designation or management were found warranting an alternative considering their removal. In addition, the BLM analyzed alternatives that carried forward all of the existing ACECs (including expansions of five of these areas), nine new ACECs, and several Management or Special Management Areas (SMA) (Appendix F).

Recommend Withdrawals for Wilderness Study Areas

The BLM considered recommending withdrawals from appropriation under the mining laws for WSAs, but eliminated the alternative from detailed study. By law, an RMP cannot close an area to the operation of the Mining Laws – this can only be accomplished by withdrawal, which is a separate action BLM can recommend but must ultimately be taken at the Secretarial level. Withdrawals cannot be applied to WSAs solely for the protection of wilderness characteristics per FLPMA Section 603, although withdrawal of a WSA is permissible for the protection of other resource values. The 10 WSAs within the Planning Area contain important cultural resources and special status species habitat, which may be withdrawn on a case-by-case basis under all of the alternatives, as well as cave and karst resources and portions of the Spanish Point Karst ACEC, which are recommended for withdrawal under all of the alternatives.

2.4.8 Socioeconomic Resources

None of the alternatives considered and subsequently eliminated from detailed analysis specifically addressed socioeconomic resources. However, alternatives considered but eliminated from detailed analysis, such as no livestock grazing, and alternatives analyzed in detail that limit or expand oil and gas, mineral materials, mining, recreation, and livestock grazing affect socioeconomic conditions.

2.5 Management Actions Common to All Alternatives

Management actions common to all alternatives can result because of specific limitations on management of resources and land use programs that guided the development of the management alternatives. These limitations are defined in various laws and regulations that govern BLM management decisions. They are also set forth in the planning criteria to ensure that management actions under all alternatives comply with nondiscretionary laws and regulations. In many cases, these laws and regulations preclude the development of alternatives to a given action; in some cases, they limit management either to implementing or not implementing the action.

This section summarizes some of the typical actions captured by management actions that are common to all alternatives. The section does not list all management actions; rather, the BLM selected and summarized actions to provide an overview. Management actions common to all alternatives include laws, regulations, and policies, and while the following descriptions reflect some of these types of actions, this section primarily includes management actions not established by such laws or policies. Table 2-9 provides a complete list of management actions common to all alternatives for each resource. This section groups management action summaries into eight broad resource topics (physical resources, mineral resources, fire and fuels management, biological resources, heritage and visual resources, land resources, special designations and other management areas, and socioeconomic resources).

2.5.1 Physical Resources

Management actions for physical resources include the use of best management practices (BMP) to preserve air, soil, cave and karst, and water resources. Appendix L includes examples of BLM approved BMPs, Required Design Features and Best Management Practices. Because BLM regularly reviews BMPs, Appendix L does not provide an exhaustive list. Success and effectiveness of BLM approved BMPs are determined by project specific implementation and monitoring. Certain management actions

specify conformance with Wyoming DEQ regulations (e.g., smoke management rules for prescribed burns and meeting water quality standards), or specify enforcement and remediation actions.

The BLM manages water resources to meet the *Wyoming Standards for Healthy Rangelands* and to achieve PFC. Under all alternatives, the BLM manages surface-disturbing activities to prevent degradation of water quality for all waters. Management actions also include control of water runoff from disturbed or developed sites and control of soil erosion to appropriate rates for natural conditions through the Wyoming DEQ Water Quality Division Storm Water Permitting Program.

Under all alternatives, cave and karst resources are closed to mineral materials disposal, closed to mineral leasing, and withdrawn from locatable entry. In addition, motorized vehicle use is limited to designated roads and trails in areas over important caves or cave passages.

2.5.2 Mineral Resources

Mineral resources management defines the scope of mineral development and applies measures such as BMPs to protect other resources and resource uses. Under all alternatives, the BLM manages land not formally withdrawn from mineral entry for exploration and development of locatable minerals. Proposals for new mineral materials disposal sites are subject to site-specific analysis prior to approval, but existing approved sites would remain open.

Management of leasable minerals includes consultation with private landowners about routing access roads, locating well pads, and other specific needs on split-estate; processing oil and gas lease applications on a case-by-case basis; and the application of BMPs in the exploration, development, production, and abandonment of oil and gas resources. Unless otherwise noted, BLM-administered land in the Planning Area that is open to oil and gas leasing is open to geothermal leasing, and, conversely, lands identified as closed to oil and gas leasing and exploration are also closed to geothermal leasing. Geothermal exploration and development is also subject to restrictions on surface-disturbing activities in the same manner as they are applied to oil and gas exploration and development activities.

2.5.3 Fire and Fuels Management

Fire and fuels management actions in the Planning Area would be implemented in coordination with and in support of other natural and cultural resource goals and objectives. Fire and fuels management actions will first prioritize the protection of firefighter and public safety while implementing an efficient and effective response to wildfire; restoring and maintaining resilient landscapes; and promoting fire-adapted communities and infrastructure. Prescribed burns will comply with Wyoming DEQ air quality standards and smoke management rules. Management prescriptions include suppressing fire that threatens greater sage-grouse habitat and crucial winter wildlife habitat in Wyoming big sagebrush communities, ensuring firefighting equipment is cleaned after water sources containing high-risk aquatic invasive species are used.

2.5.4 Biological Resources

Management actions common to all alternatives for biological resources include laws, regulations, and BLM policies that govern management of biological resources, as well as actions that set management to meet thresholds, minimize resource conflict and damage, and require stakeholder coordination. Management actions include a requirement that all types of forest management apply appropriate mitigation guidelines such as those described in the Wyoming Forestry BMPs (Appendix L), that

riparian/wetland areas be managed to meet PFC and the *Wyoming Standards for Healthy Rangelands*, and that the BLM work cooperatively to control outbreaks of grasshoppers and Mormon crickets. Areas harvested for timber are to be regenerated by natural or artificial means consistent with BLM policy, and vegetative communities are managed in accordance with the *Wyoming Standards for Healthy Rangelands*. Management prescriptions for invasive species include developing and maintaining an invasive species and pest management plan, prohibiting aerial application of pesticides within the boundaries of the Spanish Point Karst ACEC, and coordinating with appropriate stakeholders to manage for the reduction of cheatgrass and other invasive species.

Fish and wildlife management includes actions to appropriately mitigate the effects of surface-disturbing activities. Management actions include maintaining or improving important wildlife habitats through vegetative manipulations, habitat improvement projects, livestock grazing strategies and the application of applicable guidance. The BLM prohibits surface-disturbing and disruptive activities in the Bighorn River Habitat Management Plan (HMP)/Resource Area Management Plan tracts and the BLM-administered tracts in Yellowtail Wildlife Habitat Management Area and applies a no surface occupancy (NSO) restriction as appropriate. The BLM will continue to use and update existing HMPs (including the West Slope HMP, Bighorn River HMP, and Absaroka Front HMP) as necessary to include management objectives and prescriptions for wildlife.

In consultation with stakeholders, projects that could affect special status species are to be postponed or modified to protect these species. Management actions specific to greater sage-grouse include avoiding aerial pesticide spraying, restoring greater sage-grouse brood-rearing habitats in riparian/wetland areas, managing vegetation diversity to provide suitable habitat during greater sage-grouse nesting periods, and conducting fire management to minimize wildfire size and frequency in sagebrush plant communities.

Wild horse management includes maintaining or enhancing conformance with the *Wyoming Standards for Healthy Rangelands* within the Fifteenmile and McCullough Peaks HMAs. The BLM performs wild horse management activities in compliance with relevant court orders and agreements, including the Consent Decree (August 2003), as applicable to the management situation.

2.5.5 Heritage and Visual Resources

Management of heritage resources, including cultural and paleontological resources, includes consultation and cooperation with Native American tribes to limit exposure of heritage resources to incompatible uses. Management actions provide for consideration of the effects of incompatible uses on historic properties through the processes defined in the National Programmatic Agreement (BLM, ACHP, and National Conference of SHPO 2012) and the Wyoming State Protocol (BLM and Wyoming SHPO 2014). Specific actions include: investigations of Archaeological Resources Protection Act violations; limiting motorized vehicle use in areas that contain significant cultural and paleontological resources; pursuing withdrawals from appropriation under the mining laws for important cultural sites on a case by-case basis; performing inventories of sensitive cultural places identified during tribal consultations; ensuring that areas of importance to Native American Tribes are not transferred from federal ownership, physically modified, or affected by management actions in ways that restrict or deny access and/or use; protecting sites listed on the National Register of Historic Places (NRHP) appropriately; protecting and managing sites that are eligible for or listed on the NRHP; managing sites allocated for conservation, traditional use, or public use to avoid adverse effects; managing sites allocated for scientific or experimental use for their research potential; protecting and managing National Historic Landmarks through management of non-compatible uses and coordinating with affected landowners, local communities, and agencies on any decisions that could affect their use or operations; and devising management actions that complement the objectives of private landowners or local communities consistent with cultural resource protection goals and objectives.

Visual resources are managed in accordance with Visual Resource Management (VRM) class objectives. The BLM considers VRM objectives before authorizing land uses that may affect the visual character of the landscape.

2.5.6 Land Resources

Lands and realty management seeks to improve access to public land and enable better overall management of BLM-administered land. Management of acquired lands or interests in lands is consistent with adjacent or nearby BLM-administered land. The BLM considers land use authorizations, such as permits and leases and protective withdrawals, on a case-by-case basis. ROW management includes avoiding ROW authorizations in areas with 25 percent or more average slope and providing reasonable access across BLM-administered land to private land, subject to other resource concerns. The BLM manages renewable energy development in a manner consistent with other resource values, and initiates consultations with tribal governments if such development might affect tribes.

Routes within the Planning Area would be limited to existing roads, primitive roads, and trails. The OHV designation would change from “limited to existing roads, primitive roads, and trails” to “limited to designated roads, primitive roads, and trails” upon the completion of travel management plans. Route designation will be assessed using the designation criteria from 43 CFR 8342.1(b), “areas and trails shall be located to minimize harassment of wildlife or significant disruption of wildlife habitats. Special attention will be given to protect endangered or threatened species and their habitats.” Specific areas such as the Lovell Shooting Range, and the Cody Archery Range are closed to motorized vehicle use except where permitted. The BLM does not restrict pedestrian and equestrian travel on BLM-administered land, and allows these activities on or off roads or trails, except during some limited seasonal restrictions.

Where off-road vehicles are causing or will cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources, the affected areas shall be immediately closed to the type(s) of vehicle causing the adverse effect until the adverse effects are eliminated and measures implemented to prevent recurrence. This may include closure of routes or areas (43 CFR 8341.2).

The BLM manages recreational use to improve wetland habitat conditions along intensively used streams and reservoirs, consistent with the *Wyoming Standards for Healthy Rangelands*. Surface-disturbing and disruptive activities associated with construction, maintenance, and use of roads, campgrounds, interpretive sites, and other recreational facilities are to be mitigated to protect other resource values.

Livestock grazing management includes the use of rangeland health assessments, resource monitoring, or analysis to determine if livestock grazing adjustments in amounts, kinds, and seasons of use are necessary.

2.5.7 Special Designations and Other Management Areas

Only the Brown/Howe Dinosaur Area ACEC and Spanish Point Karst ACEC are designated under all alternatives; therefore, only these ACECs have management actions common to all alternatives. Within the Brown/Howe Dinosaur Area ACEC, motorized vehicle use is limited to designated roads and trails, and all surface-disturbing activities are mitigated. The Spanish Point Karst ACEC is closed to motorized vehicle use and closed to oil and gas leasing.

Other special designation management actions include retaining the Red Gulch/Alkali Road National Back Country Byway and closing BLM-administered lands within the waterway corridors of Wild and Scenic River (WSR) eligible and suitable segments to land disposal actions. The BLM manages 10 WSAs in the Planning Area, including McCullough Peaks, Alkali Creek, Cedar Mountain, Honeycombs, Medicine Lodge, Trapper Creek, Owl Creek, Sheep Mountain, Red Butte, and Bobcat Draw Badlands in accordance with BLM Manual 6330 Management of Wilderness Study Areas. The BLM manages these areas as ROW avoidance and VRM Class I areas; the lands are closed to mineral and geothermal leasing, mineral materials disposal, and renewable energy development.

2.5.8 Socioeconomic Resources

Socioeconomic resource management includes ensuring BLM actions consider local and regional economic development and land use plans, incorporating BLM actions that are sensitive to the economic and social health of the affected area, and referring to available socioeconomic monitoring plans that provide indicators for the economic and social health of an affected area. Management prescriptions for health and safety in the Planning Area generally seek to reduce human and environmental risk and reduce government environmental liabilities. Actions designed to reduce these risks include preparing an Environmental Site Assessment for acquired lands and warning the public about hazardous substances.

2.6 Alternatives Summary

This section summarizes the six alternatives (A through F) considered in detail in this RMP and EIS. Due to the breadth of management prescriptions in the alternatives, this section describes only the key elements of alternatives (those with the greatest potential to affect resources). The summary descriptions provide a general overview of each alternative, the management emphasis associated with each alternative, and key management actions for each alternative. Table 2-9 later in this chapter provides detailed descriptions of the alternatives. The maps in Volume 3 further illustrate differences in acreage allocations and management prescriptions by alternative.

Table 2-6 lists acreage allocations for resources and resource uses by alternative. Table 2-7 lists acreage allocations and the emphasis for management in existing and proposed ACECs. These tables provide a comparative summary of acreage allocations under the four alternatives.

Table 2-6. Comparative Summary of Proposed Land Use Decisions in the Bighorn Basin Planning Area

Topic	Acreage Type	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Physical, Mineral, Biological, and Heritage and Visual Resources							
Acres Available for Locatable Mineral Entry	BLM-Administered Mineral Estate	4,130,352	3,888,990	4,155,119	4,120,325	2,443,901	4,120,325
Acres Maintained/Recommended for Withdrawal Under the Mining Laws	BLM-Administered Mineral Estate	72,861	314,223	48,095	83,321	1,759,312	83,321
Acres Open to Geothermal Leasing	BLM-Administered Mineral Estate	3,986,094	1,684,832	3,993,194	3,776,248	1,684,832	3,776,248
Acres Closed to Geothermal Leasing	BLM-Administered Mineral Estate	151,931	2,453,193	145,836	361,777	2,453,193	361,777
Acres of Oil and Gas Management Areas where some discretionary seasonal restrictions would be relaxed.	BLM-Administered Mineral Estate	0	0	430,647 (for big game and sage-grouse)	348,617 (for big game)	0	348,617 (for big game)
Acres Closed to Oil and Gas Leasing	BLM-Administered Mineral Estate	260,792	2,464,745	145,836	292,353	2,464,745	324,829
Acres Open to Oil and Gas Leasing with Major Constraints	BLM-Administered Mineral Estate	889,435	932,551	91,956	1,221,142	969,432	1,191,215
Acres Open to Oil and Gas Leasing with Moderate Constraints	BLM-Administered Mineral Estate	1,633,204	335,109	1,334,491	1,714,685	319,671	1,709,652
Acres Open to Oil and Gas Leasing Subject to the Standard Lease Form	BLM-Administered Mineral Estate	1,354,593	405,620	2,565,742	911,814	384,176	912,328
Acres Open to Disposal of Mineral Materials	BLM-Administered Mineral Estate	3,974,564	1,612,993	3,859,251	3,828,320	1,059,062	3,828,320
Acres Closed to Disposal of Mineral Materials	BLM-Administered Mineral Estate	228,649	2,590,220	343,962	374,894	3,144,151	374,894

Table 2-6. Comparative Summary of Proposed Land Use Decisions in the Bighorn Basin Planning Area (Continued)

Topic	Acreage Type	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Greater Sage-Grouse Winter Concentration Areas	Planning Area	210,229 (TLS)	210,229 (NSO)	210,229 (TLS)[1]	210,229 (TLS)	210,229 (NSO)	210,229 (TLS)
	BLM-Administered Surface	172,809 (TLS)	172,809 (NSO)	172,809 (TLS)[1]	172,809 (TLS)	172,809 (NSO)	172,809 (TLS)
	BLM-Administered Mineral Estate	196,255 (TLS)	196,255 (NSO)	196,255 (TLS)[1]	196,255 (TLS)	196,255 (NSO)	196,255 (TLS)
Greater Sage-Grouse Occupied Lek Protective Buffer (Prohibitions or Restrictions on Surface-disturbing Activities)	Planning Area	26,871 (CSU)	146,324 (NSO)	26,871 (CSU)	116,522 (NSO)	146,324 (NSO)	116,522 (NSO)
	BLM-Administered Surface	21,352 (CSU)	117,398 (NSO)	21,352 (CSU)	97,889 (NSO)	117,398 (NSO)	97,889 (NSO)
	BLM-Administered Mineral Estate	26,835 (CSU)	146,233 (NSO)	26,835 (CSU)	118,309 (NSO)	146,233 (NSO)	118,309 (NSO)
Greater Sage-Grouse Occupied Lek Protective Buffer (Timing Limitation Stipulations on Surface-disturbing Activities)	Planning Area	1,461,107 (TLS)	1,526,277 (TLS)	1,461,107 (TLS)[1]	1,530,550 (TLS)	1,526,277 (TLS)	1,530,550 (TLS)
	BLM-Administered Surface	1,116,698 (TLS)	1,232,583 (TLS)	1,116,698 (TLS)[1]	1,236,037 (TLS)	1,232,583 (TLS)	1,236,037 (TLS)
	BLM-Administered Mineral Estate	1,458,628 (TLS)	1,520,845 (TLS)	1,458,628 (TLS)[1]	1,462,901 (TLS)	1,520,845 (TLS)	1,462,901 (TLS)
Raptor Active Nest Protective Buffer (Restrictions or Timing Limitation Stipulations on Surface-disturbing Activities)	Planning Area	592,529 (TLS)	994,586 (TLS) 82,294 (CSU)	82,294 (TLS)[2]	209,695 (TLS) 82,294 (CSU)	994,586 (TLS) 82,294 (CSU)	209,695 (TLS) 82,294 (CSU)
	BLM-Administered Surface	337,662 (TLS)	569,218 (TLS) 47,651 (CSU)	47,651 (TLS)[2]	126,241 (TLS) 47,651 (CSU)	569,218 (TLS) 47,651 (CSU)	126,241 (TLS) 47,651 (CSU)
	BLM-Administered Mineral Estate	428,089 (TLS)	762,795 (TLS) 58,570 (CSU)	58,570 (TLS)[2]	161,662 (TLS) 58,570 (CSU)	762,795 (TLS) 58,570 (CSU)	161,622 (TLS) 58,570 (CSU)
Acreage of Aspen Restored	BLM-Administered Surface	25-200 per year until 2,000-4,000 are restored	100 per year	N/A[1]	CBC	100 per year	CBC
Riparian/Wetland Areas Managed	BLM-Administered Surface	23,957 Towards PFC	23,957[3] Towards DPC	23,957 Towards PFC	23,957[3] Towards PFC	23,957[3] Towards DPC	23,957[3] Towards PFC
Fisheries Habitat Restored or Improved	BLM-Administered Surface	CBC	10 lotic[4] miles; 80 lentic[5] acres	CBC	on a priority basis	10 lotic[4] miles; 80 lentic[5] acres	on a priority basis

Table 2-6. Comparative Summary of Proposed Land Use Decisions in the Bighorn Basin Planning Area (Continued)

Topic	Acreage Type	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Restrictions on Surface Development on or near Important Cultural Sites	BLM-Administered Surface	CBC	NSO within 3 miles and CSU in view within 5 miles	NSO within ¼ mile and CSU in view within 1 mile	CSU up to 3 miles where setting is an important aspect of the integrity for the site	NSO within 3 miles and CSU in view within 5 miles	CSU up to 3 miles where setting is an important aspect of the integrity for the site
Visual Resource Management – Class I	BLM-Administered Surface	141,127	154,359	140,976	141,127	154,359	141,127
	BLM-Administered Mineral Estate	139,168	152,243	139,017	139,169	152,243	139,169
Visual Resource Management – Class II	BLM-Administered Surface	340,784	1,784,854	333,027	731,812	1,784,854	731,812
	BLM-Administered Mineral Estate	547,318	2,499,146	507,511	1,170,320	2,499,146	1,170,320
Visual Resource Management – Class III	BLM-Administered Surface	890,482	394,106	510,535	738,531	394,106	738,531
	BLM-Administered Mineral Estate	1,171,831	469,557	790,976	981,591	469,557	981,591
Visual Resource Management – Class IV	BLM-Administered Surface	1,815,043	858,263	2,202,825	1,580,470	858,263	1,580,470
	BLM-Administered Mineral Estate	2,324,800	1,066,985	2,745,681	1,897,333	1,066,985	1,897,333
Visual Resource Management – Unclassified	BLM-Administered Surface	23	24	24	37	24	37
	BLM-Administered Mineral Estate	19,370	19,370	19,370	19,299	19,370	19,299
Resource Uses and Support							
Acres Open to Renewable Energy Development	BLM-Administered Surface	CBC	251,203	1,428,360	1,315,309	254,151	607,429
Renewable Energy Avoidance Areas	BLM-Administered Surface	CBC	1,691,663	1,611,040	1,500,395	988,459	2,507,581
Renewable Energy Exclusion Areas	BLM-Administered Surface	CBC	1,244,948	148,416	372,110	1,945,204	292,949

Table 2-6. Comparative Summary of Proposed Land Use Decisions in the Bighorn Basin Planning Area (Continued)

Topic	Acreage Type	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Acres Closed to Livestock Grazing	BLM-Administered Surface	5,009	1,984,211	5,009	5,009	1,984,211	5,009
Number of Special Recreation Management Areas	BLM-Administered Surface	7	13	1	13	13	13
Number of Extensive Recreation Management Areas	BLM-Administered Surface	2 (Under previous guidance)	1	2	5	1	5
Acres Closed to Motorized Vehicle Use	BLM-Administered Surface	68,115	170,253	9,274	61,010	170,253	61,010
Acres Open to Motorized Cross-country Travel	BLM-Administered Surface	1,311	3,132	14,830	5,885	3,132	5,885
Acres Limited to Existing Roads and Trails for Motorized Vehicle Use	BLM-Administered Surface	2,315,896	592,563	2,137,574	1,955,943	592,563	1,295,072
Acres Limited to Designated Roads and Trails for Motorized Vehicle Use	BLM-Administered Surface	797,077	2,416,378	1,020,748	1,159,557	2,416,378	1,820,427
Acres Closed to Over-snow Vehicle Use	BLM-Administered Surface	N/A[1]	1,859,038	CBC	CBC	1,859,038	CBC
Land Available for Disposal	BLM-Administered Surface	115,905	24,042	117,845	66,363	24,042	66,363
Surface Ownership Retained	BLM-Administered Surface	3,071,909	3,164,261	3,069,967	3,121,558	3,164,297	3,121,558
Open for Entry Under the Desert Land Act	BLM-Administered Surface	1,409	0	1,409	1,409	0	1,409
Rights-of-Way Avoidance Areas	BLM-Administered Surface	940,943	2,710,695	1,173,162	2,408,662	1,610,729	2,315,730
Rights-of-Way Exclusion Areas	BLM-Administered Surface	61,147	225,447	7,586	40,802	1,322,879	133,734
Lands Managed to Maintain Wilderness Characteristics	BLM-Administered Surface	0	476,349	0	0	476,349	49,396

Table 2-6. Comparative Summary of Proposed Land Use Decisions in the Bighorn Basin Planning Area (Continued)

Topic	Acreage Type	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Special Designations							
Nez Perce National Historic Trail Management Corridor	BLM-Administered Surface	1,638[3]	24,437 (NSO) 38,319[2] (CSU)	1,638 (NSO) 7,716[2] (CSU)	up to 15,816[2]	24,437 (NSO) 38,319[2] (CSU)	up to 15,816[2]
Wild and Scenic Rivers (acreage managed to preserve eligibility for inclusion in the NWSRS)	BLM-Administered Surface	27,317	27,317	0	0	27,317	0
Wilderness Study Areas	BLM-Administered Surface	141,068[6]	141,068[7]	141,068	141,068[7]	141,068[7]	141,068[7]

Note: The Planning Area is the area of analysis for this document; it encompasses the area addressed in the previous RMPs, regardless of ownership. However, decisions in this RMP apply only to BLM-administered surface lands and mineral estate.

[1]Oil and Gas Management Areas and ROW corridors are exempt from discretionary wildlife seasonal stipulations.
[2]Surface-disturbing activities are avoided.
[3]Management toward DFC and DPC is assumed to exceed the requirements of managing toward PFC.
[4]Running water riparian/wetland areas such as rivers, streams, and springs.
[5]Standing water riparian/wetland areas such as lakes, ponds, seeps, bogs, and meadows.
[6]Includes 1,290 acres of acquired state land in Bobcat Draw.
[7]In-holdings acquired with willing landowners on a case-by-case basis.

BLM	Bureau of Land Management	NWSRS	National Wild and Scenic River System
CBC	case-by-case	PFC	proper functioning condition
CSU	controlled surface use	PHMAs	Priority Habitat Management Areas
DFC	desired future condition	RMP	Resource Management Plan
DPC	desired plant community	ROW	Right-of-way
N/A	not applicable	TLS	timing limitations
NSO	no surface occupancy		

Table 2-7. Comparative Summary of Proposed Areas of Critical Environmental Concern and other Management Areas by Alternative

Name	Value(s) of Concern	Acreage Type	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E		Alternative F	
			Existing Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage
Big Cedar Ridge	Paleontological	Total Surface	ACEC	264	ACEC	264	None	0	ACEC	264	ACEC	264	ACEC	264
		BLM-Administered Surface		264		264		0		264		264		264
		BLM-Administered Mineral Estate		264		264		0		264		264		264
Red Gulch Dinosaur Tracksite	Paleontological	Total Surface	ACEC	1,798	ACEC	1,798	None	0	ACEC	1,798	ACEC	1,798	ACEC	1,798
		BLM-Administered Surface		1,798		1,798		0		1,798		1,798		1,798
		BLM-Administered Mineral Estate		1,798		1,798		0		1,798		1,798		1,798
Sheep Mountain Anticline	Geologic; Caves; Cultural; Scenic	Total Surface	ACEC	13,261	ACEC	13,261	None	0	ACEC	13,261	ACEC	13,261	ACEC	13,261
		BLM-Administered Surface		11,520		11,520		0		11,520		11,520		11,520
		BLM-Administered Mineral Estate		11,771		11,771		0		11,771		11,771		11,771

Table 2-7. Comparative Summary of Proposed Areas of Critical Environmental Concern and other Management Areas by Alternative (Continued)

Name	Value(s) of Concern	Acreage Type	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E		Alternative F	
			Existing Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage
Spanish Point Karst	Caves; Recreational; Sinking Stream Segments; Water Quality	Total Surface	ACEC	8,026	ACEC	8,026	ACEC	8,026	ACEC	8,026	ACEC	8,026	ACEC	8,026
		BLM-Administered Surface		6,298		6,298		6,298		6,298		6,298		6,298
		BLM-Administered Mineral Estate		8,022		8,022		8,022		8,022		8,022		8,022
Brown/Howe Dinosaur Area	Paleontological	Total Surface	ACEC	5,521	ACEC	20,778	ACEC	5,521	ACEC	5,521	ACEC	20,778	ACEC	5,521
		BLM-Administered Surface		5,501		20,734		5,501		5,501		20,734		5,501
		BLM-Administered Mineral Estate		5,348		20,581		5,348		5,348		20,581		5,348
Carter Mountain	Vegetation; Wildlife *Expansion*: Cultural; Recreational; Special Status Species; Vegetation; Watershed Vegetation; Wildlife	Total Surface	ACEC	10,947	ACEC	22,203	None	0	ACEC	10,947	ACEC	22,203	ACEC	10,947
		BLM-Administered Surface		10,867		16,574		0		10,867		16,574		10,867
		BLM-Administered Mineral Estate		10,224		17,154		0		10,224		17,154		10,224

Table 2-7. Comparative Summary of Proposed Areas of Critical Environmental Concern and other Management Areas by Alternative (Continued)

Name	Value(s) of Concern	Acreage Type	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E		Alternative F	
			Existing Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage
Five Springs Falls	Recreational; Scenic; Special Status Species *Expansion*: Geologic; Scenic; Public Safety	Total Surface	ACEC	163	ACEC	1,809	None	0	ACEC	163	ACEC	1,809	ACEC	163
		BLM-Administered Surface		163		1,809		0		163		1,809		163
		BLM-Administered Mineral Estate		163		1,809		0		163		1,809		163
Little Mountain	Caves; Cultural; Paleontological; Scenic	Total Surface	ACEC	21,477	ACEC	89,146	None	0	ACEC	21,477	ACEC	89,146	ACEC	21,477
		BLM-Administered Surface		21,476		72,051		0		21,476		72,051		21,476
		BLM-Administered Mineral Estate		21,477		79,485		0		21,477		79,485		21,477
Upper Owl Creek Area	Cultural; Fish; Recreational; Scenic; Soils; Special Status Species; Vegetation; Wildlife	Total Surface	ACEC	14,266	ACEC	33,241	None	0	ACEC	14,266	ACEC	33,286	ACEC	14,266
		BLM-Administered Surface		13,758		32,733		0		13,758		32,733		13,758
		BLM-Administered Mineral Estate		13,842[1]		32,817		0		13,842		32,817		13,842
Chapman Bench	Special Status Species; Vegetation; Wildlife	Total Surface	None	0	ACEC	23,333	None	0	MA	3,425	ACEC	23,333	MA	3,425
		BLM-Administered Surface		0		23,326		0		3,425		23,326		3,425
		BLM-Administered Mineral Estate		0		23,324		0		3,425		23,324		3,425

Table 2-7. Comparative Summary of Proposed Areas of Critical Environmental Concern and other Management Areas by Alternative (Continued)

Name	Value(s) of Concern	Acreage Type	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E		Alternative F	
			Existing Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage
Clarks Fork Basin/Polecat Bench West Paleontological Area	Paleontological; Scenic	Total Surface	None	0	ACEC	25,212	None	0	None[2]	0	ACEC	25,212	None[2]	0
		BLM-Administered Surface		0		23,895		0		0		23,895		0
		BLM-Administered Mineral Estate		0		23,384		0		0		23,384		0
Clarks Fork Canyon	Geologic; Open Space; Recreational; Special Status Species; Wildlife	Total Surface	None	0	ACEC	14,056	None	0	ACEC	4,759	ACEC	14,058	ACEC	4,759
		BLM-Administered Surface		0		12,249		0		4,746		12,249		4,746
		BLM-Administered Mineral Estate		0		12,718		0		4,746		12,718		4,746
Foster Gulch Paleontological Area	Paleontological; Scenic	Total Surface	None	0	ACEC	28,585	None	0	None[2]	0	ACEC	28,585	None[2]	0
		BLM-Administered Surface		0		27,302		0		0		27,302		0
		BLM-Administered Mineral Estate		0		27,302		0		0		27,302		0
McCullough Peaks South Paleontological Area	Paleontological; Scenic	Total Surface	None	0	ACEC	6,994	None	0	None[2]	0	ACEC	6,994	None[2]	0
		BLM-Administered Surface		0		6,994		0		0		6,994		0
		BLM-Administered Mineral Estate		0		6,994		0		0		6,994		0

Table 2-7. Comparative Summary of Proposed Areas of Critical Environmental Concern and other Management Areas by Alternative (Continued)

Name	Value(s) of Concern	Acreage Type	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E		Alternative F	
			Existing Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage
Rainbow Canyon	Paleontological; Geologic; Scenic	Total Surface	None	0	ACEC	1,433	None	0	None	0	ACEC	1,433	None	0
		BLM-Administered Surface		0		1,433		0		0		1,433		0
		BLM-Administered Mineral Estate		0		1,433		0		0		1,433		0
Rattlesnake Mountain	Special Status Species; Vegetation; Wildlife	Total Surface	None	0	ACEC	21,472	None	0	None	0	ACEC	21,472	None	0
		BLM-Administered Surface		0		19,137		0		0		19,137		0
		BLM-Administered Mineral Estate		0		18,639		0		0		18,639		0
Sheep Mountain	Vegetation; Wildlife	Total Surface	None	0	ACEC	73,298	None	0	ACEC	25,960	ACEC	73,298	ACEC	25,960
		BLM-Administered Surface		0		25,151		0		14,200		25,151		14,200
		BLM-Administered Mineral Estate		0		55,289		0		22,563		55,289		22,563
PETM[3]	Paleontological; Scenic	Total Surface	None	0	None	0	None	0	ACEC	14,912	None	0	ACEC	14,912
		BLM-Administered Surface		0		0		0		14,906		0		14,906
		BLM-Administered Mineral Estate		0		0		0		14,908		0		14,908

Table 2-7. Comparative Summary of Proposed Areas of Critical Environmental Concern and other Management Areas by Alternative (Continued)

Name	Value(s) of Concern	Acreage Type	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E		Alternative F	
			Existing Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage
Absaroka Front	N/A	Total Surface	None	0	MA	402,685	MA	402,685	MA	402,685	MA	402,685	MA	402,685
		BLM-Administered Surface		0		130,872		130,872		130,872		130,872		130,872
		BLM-Administered Mineral Estate		0		253,117		253,117		253,117		253,117		253,117
Craig Thomas Little Mountain	N/A	Total Surface	SMA[1]	89,308	SMA[1]	89,308	SMA[1]	89,308	SMA	89,308	SMA[1]	89,308	SMA	89,308
		BLM-Administered Surface		69,274		69,274		69,274		69,274		69,274		69,274
		BLM-Administered Mineral Estate		79,440		79,440		79,440		79,440		79,440		79,440
Oil and Gas	N/A	Total Surface	None	0	None	0	MA	568,165	MA	528,162	None	0	MA	528,162
		BLM-Administered Surface		0		0		430,674		348,617		0		348,617
		BLM-Administered Mineral Estate		0		0		566,345		441,662		0		441,662

Table 2-7. Comparative Summary of Proposed Areas of Critical Environmental Concern and other Management Areas by Alternative (Continued)

Name	Value(s) of Concern	Acreage Type	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E		Alternative F	
			Existing Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage
Greater Sage-Grouse Key Habitat Areas *(Alternative E)* and PHMAs *(Alternative F)* ACECs	Special Status Species, Vegetation	Total Surface	None	0	None	0	None	0	None	0	None	1,857,485	None	1,786,244
		BLM-Administered Surface		0		0		0		0		1,232,583		1,116,698
		BLM-Administered Mineral Estate		0		0		0		0		1,520,845		1,458,628

Note: "Total Surface" refers to all area encompassed by the Planning Area addressed in previous Resource Management Plans (RMPs), regardless of current ownership. BLM-administered surface and BLM-administered mineral estate are federal lands administered by the BLM. This RMP describes and analyzes alternatives for the future management of public lands and resources administered by the BLM.

[1]The Craig Thomas Little Mountain Special Management Area would continue under all alternatives, but only Alternative D contains specific management for this area in this document.
[2]Though not proposed under Alternative D, a portion of this area does fall within the proposed PETM ACEC.
[3]Portions of ACEC proposed under Alternative D are managed as the Clarks Fork Basin/Polecat Bench, McCullough Peaks South Paleontological Area, and Foster Gulch ACECs under Alternative B.

ACEC Area of Critical Environmental Concern
BLM Bureau of Land Management
MA Management Area
N/A not applicable
PETM Paleocene, Eocene Thermal Maximum
PHMA Priority Habitat Management Area
SMA Special Management Area

Goals and objectives (desired outcomes) is a category of land use planning decisions; however, this section does not describe goals and objectives because they do not differ among alternatives. Instead, Section 2.7 *Detailed Description of Alternatives by Resource* describes the goals and objectives for each of the eight resource topics.

Restrictions on resource uses (e.g., closed to mineral leasing) would apply throughout the life of this RMP, unless restrictions change through an RMP amendment. Changes in resource-use restrictions and a resulting RMP amendment can result due to public demand, statewide or national policy and guidance, or other factors. The timing and degree of implementation of management prescriptions in this RMP depend on available budget, staffing, and agency priorities. Actions the BLM takes or authorizes during RMP implementation would comply with standard practices, BLM approved BMPs, guidelines for surface-disturbing activities, and other BLM guidelines and policy. Therefore, the BLM considers these practices and guidelines part of each alternative. Implementation of new BLM policy and guidance during the life of this RMP will be incorporated into the land use planning process and implementation-level decisions.

The lack of detailed, implementation-level decisions in the land use planning process prohibits the development of specific, detailed mitigation measures. As appropriate, the BLM will perform additional environmental analyses during the implementation stage for site-specific actions, and will determine on a case-by-case basis what, if any, mitigation is required. For management actions where adverse impacts to other resources would occur, "on a case-by-case basis" means an action would only be allowed when impacts can be adequately mitigated consistent with other resource goals and objectives.

2.6.1 Alternative A (Current Management)

Overview of the Alternative

Alternative A represents the current management of resources on BLM-administered surface and mineral estate within the Planning Area under the three existing plans. Management under Alternative A continues to balance the use and development of Planning Area resources.

Resource Uses and Support

Under Alternative A, 4,130,352 acres are available for locatable mineral entry and 72,861 acres are withdrawn from locatable mineral entry. Approximately 260,792 acres of federal mineral estate in the Planning Area are closed to oil and gas leasing. The remaining federal mineral estate in the Planning Area is open for oil and gas leasing subject to the following constraints: 1,354,593 acres are subject to standard stipulations, 1,633,204 acres are subject to moderate constraints, and 889,435 acres are subject to major constraints. The BLM identifies constraints on mineral leasing in the Planning Area to protect resource values. Alternative A does not include specific management decisions regarding Oil and Gas Management Areas. Under this alternative, 3,974,564 acres are available for mineral materials disposal and 228,649 acres are closed to mineral materials disposal.

Land resource program actions under Alternative A identify 115,905 acres in the Planning Area as available for disposal. Under Alternative A, the BLM manages 940,943 acres as ROW avoidance areas, and 61,147 acres as ROW exclusion areas. Alternative A requires approval of renewable energy development projects to be considered on a case-by-case basis. Travel management designations under Alternative A include 68,115 acres closed to motorized vehicle use, 2,315,896 acres limited to existing roads and trails, 797,077 acres limited to designated roads and trails, and 1,311 acres open to motorized

vehicle use. Under Alternative A, the BLM considers areas open to over-snow vehicles on a case-by-case basis.

Recreation management under Alternative A balances protection of recreational resources with other resource uses. The BLM applies NSO restrictions to fishing and hunting access areas, Five Springs Falls Campground, the Cody Archery Range, and Recreation and Public Purpose (R&PP) lease area for the Lovell Rod and Gun Club. Under Alternative A, the BLM maintains seven Special Recreation Management Areas (SRMAs) – Absaroka Mountain Foothills (72,130 acres), Badlands (213,981 acres), Bighorn River (15,256 acres), West Slope (375,888 acres), The Rivers (18,247 acres), Historic Trails (12,065 acres), and Worland Caves. Alternative A also includes two Extensive Recreation Management Areas (ERMAs) – the Cody and the Worland general ERMAs.

Under Alternative A, the BLM allows livestock grazing on all but 5,009 acres of the Planning Area. The alternative allows the use of produced water for livestock on a case-by-case basis and prohibits the placement of salt, mineral, or forage supplements within ¼ mile of water, wetlands, riparian areas, or reforested areas.

Special Designations

Alternative A includes nine ACECs – Carter Mountain, Five Springs Falls, Little Mountain, Sheep Mountain Anticline, Brown/Howe Dinosaur Area, Upper Owl Creek Area, Spanish Point Karst, Red Gulch Dinosaur Tracksite, and Big Cedar Ridge. Table 2-7 summarizes acreages and management emphasis in each of these ACECs. Under Alternative A, there is one National Back Country Byway (Red Gulch/Alkali Road National Back Country Byway), one National Historic Landmark (Heart Mountain Relocation Center), and one NHT (the Nez Perce NHT). This alternative also manages 20 WSR eligible waterways, each with interim protective management, and 10 WSAs.

Physical, Biological, Heritage and Visual Resources, and Lands with Wilderness Characteristics

Under Alternative A, the BLM manages physical resources to conserve air, water, and soil resources and to support resources and resource uses. Alternative A includes soil reclamation practices such as seeding of disturbed areas using approved seed mixtures of native species and reestablishing vegetative cover over disturbed soils within 5 years of initial seeding. No reclamation plans are required, and the BLM considers stabilization of heavily eroded roads and topsoil salvage and segregation on a case-by-case basis. The BLM assesses erosion and soil stability during rangeland health evaluations. Alternative A allows for the proper disposal of produced water on BLM-administered lands if it meets the State of Wyoming water quality standards. This alternative does not include management actions to maintain contiguous blocks of vegetation and habitat on BLM-administered lands. Under Alternative A, vegetation resources would be managed to maintain DPC composition for eight broadly defined plant communities. DPC objectives include percent composition by weight for grasses, shrubs, and forbs and, where appropriate, grass-like species and trees with an emphasis on invasion of limber pine and juniper on deep soils on woodland sites. Alternative A prohibits surface-disturbing activities within 500 feet of surface water and riparian/wetland areas and allows aerial application of pesticides in all areas on a case-by-case basis.

Alternative A management actions attempt to provide habitat for fish and wildlife, meet public demand for forest products, protect natural functions in riparian areas, control the spread of invasive species, and comply with the Endangered Species Act (ESA) and BLM policy for special status species. Alternative A applies an NSO restriction and manages surface-disturbing activities using standard restrictions within

500 feet of surface water and riparian areas to protect fish habitat. Seasonal wildlife restrictions under Alternative A include avoiding surface-disturbing activities in big game crucial winter range from November 15 through April 30. This alternative applies CSU stipulations for big game migration corridors, narrow ridges, and overlapping big game crucial winter ranges.

Under this alternative, the BLM prohibits surface-disturbing activities within ¼ mile of occupied greater sage-grouse leks and within 2 miles of occupied leks in greater sage-grouse nesting and early brood-rearing habitats. The BLM prohibits surface-disturbing activities in greater sage-grouse winter concentration areas from November 15 to March 14. Alternative A does not include travel management restrictions in greater sage-grouse Key Habitat Areas. Alternative A prohibits any activity within ¾ mile of active raptor nests from February 1 through July 31. The BLM identifies no specific management actions for black-footed ferret reintroduction but does implement conservation measures, Biological Evaluations, and inter-agency coordination memorandums for all prairie dogs. Impacts to special status plant species from a variety of resource uses are reviewed by the BLM which implements avoidance and mitigation measures on a case-by-case basis.

Alternative A provides for wild horse viewing opportunities in both the Fifteenmile and McCullough Peaks HMAs. Mitigation of surface-disturbing activity to protect wild horse health is applied only in the Fifteenmile HMA. As required by national policy, the BLM prohibits wild horse gathers between March 1 and June 30.

Alternative A requires the BLM to balance the protection of cultural and paleontological resources with resource development. Under this alternative, the BLM pursues restrictions and places stipulations on mineral leasing and mineral materials disposal on a case-by-case basis near cultural resources. Alternative A also allows renewable energy development near cultural resource sites on a case-by-case basis, consistent with applicable policy and guidance and other resource management objectives. Under Alternative A, the BLM attaches Standard Paleontological Resources Protection Stipulations to authorizations for surface-disturbing activities on Potential Fossil Yield Classification (PFYC) 3, 4, and 5 formations. This alternative also requires an on-the-ground survey prior to approval of surface-disturbing activities or land-disposal actions, and monitoring of surface-disturbing activities in all PFYC 4 and 5 formations and, surveys may or may not be required in PFYC 3 areas. Under this alternative, the BLM prohibits surface-disturbing activities within 50 feet of the outer edge of a paleontological locality and also prohibits the resumption of activity within 50 feet of a paleontological discovery until the authorized officer issues a written authorization to proceed.

Under Alternative A, the BLM manages visual resources in accordance with four VRM classes. The class allocations for BLM-administered surface lands include 141,127 acres of VRM Class I, 340,784 acres of VRM Class II, 890,482 acres of VRM Class III, and 1,815,043 acres of VRM Class IV. Under Alternative A, 23 acres are unclassified. Alternative A does not specifically manage lands with wilderness characteristics to preserve their wilderness characteristics.

2.6.2 Alternative B

Overview of the Alternative

Alternative B emphasizes conservation of physical, biological, heritage and visual resources, and lands with wilderness characteristics with constraints on resource uses. Alternative B conserves large areas of land for physical, biological, and heritage resources; designates 17 ACECs; and places a number of restrictions on motorized vehicle use and mineral development.

Resource Uses and Support

Mineral resource uses are subject to additional constraints under Alternative B compared to other alternatives except Alternative E (see Table 2-6 for comparative land use acreages by alternative). Under Alternative B, 3,888,990 acres are available and 314,223 acres are withdrawn or would be recommended for withdrawal or extension of an existing withdrawal from locatable mineral entry. In addition, approximately 2,464,745 acres of federal mineral estate are closed to oil and gas leasing; the remaining federal mineral estate is open to oil and gas leasing subject to the following constraints: 405,620 acres are subject to the standard lease form, 335,109 acres are subject to moderate constraints, and 932,551 acres are subject to major constraints. Alternative B does not delineate Oil and Gas Management Areas. This alternative makes 1,612,993 acres available for mineral materials disposal, while 2,590,220 acres are closed to mineral materials disposal.

Land resource program actions under Alternative B identify 24,042 acres of BLM-administered land in the Planning Area as available for disposal. Under Alternative B, the BLM manages 2,710,695 acres as ROW avoidance areas, and 225,487 acres as ROW exclusion areas. Under Alternative B, 251,203 acres are open to renewable energy development.

Under Alternative B, travel and recreation management emphasizes protection of resources and recreational experiences, and includes more restrictions on resource uses than the other alternatives except Alternative E. Under Alternative B, 170,253 acres of BLM-administered land are closed to motorized vehicle use, 592,563 acres are limited to existing roads and trails, 2,416,378 acres are limited to designated roads and trails, and 3,132 acres are open to motorized vehicle use. Areas opened through activity planning to over-snow travel are required to have a minimum average of 12 inches of snow, and all ACECs, lands with wilderness characteristics specifically managed to preserve their wilderness characteristics, WSAs, WSRs, greater sage-grouse winter concentration areas, and big game crucial winter ranges are closed to over-snow travel. Alternative B expands the resource constraints on recreational areas present under Alternative A, applying an NSO restriction on areas within ¼ mile of campgrounds, trailheads, day use areas, and similar recreation sites and applying a CSU stipulation on developed recreation sites and national, regional, and local trails. Under Alternative B, the BLM designates the following 13 SRMAs: Absaroka Mountain Foothills (72,130 acres), Badlands (220,687 acres), Bighorn River (15,113 acres), West Slope (406,309 acres), The Rivers (18,247 acres), Canyon Creek (3,677 acres), Red Canyon Creek (8,435 acres), Horse Pasture (144 acre), McCullough Peaks (160,838 acres), Basin Garden (19,771 acres), Beck Lake (6,483 acres), and Newton Lake Ridge (1,997 acres). Cave and karst resources are managed under the Worland Caves ERMA while all other non-designated land is managed under other multiple-use objectives.

Under this alternative, a large portion of the Planning Area is closed to livestock grazing (1,984,211 acres) as a result of factors such as crucial winter range for elk and bighorn sheep and greater sage-grouse Key Habitat Areas. The remainder of the Planning Area is open to grazing where it does not conflict with other resource uses.

Special Designations

Alternative B includes 17 ACECs – the nine existing areas (five of which the BLM proposes for expansion) and eight new ACECs. The five existing ACECs the BLM proposes to expand are Brown/Howe Dinosaur Area, Carter Mountain, Five Springs Falls, Little Mountain, and Upper Owl Creek. The eight proposed ACECs are Chapman Bench, Clarks Fork Basin/Polecat Bench West Paleontological Area, Clarks Fork Canyon, Foster Gulch Paleontological Area, McCullough Peaks South Paleontological Area, Rainbow Canyon, Rattlesnake Mountain, and Sheep Mountain. Table 2-7 summarizes acreages and management emphasis in each of these ACECs.

Alternative B retains the Red Gulch/Alkali Road National Back Country Byway and designates the Hyattville Logging Road and Hazelton Road as primitive Back Country Byways. Under this alternative, the BLM also applies protective management prescriptions to the Heart Mountain Relocation Center National Historic Landmark, Nez Perce NHT, and other important historic and regional trails. Under Alternative B, the BLM manages all 20 WSR-eligible waterways as suitable for inclusion in the National Wild and Scenic River System (NWSRS), and applies more restrictive interim management prescriptions to the waterways. Under Alternative B, the BLM applies additional constraints on travel within the 10 WSAs.

Physical, Biological, Heritage and Visual Resources, and Lands with Wilderness Characteristics

Under Alternative B, the BLM manages physical resources (air, water, and soil) with an emphasis on conservation. This alternative is less focused on supporting resource uses than Alternative A. Alternative B requires an inventory of BLM-administered land to determine the rate of erosion and degree of soil slope stability and photo point monitoring of all channel crossings and all surface disturbance of more than ½ acre. In addition, Alternative B requires reclamation plans and topsoil salvage for any BLM-authorized surface-disturbing activity. As under Alternative A, the BLM continues the use of seed mixtures of native species to reclaim disturbed areas. Under Alternative B, the BLM does not authorize new activities resulting in the surface discharge of produced water on BLM-administered land and allows the fencing of springs, wetlands, reservoirs, and riparian areas as necessary to meet resource objectives.

Alternative B emphasizes the conservation of habitat for fish and wildlife, maintenance of contiguous blocks of native plant communities, ecosystem management, protection of natural functions in riparian areas, and control of invasive species. Under Alternative B, ESDs are emphasized in the management of vegetation resources, with a management focus on making progress towards the reference state plant community as described in the appropriate ESD. This alternative places the second-most constraints on resource uses that affect biological resources after Alternative E. For example, the BLM prohibits surface-disturbing activities within ¼ mile of riparian/wetland areas, applies an NSO restriction on wetland areas of more than 40 acres, and prohibits aerial application of pesticides within ½ mile of riparian/wetland areas and aquatic habitats. For the protection of fish species, the BLM also applies an NSO restriction and prohibits surface disturbance within ¼ mile of any waters rated by the Wyoming Game and Fish Department (WGFD) as Blue Ribbon (national importance) or Red Ribbon (regional importance) trout streams, and applies a 500 foot buffer around all other fisheries. Seasonal wildlife

restrictions under this alternative include a motorized vehicle closure in big game crucial winter range. The BLM prohibits surface-disturbing activities year-round in big game crucial winter range and within ½ mile of big game migration corridors. Under this alternative, the BLM designates the Absaroka Front Management Area (130,872 acres), closing it to most mineral entry and limiting other resource uses.

Compared to Alternative A, special status species receive increased protection under Alternative B. Alternative B extends the protective buffers around greater sage-grouse habitat, prohibiting surface-disturbing activities within 0.6 mile of occupied greater sage-grouse leks and seasonally mitigating surface-disturbing activities in greater sage-grouse nesting and early brood-rearing habitat. Greater sage-grouse Key Habitat Areas are closed to mineral leasing and are closed to motorized vehicle use from March 15 to June 30. Under Alternative B, the BLM prohibits surface-disturbing activities within 1 mile of active raptor nests during nesting periods and applies a year-round ¼-mile CSU stipulation on all raptor nests. The BLM applies an NSO restriction on suitable habitat for black-footed ferret reintroduction and on the Sage Creek Prairie Dog Town. For the protection of BLM special status plant species, the BLM applies protective buffers that prohibit various resource uses and surface-disturbing activity around special status plant species populations.

Alternative B emphasizes wild horse health and does not allow special recreation permits (SRP) using domestic horses in the McCullough Peaks and Fifteenmile HMAs. Under this alternative, the BLM applies seasonal restrictions on surface-disturbing activities to prevent foal abandonment or jeopardy of wild horse health and welfare. Under Alternative B, wild horse gathers would occur, to the extent possible, in the fall after peak foaling.

Alternative B emphasizes the protection of cultural and paleontological resources and restricts resource uses that might adversely affect such resources. Around important cultural sites, the BLM applies an NSO restriction within 3 miles and a CSU stipulation in view within 5 miles for leasable minerals. The BLM also prohibits mineral materials disposal within 3 miles or in view within 5 miles of important cultural sites. Under Alternative B, areas within 5 miles of trails and sites eligible for listing on the NRHP and Traditional Cultural Properties (TCP) are exclusion areas for renewable energy development (specifically wind turbines), unless structures are screened from the sites by intervening topography. The BLM attaches Standard Paleontological Resources Protection Stipulations to authorizations for surface-disturbing activities in all areas, regardless of PFYC. This alternative also requires an on-the-ground survey before approval of surface-disturbing activities or land-disposal actions, and monitoring of surface-disturbing activities for PFYC 3, 4, and 5 formations. The BLM prohibits surface-disturbing activities within 100 feet of the outer edge of a paleontological locality and prohibits the resumption of activity within 100 feet of a paleontological discovery until the authorized officer issues a written authorization to proceed.

Compared to Alternative A, Alternative B manages more acreage as VRM Class I and II areas which allow only a low level of change to the characteristic landscape. The class allocations for BLM-administered surface lands include 154,359 acres of VRM Class I, 1,784,854 acres of VRM Class II, 394,106 acres of VRM Class III, and 858,263 acres of VRM Class IV. Under Alternative B, 37 acres are unclassified.

Under this alternative, the BLM specifically manages all lands with wilderness characteristics to preserve their wilderness characteristics (naturalness, outstanding opportunities for solitude, and primitive and unconfined recreation); and applies additional stipulations on travel, mineral resource use, and ROW authorizations in these areas.

2.6.3 Alternative C

Overview of the Alternative

Alternative C emphasizes resource uses and reduces constraints on resource uses to protect physical, biological, and heritage and visual resources. Compared to other alternatives, Alternative C conserves the least land area for physical, biological, and heritage resources; designates the fewest ACECs and SRMAs; and is the least restrictive to motorized vehicle use and energy and mineral development.

Resource Uses and Support

Under Alternative C, 4,155,119 acres are available and 48,095 acres are withdrawn or would be recommended for withdrawal or extension of an existing withdrawal from locatable mineral entry; existing withdrawals and segregations not carried forward are allowed to expire. In addition, approximately 145,836 acres of federal mineral estate are closed to oil and gas leasing in the Planning Area. The remaining federal mineral estate in the Planning Area is open to oil and gas leasing subject to the following constraints: 2,565,742 acres are subject to the standard lease form, 1,334,491 acres are subject to moderate constraints, and 91,956 acres are subject to major constraints. Alternative C delineates Oil and Gas Management Areas around intensively-developed existing fields, and the BLM manages these areas primarily for oil and gas exploration and development, with all other surface uses considered secondary. This alternative makes 3,859,251 acres available for mineral materials disposal, while 343,962 acres are closed to mineral materials disposal.

Land resource management actions under Alternative C identify 117,845 acres in the Planning Area as available for disposal. The BLM manages approximately 1,173,162 acres as ROW avoidance areas and 7,586 acres as ROW exclusion areas. Under Alternative C, 1,428,360 acres are open to renewable energy development. Travel management under Alternative C includes fewer travel restrictions than other alternatives. Under Alternative C, the BLM closes 9,274 acres of BLM-administered land to motorized vehicle use, limits 2,137,574 acres to existing roads and trails, limits 1,020,748 acres to designated roads and trails, and opens 14,830 acres to motorized vehicle use. The BLM closes areas to over-snow vehicle travel on a case-by-case basis.

Areas open to surface-disturbing activity on a case-by-case basis include hunting and fishing access areas, Five Springs Falls Campground, the Cody Archery Range, and the R&PP lease area for the Lovell Rod and Gun Club. Alternative C includes the most development of recreation sites, including the addition of interpretive sites, facilities, and additional amenities, and the addition or upgrade of existing recreation sites. Under Alternative C, Rattlesnake Ridge is the only SRMA (7,996 acres) in the Planning Area. ERMAs under Alternative C include Basin Gardens (15,349 acres), and Basin Gardens Play Area (4,421 acres). All other non-designated land is managed under other multiple-use objectives.

Under Alternative C, the Planning Area is closed to livestock grazing in the same areas as Alternative A. Livestock grazing is not managed specifically to enhance other resource values by restricting livestock grazing. Alternative C allows the use of salt, mineral, or forage supplements to maximize livestock utilization, and the use of produced water on a case-by-case basis.

Special Designations

Alternative C carries forward current management of the existing Brown/Howe Dinosaur Area and Spanish Point Karst ACECs, the Heart Mountain Relocation Center National Historic Landmark, the Nez Perce NHT, and the Red Gulch/Alkali Road National Back Country Byway, with additional protective management applied in some areas. The alternative does not retain other ACECs or designated trails and does not propose expansions or additional areas. Under this alternative, the BLM manages none of the 20 WSR eligible waterways as suitable for inclusion in the NWSRS and releases these areas to other uses. Alternative C limits motorized vehicle use to designated roads and trails within the 10 WSAs.

Physical, Biological, Heritage and Visual Resources, and Lands with Wilderness Characteristics

Under Alternative C, the BLM generally manages physical resources similar to Alternative A, but with fewer management requirements and more allowance for the case-by-case application of management actions. Under Alternative C, the BLM seeds areas that do not meet resource objectives using approved nonnative and native species and requires 30 percent desired vegetative cover within three growing seasons. The BLM considers reclamation plans and topsoil salvage and segregation on a case-by-case basis. Under this alternative, the BLM would assess erosion and soil stability during rangeland health evaluations but would not require photo point monitoring of surface disturbance. Alternative C authorizes new activities resulting in the surface discharge of produced water, and allows the beneficial use of produced water in accordance with applicable laws and regulations and at the discretion of the BLM and its stakeholders.

The BLM would not manage to maintain contiguous blocks of native plant communities or minimize fragmentation. Under Alternative C, the *Wyoming Standards for Healthy Rangelands* would guide the management of vegetation resources with an emphasis on appropriate function structural groups as defined in BLM Technical Reference 1734-6, *Interpreting Indicators of Rangeland Health* (BLM 2005c). Under this alternative, the BLM allows surface-disturbing activities in flood plains or riparian/wetland areas on a case-by-case basis and prohibits the aerial application of pesticides within 100 feet of riparian/wetland areas and aquatic habitats.

Under Alternative C, the BLM applies similar restrictions to protect fisheries as Alternative A, including applying an NSO restriction and managing surface-disturbing activities using standard restrictions within 500 feet of surface water and riparian areas. Alternative C requires identification and management of migration and travel corridors for big game species and migratory birds, but does not specify protective measures. This alternative exempts Oil and Gas Management Areas and ROW corridors from discretionary wildlife seasonal stipulations and allows the BLM to manage motorized vehicle use in big game crucial winter range consistent with other resource objectives. Under this alternative, the Absaroka Front Management Area (130,872 acres) is open to mineral entry and ROW authorizations, with some seasonal restrictions.

Special status species generally receive similar protection under Alternative C as under Alternative A. Under Alternative C, the BLM applies the same prohibitions (outside of Oil and Gas Management Areas and ROW corridors) on surface-disturbing and disruptive activities for occupied greater sage-grouse leks and the same timing restrictions for greater sage-grouse winter concentration areas as under Alternative A. The BLM manages motorized vehicle use in greater sage-grouse Key Habitat Areas consistent with other resource objectives, and applies timing limitations (TLS) to avoid surface-disturbing activities within ¼ mile of active raptor nests (during nesting and fledging periods). The BLM only implements protective measures for white- and black-tailed prairie dog colonies in the Sage Creek Town area. For special status plant species, the BLM prohibits range improvement projects and other

surface-disturbing activities within 300 feet and prohibits aerial application of pesticides within ½ mile (vehicle and hand application is allowed on a case-by-case basis) of known populations of special status plant species.

Wild horse management under Alternative C places a greater emphasis on public viewing and other resource uses than under other alternatives. Under this alternative, the BLM actively promotes opportunities for public viewing within the McCullough Peaks HMA and allows SRP activities in both HMAs. As required by national policy, the BLM does not allow wild horse gathers between March 1 and June 30.

Alternative C establishes set buffers around cultural sites, but, similar to Alternative A, requires the BLM to balance the protection of cultural and paleontological resources with resource development. Around important cultural sites, the BLM applies an NSO restriction within ¼ mile and a CSU stipulation within 1 mile for leasable minerals. Similarly, Alternative C prohibits mineral materials disposals within ¼ mile or in view within 1 mile of important cultural sites. Alternative C manages areas within 5 miles of trails and sites eligible for listing on the NRHP and TCPs as avoidance areas for renewable energy development (specifically wind turbines), unless structures are screened from the site by intervening topography. Under Alternative C, the BLM attaches Standard Paleontological Resources Protection Stipulations to authorizations for surface-disturbing activities in PFYC 4 or 5 areas. This alternative also requires an on-the-ground survey before approval of surface-disturbing activities or land-disposal actions, and monitoring of surface-disturbing activities for PFYC 5 formations. Similar to Alternative A, the BLM prohibits surface-disturbing activities within 50 feet of the outer edge of a paleontological locality and prohibits the resumption of activity within 50 feet of a paleontological discovery until the authorized officer issues written authorization.

Under Alternative C, the BLM manages the least amount of acreage as VRM Class I and II. The class allocations for BLM-administered surface lands include 140,976 acres of VRM Class I, 333,027 acres of VRM Class II, 510,535 acres of VRM Class III, and 2,202,825 acres of VRM Class IV. Under Alternative C, 37 acres are unclassified (i.e., water or under other federal agency jurisdiction). Alternative C focuses on resource development and enhanced opportunity for responsible use of public land resources and does not manage any lands with wilderness characteristics specifically to maintain their wilderness characteristics.

2.6.4 Alternative D (Proposed RMP)

Overview of the Alternative

Alternative D generally increases conservation of physical, biological, and heritage and visual resources compared to current management, including the designation of one SMA, two Management Areas, and 12 ACECs. Alternative D also emphasizes moderate constraints on resource uses and reclamation and mitigation requirements to reduce impacts to resource values.

Resource Uses and Support

Under Alternative D, 4,120,325 acres are available for locatable mineral entry, while 83,321 acres are withdrawn or would be recommended for withdrawal or extension of existing withdrawals; existing withdrawals and segregations not carried forward would be allowed to expire. In addition, approximately 292,353 acres of federal mineral estate are closed to oil and gas leasing in the Planning Area. The remaining federal mineral estate in the Planning Area is open to oil and gas leasing subject to

the following constraints: 911,814 acres are subject to the standard lease form, 1,714,685 acres are subject to moderate constraints, and 1,221,142 acres are subject to major constraints. Alternative D delineates Oil and Gas Management Areas to be managed primarily for oil and gas exploration and development. Alternative D refines stipulations for protections of big game, geologic features, recreation, and LRP soils for oil and gas-related surface disturbances within the Absaroka Front (130,872 acres), Fifteenmile (180,186 acres), and Big Horn Front (379,308 acres) Master Leasing Plan (MLP) Analysis Areas. This alternative makes 3,828,320 acres available for mineral materials disposal, while 374,894 acres are closed to mineral materials disposal.

Land resource program actions under Alternative D identify 66,363 acres of BLM-administered land in the Planning Area as available for disposal. Under Alternative D, the BLM manages 2,408,662 acres as ROW avoidance areas and 40,802 acres as ROW exclusion areas. Under Alternative D, 1,315,309 acres are open to renewable energy development. Travel management designations under Alternative D include 61,010 acres closed to motorized vehicle use, 1,955,943 acres limited to existing roads and trails, 1,159,557 acres limited to designated roads and trails, and 5,885 acres open to motorized vehicle use. Similar to Alternative A, the BLM considers areas open to over-snow vehicles on a case-by-case basis.

Alternative D designates more recreation management areas than Alternative A, including SRMAs, Recreation Management Zones (RMZ), and ERMAs. Other resource uses such as minerals development are typically allowed to occur within these areas if the adverse impacts can be mitigated. An NSO restriction is applied to all developed recreation sites, national and regional trails, local trail systems, and interpretive sites with exceptional recreation value. Under Alternative D the BLM maintains 13 SRMAs: Absaroka Mountain Foothills (42,615 acres), Badlands (211,516 acres), Bighorn River (2,496 acres), West Slope (320,704 acres in CYFO), Rivers (6,047 acres), McCullough Peaks (160,838 acres), Basin Gardens Play Area (4,421 acres), Canyon Creek (3,675 acres), Horse Pasture (144 acres), Middle Fork of the Powder River (14,644 acres), West Slope (190,928 acres in WFO), Beck Lake (6,473 acres), and Newton Lake Ridge (1,949 acres). All land not included in a SRMA or within the Absaroka, Bighorn River, Rattlesnake Ridge, Red Canyon Creek, or Southern Bighorns ERMAs, is managed under other multiple-use objectives.

Under Alternative D, the BLM closes the same acreage in the Planning Area to livestock grazing as Alternative A (5,009 acres). However, unlike Alternative A, grazing is allowed in closed areas as a tool to maintain or improve resource conditions. To reduce user conflict, new resource uses are mitigated to minimize or avoid conflict with livestock grazing.

Special Designations

Alternative D includes 12 ACECs – the nine existing areas and three new ACECs. The three proposed ACECs are Clarks Fork Canyon; Paleocene, Eocene Thermal Maximum (PETM); and Sheep Mountain. Alternative D would also designate the Chapman Bench Management Area for the retention and success of sensitive species habitat and would manage a portion of the Little Mountain area as the Craig Thomas Little Mountain SMA. Table 2-7 summarizes acreages and management emphasis in each of these ACECs and other management areas. Similar to Alternative C, Red Gulch/Alkali Road will continue to be managed as a National Back Country Byway, whereas other proposed roads will not be managed as byways. Alternative D does not designate additional back country byways, but would consider the designation of new back country byways in the future. Alternative D would also provide similar but less protective measures than Alternative B for the Heart Mountain Relocation Center National Historic Landmark, Nez Perce NHT, and Other Trails. Under Alternative D, the BLM finds no WSR eligible waterways suitable for inclusion in the NWSRS, and does not continue interim management to protect

their outstanding remarkable values and free-flowing characteristics. Alternative D limits motorized vehicle use to designated roads and trails within six WSAs and closes four WSAs to motorized vehicle use.

Physical, Biological, Heritage and Visual Resources, and Lands with Wilderness Characteristics

Under Alternative D, management of physical resources emphasizes moderate constraints on resource uses and mitigation of impacts. Reclamation practices include beginning interim and final reclamation at the earliest feasible times and, in disturbed areas, reestablishing healthy native or desired plant communities based on predisturbance/desired plant species composition. The BLM requires reclamation plans, stipulations, or measures prior to approval of authorized surface-disturbing activities. Similar to Alternative A, the BLM assesses erosion and soil stability during rangeland health evaluations and allows the surface discharge of produced water from new activities, where compatible with other resource objectives.

Management of biological resources under Alternative D emphasizes protection through avoidance and mitigation of surface-disturbing activity and moderate resource constraints. For example, Alternative D avoids surface-disturbing activities within big game crucial winter range, but exempts Oil and Gas Management Areas from discretionary big game seasonal stipulations. Similar to Alternative A, surface-disturbing activities are prohibited within the 500 feet of surface water and wetland/riparian areas, although exceptions may be made on a case-by-case basis. The BLM also applies an NSO restriction on wetland areas greater than 20 acres and designated 100-year flood plains. Aerial applications of pesticides are allowed within wetland/riparian areas on a case-by-case basis. Vegetation resources are managed to maintain contiguous blocks of native plant communities. Under Alternative D, ESDs are emphasized in the management of vegetation resources in plant communities determined to be meeting Wyoming Standards for Healthy Rangelands manage to maintain or improve those communities, as described in the appropriate ESD. For fish species, the BLM avoids surface-disturbing activities within ¼ mile of any waters rated by the WGFD as Blue Ribbon or Red Ribbon fisheries and applies a 500-foot buffer to all other fisheries. Alternative D would manage the Absaroka Front Management Area with a mix of CSU, TLS, and NSO stipulations as well as areas that are closed mineral leasing.

Special status species generally receive greater protection under Alternative D than under Alternative A. For greater sage-grouse, constraints on resource uses are greater within PHMAs than outside PHMAs. For example, the BLM would apply a NSO stipulation to prohibit surface-disturbing activities within a 0.6-mile radius of the perimeter of occupied greater sage-grouse leks within PHMAs and within ¼-mile radius of the perimeter of greater sage-grouse leks outside PHMAs. The BLM would also apply a goal of consolidating development to maintain greater sage-grouse habitat. To protect raptor habitat, the BLM would apply species specific protective buffers of up to 1 mile of active raptor nests during nesting periods and a year-round ¼-mile CSU stipulation on all raptor nests. Under Alternative D, the BLM applies an NSO restriction on suitable habitat for black-footed ferret reintroduction and on the Sage Creek Prairie Dog Town. The BLM requires avoidance of range improvement projects and aerial application of herbicides within ¼ mile and ½ mile, respectively, of BLM special status plant species populations.

Wild horse management under Alternative D balances providing opportunities for public viewing of wild horses with protection of horse health. Opportunities for public viewing, education, and interpretation of wild horses are promoted within the McCullough Peaks HMA, but SRPs using domestic horses would be prohibited within the McCullough Peaks HMA and avoided within the Fifteenmile HMA. Under this

alternative, the BLM applies seasonal restrictions on surface-disturbing activities to prevent foal abandonment and jeopardy of wild horse health and welfare.

Cultural and paleontological resources generally receive more protection under Alternative D than Alternative A. The BLM protects the foreground of important cultural sites up to 3 miles, using BLM approved BMPs to avoid or mitigate adverse impacts from mineral development or other surface-disturbing activity. The BLM attaches Standard Paleontological Resources Protection Stipulations to authorizations for surface-disturbing activities regardless of PFYC formation and requires an on-the-ground survey prior to approval of surface-disturbing activities or land-disposal actions for all PFYC 4 and 5 formations. Monitoring of surface-disturbing activities for PFYC 4 and 5 formations would be conducted. The BLM allows surface-disturbing activities within 100 feet of a paleontological locality if the impacts can be adequately mitigated but prohibits the resumption of activity within 100 feet of a paleontological discovery until the authorized officer issues a written authorization to proceed.

Under Alternative D, the BLM manages more acres as VRM Class I and II than Alternative A. The class allocations for BLM-administered surface lands include 141,127 acres of VRM Class I, 731,812 acres of VRM Class II, 738,531 acres of VRM Class III, and 1,580,470 acres of VRM Class IV. Under Alternative D, 37 acres are unclassified.

Like Alternative C, Alternative D does not manage any lands with wilderness characteristics to maintain their wilderness characteristics.

2.6.5 Alternative E

Overview of the Alternative

Alternative E is the same as Alternative B outside of greater sage-grouse Key Habitat Areas. Within greater sage-grouse Key Habitat Areas, Alternative E includes additional management actions and designates the area as an ACEC. Alternative E emphasizes conservation of physical, biological, heritage and visual resources, and lands with wilderness characteristics with constraints on resource uses.

Resource Uses and Support

Management of activities associated with mineral resource exploration, development, and extraction are the same as described under Alternative B, except within greater sage-grouse Key Habitat Areas (1,232,583 acres) where locatable withdrawals and closure to mineral materials disposal would reduce the area available for mineral exploitation more than under any other alternative (see Table 2-6 for comparative land use acreages by alternative). Under Alternative E, 2,433,901 acres are available and 1,759,312 acres are recommended for withdrawal or extension of an existing withdrawal from locatable mineral entry. Alternative E does not delineate Oil and Gas Management Areas and manages leasable minerals the same as Alternative B. Alternative E makes 1,059,062 acres available for mineral materials disposal, while 3,144,151 acres are closed to mineral materials disposal.

Land resource program actions under Alternative E identify 24,042 acres of BLM-administered land in the Planning Area as available for disposal through land tenure adjustments. The BLM manages 1,610,792 acres as rights-of-way (ROW) avoidance areas and 1,322,879 acres as ROW exclusion areas. Under Alternative E, 254,151 acres are open and 1,945,204 acres are closed to renewable energy development.

Under Alternative E, travel management designations, including areas open to motorized vehicle use and over-snow travel, are the same as Alternative B; however, Alternative E prohibits new road construction within 4 miles of active greater sage-grouse leks and requires the development of travel management plans that minimize impacts to greater sage-grouse habitat. In addition, routes within greater sage-grouse Key Habitat Areas would be managed under a seasonal closure restricting motorized use from March 15 through June 30.

Recreation management is the same as under Alternative B, except within greater sage-grouse Key Habitat Areas where the BLM requires that Special Recreation Permits have neutral or beneficial effects to sage-grouse habitat. Alternative E manages livestock grazing the same as Alternative B, including the closure of greater sage-grouse Key Habitat Areas.

Special Designations

Special designations under Alternative E include those identified under Alternative B with the addition of the Greater Sage-Grouse Key Habitat Areas ACEC, which consists of BLM-administered land within the greater sage-grouse Key Habitat Areas. Under Alternative E, the BLM applies various constraints to resource uses within the Greater Sage-Grouse Key Habitat Areas ACEC to conserve greater sage-grouse and its habitat, including limiting anthropogenic disturbance to one disturbance per 640 acres and 3 percent or less of total sage-grouse habitat; recommending withdrawal from mineral entry and closure to livestock grazing; prohibiting mineral material disposals; and managing the ACEC as ROW and renewable energy exclusion areas.

Alternative E includes 18 ACECs – the nine existing areas (five of which the BLM proposes for expansion) and nine new ACECs. The five existing ACECs the BLM proposes to expand are Brown/Howe Dinosaur Area, Carter Mountain, Five Springs Falls, Little Mountain, and Upper Owl Creek. The nine proposed ACECs are Chapman Bench, Clarks Fork Basin/Polecat Bench West Paleontological Area, Clarks Fork Canyon, Foster Gulch Paleontological Area, McCullough Peaks South Paleontological Area, Rainbow Canyon, Rattlesnake Mountain, Sheep Mountain, and Greater Sage-Grouse Key Habitat Areas. Table 2-7 summarizes acreages and management emphasis in each of these ACECs.

Physical, Biological, Heritage and Visual Resources, and Lands with Wilderness Characteristics

Alternative E implements the same resource protection measures as Alternative B, but with additional management to emphasize the conservation of greater sage-grouse priority habitat areas through the Greater Sage-Grouse Key Habitat Areas ACEC. The scale of the this additional ACEC and the limitations on surface disturbances and road development, as well as withdrawal of locatable minerals, closure to mineral materials disposal, ROW development, and renewable energy development it includes, result in greater overall resource protection under Alternative E than under the other alternatives.

Fire and fuels management, habitat restoration/vegetation management, and invasive species management actions under Alternative E are the same as Alternative B, but with additional emphasis on greater sage-grouse habitat objectives within the Greater Sage-Grouse Key Habitat Areas ACEC. For example, fuels management activities under this alternative must maintain at least 15 percent of sagebrush cover and evaluate the benefits of fuel breaks against the additional loss of sagebrush cover.

The management of physical resources, heritage and visual resources, and lands with wilderness characteristics is consistent with Alternative B.

2.6.6 Alternative F

Overview of the Alternative

Alternative F is the same as Alternative D outside of greater sage-grouse PHMAs. Within greater sage-grouse PHMAs, Alternative F includes additional management actions and designates these areas as an ACEC. Alternative F generally emphasizes conservation of physical, biological, and heritage and visual resources compared to current management, while placing moderate constraints on resource uses and reclamation and mitigation requirements to reduce impacts to resource values.

Resource Uses and Support

Management of activities associated with mineral resource exploration, development, and extraction are the same as described under Alternative D. Under Alternative F, 324,829 acres of federal mineral estate are closed to oil and gas leasing in the Planning Area. The remaining federal mineral estate in the Planning Area is open to oil and gas leasing subject to the following constraints: 912,328 acres are subject to the standard lease form, 1,709,652 acres are subject to moderate constraints, and 1,191,215 acres are subject to major constraints. Alternative F designates 438,863 acres as Oil and Gas Management areas. These areas are managed primarily for oil and gas exploration and development except where these areas are overlapped by the Greater Sage-Grouse PHMAs ACEC, in which case the BLM would apply protective management actions consistent with the ACEC designation. Alternative F applies MLPs to the same areas and acreages as Alternative D for the protection of big game, geologic features, and LRP soils; the Absaroka Front, Fifteenmile, and Big Horn Front areas. The management of locatable and salable mineral resources is the same as Alternative D.

Land resource program actions under Alternative F identify 66,363 acres of BLM-administered land in the Planning Area as available for disposal through land tenure adjustments. The BLM manages 2,315,730 acres as ROW avoidance areas and 133,734 acres as ROW exclusion areas. Under Alternative F, 607,429 acres are open to renewable energy development and 292,949 acres are renewable energy development exclusion areas.

Travel management designations under Alternative F include 61,010 acres closed to motorized vehicle use, 1,295,072 acres limited to existing roads and trails, 1,820,427 acres limited to designated roads and trails, and 5,885 acres open to motorized vehicle use. Motorized vehicle use in the Greater Sage-Grouse PHMAs ACEC is limited to designated roads and trails and the construction of new primary roads would be prohibited within 1.9 miles of greater sage-grouse leks. Similar to alternatives A and D, the BLM considers areas open to over-snow vehicles on a case-by-case basis.

Recreation management is the same as under Alternative D, except within greater sage-grouse PHMAs where the BLM requires that Special Recreation Permits have neutral or beneficial effects to greater sage-grouse habitat. The BLM closes the same acreage in the Planning Area to livestock grazing as alternatives A and D (5,009 acres). Alternative F manages grazing lands consistent with Alternative D, except in the Greater Sage-Grouse PHMAs ACEC where the BLM prioritizes the consideration of sage-grouse habitat objectives and management considerations over livestock grazing objectives through the imposition of restrictions on livestock grazing location and timing, and range improvement projects.

Special Designations

Special designations under Alternative F include those identified under Alternative D with the addition of a Greater Sage-Grouse PHMAs ACEC, which consists of public lands within greater sage-grouse PHMAs. Alternative F implements various resource protection measures within greater sage-grouse PHMAs; however, constraints on resource uses in priority sage-grouse habitats under Alternative F are generally more moderate than those under alternatives E and B. For example, PHMAs are available for fluid mineral leasing under Alternative F subject to NSO and TLS restrictions, whereas alternatives E and B close Key Habitat Areas to fluid mineral leasing. Similarly, whereas Alternative E prohibits the construction of above-ground transmission lines in greater sage-grouse priority habitat areas, Alternative F allows the construction of above-ground transmission lines subject to seasonal restrictions.

Alternative F includes 13 ACECs – the nine existing areas and four new ACECs. The four proposed ACECs are Clarks Fork Canyon, PETM, Sheep Mountain, and Greater Sage-Grouse PHMAs. Table 2-7 summarizes acreages and management emphasis in each of these ACECs and other management areas.

Physical, Biological, Heritage and Visual Resources, and Lands with Wilderness Characteristics

Alternative F places similar constraints on resource uses that affect biological resources as Alternative D, but proposes additional management to emphasize the conservation of greater sage-grouse habitat through the designation of the Greater Sage-Grouse PHMAs ACEC. As discussed above, Alternative F applies additional limitations on surface disturbance and disruptive activities within the Greater Sage-Grouse PHMAs ACEC. Fire and fuels management, habitat restoration and/or vegetation management, and invasive species management actions under Alternative F are the same as Alternative D, but with additional emphasis on sage-grouse habitat objectives within the Greater Sage-Grouse PHMAs ACEC.

The management of physical resources, heritage and visual resources, and lands with wilderness characteristics are the same as Alternative D.

2.7 Detailed Descriptions of Alternatives by Resource

This section is comprised of two tables. To assist the reader in maneuvering through the alternatives, Table 2-8 lists key terms and concepts by resource topic (such as CSU, easements, and erosion/sediment control) and directs readers to the locations in Table 2-9 that address the term. Table 2-9 identifies goals and objectives, management actions common to all alternatives, and management actions by alternative. Table 2-9 is arranged according to the following resource topics:

Number	Resource Topic
0000	Common to All
1000	Physical Resources (PR)
2000	Mineral Resources (MR)
3000	Fire and Fuels Management (FM)
4000	Biological Resources (BR)
5000	Heritage and Visual Resources (HR)
6000	Land Resources (LR)
7000	Special Designations (SD)
8000	Socioeconomic Resources (SR)

This numbering system and the abbreviations for each of the eight resource topics appear as headings and serve to organize Table 2-9. The goals and objectives listed in the table apply to all four alternatives under consideration for the entire Planning Area and would apply for the life of this RMP.

Management actions are anticipated to achieve the goals and objectives identified for each resource topic. Some management actions are constant across all alternatives (common to all), whereas others vary by alternative. Management actions that apply to all alternatives are listed for each resource topic under the heading Management Actions Common to All Alternatives immediately following the goals and objectives for each resource topic. Management actions that vary by alternative are listed under the heading Management Actions by Alternative.

Because the Bighorn Basin RMP Revision Project is a combined effort to revise RMPs for both the CYFO and WFO, management actions might apply to one or both field offices. Table 2-9 designates management actions that apply to the CYFO with an X in the column labeled C, and designates management actions that apply to the WFO with an X in the column labeled W.

Actions apply for the life of this RMP, but can be changed via RMP amendments. For example, areas identified as closed to mineral leasing refer to federal mineral estate closed from leasing for the life of this RMP unless changed through an RMP amendment. Furthermore, where the RMP places seasonal or other restrictions or limitations on development, the authorized officer may issue written exceptions, waivers, or modifications to these limitations, including documented supporting analysis (Appendix G).

Table 2-8. Key Terms and Concepts by Resource Topic

Term or Concept	Resource Topic
Abandoned Mine Lands	Public Health and Safety
Aspen	Forest, Woodlands, and Forest Products; Fish and Wildlife
Black-footed ferret	Special Status Species
Best Management Practice (BMP)	Air Quality; Soil Resources; Water Resources; Mineral Resources; Forest, Woodlands, and Forest Products; Riparian/Wetland Resources; Special Status Species; Visual Resource Management; Renewable Energy; ROW and Corridors; Livestock Grazing Management
Classification	Mineral Resources; Lands and Realty
Conveyance	Lands and Realty; Public Health and Safety
Cooperation with agencies/governments/landowners/stakeholders	Water Resources; Fire and Fuels Management; Invasive Species; Fish and Wildlife; Special Status Species; Cultural Resources; Renewable Energy; ROW and Corridors; Livestock Grazing Management; National Back Country Byways; National Historic Trails; WSAs; Social and Economic
Crucial winter range	Fish and Wildlife; Livestock Grazing Management; ACECs
Controlled surface use (CSU)	Mineral Resources; Fish and Wildlife; Special Status Species; Cultural Resources; Recreation; National Historic Landmark; National Historic Trails
Desert Land Act	Lands and Realty
Disposal (Land)	Paleontological Resources; Lands and Realty; ACECs; Wild and Scenic Rivers

Table 2-8. Key Terms and Concepts by Resource Topic (Continued)

Term or Concept	Resource Topic
Disposal (Mineral Materials)	Mineral Resources; Cultural Resources; Recreation; Lands with Wilderness Characteristics; ACECs; National Historic Landmark; National Historic Trails and Scenic Trails; Wild and Scenic Rivers
Easement	Visual Resource Management; Lands and Realty; ROW and Corridors; Recreation; Livestock Grazing Management
Extensive Recreation Management Area (ERMA)	Cave and Karst Resources; Recreation
Erosion/sediment control	Soil Resources; Water Resources; Riparian/Wetland Resources; Fish and Wildlife
Fire suppression	Fire and Fuels Management; Special Status Species; Cultural Resources; ACECs
Geologic hazards	Public Health and Safety
Geophysical exploration	Common to All; Mineral Resources; Fish and Wildlife; Special Status Species; Recreation; ACECs; Wild and Scenic Rivers
Geothermal	Mineral Resources; ACECs
Greater sage-grouse	Fire and Fuels Management; Fish and Wildlife; Special Status Species; Comprehensive Travel and Transportation Management; Livestock Grazing Management; ACECs
Invasive nonnative pest species/weeds	Fire and Fuels Management; Invasive Species; Fish and Wildlife; Special Status Species; ACECs; Lands with Wilderness Characteristics; Livestock Grazing Management
Juniper	Forest, Woodlands, and Forest Products; Grasslands and Shrublands
Priority and Key Habitat Areas (greater sage-grouse)	Special Status Species; ACECs
Livestock grazing	Forest, Woodlands, and Forest Products; Riparian/Wetland Resources; Grasslands and Shrublands; Fish and Wildlife; Lands with Wilderness Characteristics; Livestock Grazing Management; ACECs; Social and Economic
Migration corridors	Fish and Wildlife; Lands and Realty
Mineral leasing/lease (leasable minerals)	Mineral Resources; Fish and Wildlife; Special Status Species; Recreation; Lands with Wilderness Characteristics; ACECs; National Historic Landmark; Wild and Scenic Rivers; WSAs; Social and Economic
Mitigation	Common to All; Air Quality; Soil Resources; Water Resources; Mineral Resources; Riparian/Wetland Resources; Forest, Woodlands, and Forest Products; Fish and Wildlife; Special Status Species; Wild Horses; Cultural Resources; Visual Resource Management; Lands and Realty; National Historic Trails; Recreation; ACECs; Social and Economic; Public Health and Safety
Motorized vehicle use closed	Cave and Karst Resources; Visual Resource Management; Comprehensive Travel and Transportation Management; Recreation; ACECs; Wild and Scenic Rivers; WSAs
Motorized vehicle use limited to designated roads and trails	Cave and Karst Resources; Fish and Wildlife; Special Status Species; Cultural Resources; Visual Resource Management; Comprehensive Travel and Transportation Management; Recreation; Lands with Wilderness Characteristics; ACECs; National Historic Trails and Scenic Trails; Wild and Scenic Rivers; WSAs
Motorized vehicle use limited to existing roads and trails	Comprehensive Travel and Transportation Management; Recreation; ACECs; Wild and Scenic Rivers; WSAs
Motorized vehicle use open	Comprehensive Travel and Transportation Management; Recreation

Table 2-8. Key Terms and Concepts by Resource Topic (Continued)

Term or Concept	Resource Topic
Motorized vehicle use seasonal closure	Fish and Wildlife; Comprehensive Travel and Transportation Management; ACECs; Social and Economic
No surface occupancy (NSO)	Mineral Resources; Riparian/Wetland Resources; Fish and Wildlife; Special Status Species; Cultural Resources; Recreation; ACECs; National Historic Trails and Scenic Trails; Wild and Scenic Rivers
Oil and Gas Management Areas	Mineral Resources; Fish and Wildlife; Special Status Species
Pesticide application	Water Resources; Invasive Species; Fish and Wildlife; Special Status Species
Plant community/communities	Soil Resources; Grasslands and Shrublands; Invasive Species; Special Status Species
Prairie dog	Fish and Wildlife; Special Status Species
Prescribed burn/fire	Air Quality; Fire and Fuels Management; Lands with Wilderness Characteristics; ACECs
Produced water	Water Resources; Fish and Wildlife; Livestock Grazing Management; Public Health and Safety
Public access	Fish and Wildlife; ROW and Corridors; Comprehensive Travel and Transportation; Recreation; Lands with Wilderness Characteristics; ACECs; National Historic Trails and Scenic Trails; Social and Economic
Range improvements (fencing, reservoirs, vegetation treatments)	Water Resources; Fish and Wildlife; Special Status Species; Wild Horses; Livestock Grazing Management; ACECs; Wild and Scenic Rivers; WSAs
Rangeland	Soil Resources; Grasslands and Shrublands; Lands with Wilderness Characteristics; Livestock Grazing Management
Renewable energy (wind, biomass, solar)	Leasable Minerals – Geothermal; Fish and Wildlife; Cultural Resources; Renewable Energy; Recreation; ACECs; WSAs
Rock art	Cultural Resources; Fire and Fuels Management
Rights-of-way (ROW) avoidance	Cave and Karst Resources; Fish and Wildlife; Special Status Species; Cultural Resources; Lands and Realty; National Historic Trails; ROW and Corridors; Recreation; Lands with Wilderness Characteristics; ACECs; Wild and Scenic Rivers; WSAs
Rights-of-way (ROW) exclusion	Fish and Wildlife; National Historic Trails; Renewable Energy; ROW and Corridors; Recreation; ACECs; Wild and Scenic Rivers
Rights-of-way (ROW) open	Recreation; National Historic Trails; Wild and Scenic Rivers
Sagebrush	Fire and Fuels Management; Vegetation; Grassland and Shrubland; Fish and Wildlife; Special Status Species
Seeding/reclamation	Soil Resources; Invasive Species; Special Status Species; Wild and Scenic Rivers; Mineral Resources; Fish and Wildlife; Public Health and Safety
Segregation	Lands and Realty
Special Recreation Management Area (SRMA)	Cave and Karst Resources; Recreation
Surface-disturbing/surface disturbance	Common to All; Soil Resources; Water Resources; Mineral Resources; Forest, Woodlands, and Forest Products; Riparian/Wetland Resources; Fish and Wildlife; Special Status Species; Wild Horses; Cultural Resources; Paleontological Resources; Visual Resource Management; Recreation; Lands with Wilderness Characteristics; Livestock Grazing Management; ACECs; National Historic Landmark; National Historic Trails and Scenic Trails; Wild and Scenic Rivers

Table 2-8. Key Terms and Concepts by Resource Topic (Continued)

Term or Concept	Resource Topic
Timber harvest/firewood (personal use)/poles	Forest, Woodlands, and Forest Products; Wild and Scenic Rivers; Lands with Wilderness Characteristics
Timing limitations (TLS)	Fish and Wildlife; Special Status Species
Vegetation treatment	Fire and Fuels Management; Forest, Woodlands, and Forest Products; Invasive Species; Fish and Wildlife; Lands with Wilderness Characteristics; Livestock Grazing Management; Wild and Scenic Rivers
Visual resource management (VRM)	Visual Resource Management; Recreation; Lands with Wilderness Characteristics; National Historic Trails; ACECs; Wild and Scenic Rivers; WSAs
Water quality	Water Resources; Fire and Fuels Management; Riparian/Wetland Resources; Wild and Scenic Rivers
Well (oil and gas)	Water Resources; Mineral Resources; Special Status Species; Social and Economic; Public Health and Safety
Well (water)	Water Resources
Withdrawal	Mineral Resources; Cultural Resources; Lands and Realty; Recreation; Livestock Grazing Management; ACECs; National Back Country Byways; National Historic Landmark; Wild and Scenic Rivers
Wyoming Standards for Healthy Rangelands	Soil Resources; Water Resources; Grasslands and Shrublands; Riparian/Wetland Resources; Fish and Wildlife; Wild Horses; Recreation; Lands with Wilderness Characteristics; Livestock Grazing Management

ACEC Area of Critical Environmental Concern
WSA Wilderness Study Area

Table 2-9. Detailed Alternatives

0000 COMMON TO ALL									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
0001	X	X	PR:3.1 MR:1.1 MR:1.3 MR:3.1	Surface-disturbing activities are subject to the *Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities, the Wyoming BLM Reclamation Policy, and the Wyoming DEQ-WQD's Storm Water Permitting Program*.					
0002	X	X	SD:1 SD:5.1 BR:7.1 BR:7.6 BR:8.2 BR:9.1 BR:9.2	The BLM may pursue a withdrawal from appropriation under the mining laws for locatable minerals within ACECs, recommended WSR suitable waterway segments, and special status species habitat on a case-by-case basis.					
0003	X	X	MR:1 MR:1.2 MR:2 BR:6 BR:6.1 BR:7 LR:2.1 LR:3.1	Utilize recommendations found in WGFD documents *Recommendations for Development of Oil and Gas Resources within Crucial and Important Wildlife Habitats* (WGFD 2010b), *Wildlife Protection Recommendations for Wind Energy Development in Wyoming* (WGFD 2010c), and similar documents updated over time where determined applicable and consistent with valid existing rights.					

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
1000 PHYSICAL RESOURCES (PR) – Air Quality									
				GOAL PR:1 Minimize the impact of management actions in the Planning Area on air quality by complying with all applicable air quality laws, rules, and regulations. **Objectives:** **PR:1.1** Maintain concentrations of criteria pollutants in compliance with applicable state and federal Ambient Air Quality Standards within the scope of BLM's authority. **PR:1.2** Maintain concentrations of PSD pollutants associated with management actions in compliance with the applicable increment. **GOAL PR:2** Improve air quality in the Planning Area as practicable. **Objectives:** **PR:2.1** Reduce visibility-impairing pollutants in accordance with the reasonable progress goals and time-frames established within the State of Wyoming's Regional Haze State Implementation Plan. **PR:2.2** Reduce atmospheric deposition pollutants to levels below generally accepted levels of concern and levels of acceptable change.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
1001	X	X	PR:1	Manage prescribed burns to comply with all applicable air quality laws, rules, and regulations, including Wyoming DEQ Air Quality District smoke-management rules and regulations.					
1002	X	X	PR:1	Define a criteria pollutant and air quality related values monitoring strategy and cooperatively establish a monitoring network by creating a method for siting air quality monitors in order to provide additional data for describing background concentrations.					
1003	X	X	PR:1 PR:2	Provide for compliance with applicable air quality standards in the Planning Area and work cooperatively to encourage industry and other permittees to adopt measures to reduce emissions.					
1004	X	X	PR:1.1	Enhance the existing cooperative process that shares air quality information with agencies, stakeholders, and the public.					
1005	X	X	PR:1.1	The State of Wyoming has primary responsibility (primacy) for administering and enforcing air quality standards and regulations within the state. BLM actions will conform with Wyoming DEQ Air Quality Standards and Regulations through application of BMPs and other measures consistent with resource goals and objectives.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
1006	X	X	PR:1 PR:2	Perform analyses of activities with expected effects to air resources. Modeling may be performed on a case-by-case basis.	Require quantitative air quality modeling of industrial activities (e.g., oil and gas field development or mining activities) in order to determine the potential effects from proposed emission sources and the effects of potential mitigation strategies for projects expected to approach or exceed emission standards at the	Same as Alternative A.	Characterize the condition of Class I areas within and adjacent to the Planning Area (Table 3-4), with stakeholders. Appendix J describes the details of this characterization. The proponent of a project will demonstrate regard for air resources and will demonstrate consideration of measures to reduce emissions to meet air	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

1000 PHYSICAL RESOURCES (PR) – Air Quality									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					project/RMP level.		quality goals and objectives and Management Action 1003. The BLM will require additional air emission control measures and strategies within its regulatory authority and in consultation with stakeholders if proposed or committed measures are insufficient to achieve air quality goals and objectives. Perform quantitative air quality analyses (i.e., modeling) for project specific developments as determined on a case-by-case basis in consultation with state, federal, and tribal entities to determine the potential impacts of proposed air emissions. Modeling may be performed to determine the effectiveness of mitigation strategies. Perform a quantitative air quality analysis to ensure protection of air quality when the sum of project specific developments in the Planning Area approaches a level of concern as determined in consultation with state, federal, and tribal entities. The BLM may facilitate discussions with stakeholders to implement		

Table 2-9. Detailed Alternatives (Continued)

1000 PHYSICAL RESOURCES (PR) – Air Quality									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							mitigation measures beyond BLM's authority, to reduce emissions from current levels in the Planning Area.		

Table 2-9. Detailed Alternatives (Continued)

1000 PHYSICAL RESOURCES (PR) – Soil									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				GOAL PR:3 Maintain or improve soil health (e.g., chemical, physical, and biotic properties) while focusing on making significant progress toward meeting the *Wyoming Standards for Healthy Rangelands* (Appendix N). **Objective:** **PR:3.1** Apply guidelines and appropriate measures to all management actions (including reclamation) affecting soil health to decrease erosion and sedimentation, to achieve and maintain stability, and to support the hydrologic cycle by providing for water capture, storage, and release.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
1007	X	X	PR:3.1	Use BMPs to reduce runoff, soil erosion, and sediment yield, and to retain water on the landscape.					
1008	X	X	PR:3.1	Develop appropriate mitigation for surface-disturbing and disruptive activities associated with wildlife and fish management through use of the mitigation guidelines described in Appendix H.					
1009	X	X	PR:3.1	Maintain existing watershed improvement projects.					
1010	X	X	PR:3.1	Allow surface-disturbing activities on fragile soils, biological crusts, soils with low reclamation potential, and soils with highly erosive characteristics on a case-by-case basis.					
1011	X	X	PR:3.1	Construct water flow, sediment control, and watershed stabilization projects in partnership with local, state, and federal programs.					
1012	X	X	PR:3.1	Prioritize and reseed portions of watersheds as opportunities arise.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
1013	X	X	PR:3.1	Stabilize existing watershed improvement projects where they have failed to promote/enhance/ improve watershed stability.	Stabilize watershed projects to prevent the release of stored sediment if projects are no longer meeting resource objectives.	Same as Alternative B, except on a case-by-case basis.	Stabilize existing watershed improvement projects to prevent the release of stored sediment if projects are no longer needed to meet resource objectives.	Same as Alternative B.	Same as Alternative D.
1014	X	X	PR:3.1	No similar management action; however, under current management all surface-disturbing activities are analyzed for suitability and impacts.	Prior to approval of surface disturbance, analyze surface-disturbing activities by mapping soils to a series level, collecting soil samples for physical and chemical analysis, and evaluating current erosion conditions.	Same as Alternative B, except conduct mapping, collecting, and evaluating on a case-by-case basis.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

1000 PHYSICAL RESOURCES (PR) – Soil									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
1015	X	X	PR:3.1	Assess erosion and soil stability during land health evaluations.	Inventory BLM-administered land to determine the rate of erosion and degree of soil stability.	Same as Alternative A.	Same as Alternative A, plus incorporate erosion rates and soil stability into soil survey efforts as soil survey funds become available.	Same as Alternative B.	Same as Alternative D.
1016	X	X	PR:3.1	Allow seeding of areas disturbed by surface-disturbing activities (as part of interim and final reclamation) or areas not meeting resource objectives using approved BLM seed mixtures of native species.	Same as Alternative A.	Allow seeding of areas not meeting resource objectives using approved nonnative and native species.	Allow seeding of areas disturbed by surface-disturbing activities (as part of interim and final reclamation) and areas not meeting resource objectives using approved BLM seed mixtures.	Same as Alternative A.	Same as Alternative D.
1017	X	X	PR:3.1	Routinely seed disturbed areas with native plant species.	In disturbed areas, reestablish healthy native plant communities based on preexisting composition or other species, as identified in an approved management plan.	In disturbed areas, reestablish plant communities to increase commodity production to meet other resource objectives.	In disturbed areas, reestablish healthy native or desired plant communities based on pre-disturbance/desired plant species composition.	Same as Alternative B.	Same as Alternative D.
1018	X	X	PR:3.1	No similar action.	Require a temporary protective surface treatment for the reclamation of all mechanically disturbed areas such as mulch, matting, netting, or tackifiers (excluding fires and including BLM-permitted or trespass activities).	Same as Alternative A.	When appropriate for the site and situation, require temporary protective surface treatments such as weed-free mulch, matting, netting, or tackifiers to facilitate the reclamation of areas affected by authorized or unauthorized surface-disturbing activities. If needed, allow, the use of sterile, weed-free temporary protective surface treatments to facilitate stabilization following wildfires.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

1000 PHYSICAL RESOURCES (PR) – Soil									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
1019	X	X	PR:3.1	Reestablish vegetation cover over disturbed soils within 5 years of initial seeding. Require reclamation in compliance with BLM policy, including Wyoming BLM Reclamation Policy and similar guidance updated over time.	Require 50 percent pre-disturbance of desired vegetative cover within three growing seasons. Require 80 percent pre-disturbance vegetative cover within 5 years of initial seeding. Interim and final reclamation will begin at the earliest feasible time.	Require 30 percent desired vegetative cover within three growing seasons. Require reclamation in compliance with BLM policy, including Wyoming BLM Reclamation Policy and similar guidance updated over time.	Interim and final reclamation will begin at the earliest feasible time. Successful final reclamation of the desired vegetative cover will be considered achieved if conditions are equal to or better than pre-disturbance site condition. Require reclamation in compliance with BLM policy, including Wyoming BLM Reclamation Policy and similar guidance updated over time.	Same as Alternative B.	Same as Alternative D.
1020	X	X	PR:3.1	Reclamation plans are not required.	Reclamation plans will be developed and approved prior to any authorized surface-disturbing activities.	Reclamation plans are required on a case-by-case basis.	Reclamation plans, stipulations, and/or mitigation and monitoring measures are required prior to approval of all authorized surface-disturbing activities. Develop specific objectives and timeframes for reclamation plans in coordination with stakeholders.	Same as Alternative B.	Same as Alternative D.
1021	X	X	PR:3.1	Consider stabilization of heavily eroded or washed out roads on a case-by-case basis.	Close and reclaim heavily eroded or washed out roads and trails if alternative roads and trails are available. Stabilize or relocate heavily eroded or washed out roads and trails if alternative roads and trails are unavailable.	Stabilize heavily eroded or washed out roads and trails.	In consultation with stakeholders and subject to site-specific NEPA actions, close and reclaim unnecessary and/or heavily eroded roads and trails if other stable roads and trails are available on a priority basis. Stabilize or relocate heavily eroded or washed out roads and trails if other	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

1000 PHYSICAL RESOURCES (PR) – Soil									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							stable roads and trails are unavailable on a priority basis.		
1022	X	X	PR:3.1	Consider topsoil salvage and segregation on a case-by-case basis.	Require topsoil salvage and segregation for all surface-disturbing activities.	Same as Alternative A.	Salvage and segregate topsoil for all applicable surface-disturbing activities. Use salvaged topsoil in the reclamation of the associated surface disturbance.	Same as Alternative B.	Same as Alternative D.
1023	X	X	PR:3 PR:3.1	No similar action.	Require photo point monitoring of all channel crossings and all surface disturbance greater than 0.5 acres.	Same as Alternative A.	Channel crossings and surface disturbance are subject to the monitoring and reporting requirements of Reclamation Requirement 10 of the Wyoming Reclamation Policy, where applicable, and similar guidance updated over time.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
1000 PHYSICAL RESOURCES (PR) – Water									
				GOAL PR:4 Maintain the quality of surface water and groundwater resources, maintain compliance with applicable federal and state water quality standards, and improve water quality where practical within the scope of the BLM's authority. **Objectives:** **PR:4.1** Manage water resources to meet or achieve the *Wyoming Standards for Healthy Rangelands*. **PR:4.2** Attain, maintain, or enhance the physical, chemical, and biological integrity of surface water (Map 3). **PR:4.3** Manage watersheds to prevent accelerated channel erosion and undesirable adjustments in channel geometry (e.g., width-depth ratio, sinuosity, bank stability, gradient) of stream channels within the authority of the BLM. **PR:4.4** Manage watersheds to restore stream channels that have been degraded within the authority of the BLM. **PR:4.5** Manage watersheds to achieve and maintain erosional stability and to support the hydrologic cycle and aquifer recharge. **PR:4.6** Manage pollutants on federal lands to minimize threats to drinking water sources. **PR:4.7** Manage produced water to meet other resource goals and objectives. **GOAL PR:5** Within the scope of BLM's authority, provide for the availability of water to support uses on public lands. **Objective:** **PR:5.1** Rehabilitate, maintain, acquire, develop, or reclaim water supply sources to meet other resource goals and objectives within the scope of BLM's authority.				
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
1024	X	X	PR:4	Water quality standards, enforcement, and remediation are the primacy of and administered by the State of Wyoming. BLM actions will conform with Wyoming DEQ-WQD regulations and requirements through application of BMPs and other measures consistent with resource goals and objectives. Reporting of leaks and spills to the Wyoming DEQ and/or Wyoming Oil and Gas Conservation Commission will be required, as appropriate.					
1025	X	X	PR:5.1	File for water rights to water projects on BLM-administered land as determined appropriate by the BLM.					
1026	X	X	PR:4.2 PR:4.6	Avoid aerial application of fire suppressant chemicals within 300 feet of perennial waters. Consider ground-based application on a case-by-case basis.					
1027	X	X	PR:4.5	Protect watershed resources through the application of watershed conservation practices and BMPs.					
1028	X	X	PR:4.6	In cooperation with stakeholders and within BLM's authority, protect groundwater during BLM activities and permitted actions through appropriate measures. These measures may be determined through methods such as predictive modeling, the results of monitoring, or project-specific analysis.					
1029	X	X	PR:4.2 PR:4.5-4.7	Apply BMPs for oil and gas and water well drilling operations, mining, and other activities, which could affect groundwater resources. For all oil and gas wells, a groundwater monitoring program will be established in accordance with state requirements.					
1030	X	X	PR:4.2 PR:4.5-4.7	Conduct water quality monitoring following the application of pesticides when treatments are conducted adjacent to streams within municipal watersheds, fish hatchery supply watersheds, or adjacent to major fish-bearing streams on a case-by-case basis.					
1031	X	X	PR:4.2 PR:4.3 PR:4.5	Control water runoff from disturbed or developed sites and control soil erosion to appropriate rates for natural conditions through the Wyoming Storm Water Discharge Program using appropriate BMPs and technologies.					

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
1000 PHYSICAL RESOURCES (PR) – Water									
1032	X	X	PR:4.3-4.5	Participate in the development and implementation of local watershed management plans and/or TMDLs with interested stakeholders and Wyoming DEQ. Apply BMPs as appropriate from the *E. coli Total Maximum Daily Loads for the Big Horn River Watershed* (Wyoming DEQ 2013a), for the development and implementation of authorized activities on BLM lands in the Big Horn watershed.					
1033	X	X	PR:4.5	Implement BMPs to protect water quantity and water quality within cave and karst areas exhibiting unique underground drainage characteristics.					
1034	X	X	PR:4.1 PR:4.2 PR:4.7 PR:5.1	Acquire abandoned mineral wells that produce water as determined appropriate by BLM to meet other resource objectives.					
1035	X	X	PR:4.5	Cooperate with stakeholders to plug unneeded abandoned water wells to prevent groundwater contamination and with the State Engineers Office regulations (Part III) for proper water well abandonment.					
1036	X	X	PR:4.6	Cooperate with EPA, the State of Wyoming, and local governments in the development and implementation of source water and wellhead protection plans to protect drinking water sources.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
1037	X	X	PR:4.1-4.4 PR:4.6	Implement watershed improvement practices in Wyoming's Bighorn Basin water quality plans to reduce sediment loadings in streams and river segments as well as lakes and reservoirs. When approved, these practices will be included in various BLM activity plans and in BLM use authorizations, as appropriate.	Develop watershed improvement practices in cooperation with local governments to reduce sediment loading in stream and river systems as well as lakes and reservoirs. Once developed, include in all activity plans and permitted activities.	Apply BMPs to all activity plans and permitted activities.	Same as Alternative B, plus apply BMPs and work in cooperation with stakeholders on activity plans and other authorized activities.	Same as Alternative B.	Same as Alternative D.
1038	X	X	PR:4.2 PR:4.3	In cooperation with other stakeholders, encourage the maintenance of natural flow regimes in streams supporting fisheries in compliance with Wyoming water laws.	In cooperation with other stakeholders, maintain the natural flow regimes in priority streams supporting fisheries in compliance with Wyoming water laws.	In cooperation with other stakeholders, encourage water development projects to allow for adequate in-stream flow to support riparian and fisheries values in compliance with Wyoming water laws.	In cooperation with other stakeholders, encourage the maintenance of natural flow regimes in priority streams supporting fisheries in compliance with Wyoming water laws.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

1000 PHYSICAL RESOURCES (PR) – Water									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
1039	X	X	PR:4.1-4.3	Fence springs and reservoirs on BLM-administered land, as necessary, to meet resource objectives. Provide offsite water as necessary.	Consider fencing of springs, wetlands, reservoirs, and riparian areas, and provide offsite water when necessary to meet resources objectives.	Same as Alternative B, except only fence springs and their associated wetlands. Provide offsite water as necessary.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
1040	X	X	PR:4.3 PR:4.4	No similar action.	Cooperate with adjacent landowners and managers to address Impaired waterbodies listed on the State of Wyoming's 303d list. Prioritize all streams not meeting state water quality standards where the evidence indicates that failure to meet such standards is the result of BLM management actions or permitted activities.	Same as Alternative B.	Cooperate with adjacent landowners, managers, and the Wyoming DEQ to address waterbodies not meeting state water quality standards. Prioritize and implement BMPs to address causal factors related to the impairment of water quality of waters where the evidence indicates that failure to meet such standards is the result of BLM management actions or permitted activities.	Same as Alternative B.	Same as Alternative D.
1041	X	X	PR:4.1 PR:4.2 PR:4.6 PR:4.7	Authorize new activities resulting in the surface discharge of produced water if it meets State of Wyoming water quality standards. As the surface administrator of public lands, the BLM considers multiple-use objectives and provides recommendations to the Wyoming DEQ before that agency issues water discharge permits.	Do not authorize new activities resulting in the surface discharge of produced water on BLM-administered land.	Authorize new activities resulting in the surface discharge of produced water and require the proper disposal of this water. At the discretion of BLM and its stakeholders, such waters may be put to beneficial use, in accordance with federal, state, and local laws and regulations. When it occurs in waterways on BLM-administered land, require the discharge of produced water be done in such a	Authorize new activities resulting in the surface discharge of produced water where compatible with other resource objectives and in consultation with stakeholders. Require water monitoring plans for new activities resulting in surface discharges of water to track changes in receiving channels and to minimize adverse impacts to watershed health. If adverse impacts to	Same as Alternative B and restrict or prohibit BLM-authorized activities and infrastructure such as unlined impoundment ponds/pits, reserve pits, and evaporation ponds that could result in the contamination of sensitive water resources, including Groundwater Zones 1-3, Surface Water Zones 1-3, and sensitive aquifer systems identified through the use of the Wyoming Groundwater Vulnerability Assessment Handbook or	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

1000 PHYSICAL RESOURCES (PR) – Water									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
						manner as to cause minimal environmental harm, while still contributing to beneficial uses.	receiving channels or watershed health occur, require development and implementation of water management plans which include reclamation strategies and mitigation to address impacts. Avoid or mitigate BLM-authorized activities and infrastructure such as unlined impoundment ponds/pits, reserve pits, and evaporation ponds that could result in the contamination of sensitive water resources, including Source Water Protection Areas identified in Wellhead or Source Water Protection Plans approved local governing bodies and "High" and "Moderately High" sensitivity aquifer systems identified through the use of the Wyoming Groundwater Vulnerability Assessment Handbook or similar document as updated over time, on a case-by-case basis. BMPs appropriate for consideration to mitigate potential water quality impacts are listed in Appendix L.	similar document as updated over time, unless anticipated impacts are mitigated. BMPs appropriate for consideration to mitigate potential water quality impacts are listed in Appendix L.	

Table 2-9. Detailed Alternatives (Continued)

1000 PHYSICAL RESOURCES (PR) – Water									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
1042	X	X	PR:4.6	No similar action.	Prohibit activities that could affect water resources within a ¼ mile area around public water supply wells, and an area including ¼ mile on both sides of a river or stream, for 10 miles upstream of the public water supply intake, within the watershed. For lakes and reservoirs, this would include a ¼ mile area around the waterbody.	Allow activities around public water supply wells on a case-by-case basis.	Avoid activities that could negatively affect water resources within a ¼ mile area around public water supply wells, and an area including ¼ mile on both sides of a river or stream, for 10 miles upstream of the public water supply intake, within the watershed. For lakes and reservoirs, this would include a ¼ mile area around the waterbody. For unavoidable activities in these areas, site specific mitigation will be included to minimize risk of adverse impacts.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
1000 PHYSICAL RESOURCES (PR) – Cave and Karst Resources									
				GOAL PR:6 Conserve significant cave and karst resources and enhance educational and scientific research opportunities relative to cave and karst resources in the Planning Area. **Objectives:** **PR:6.1** Manage significant cave resources as mandated by the Federal Cave Resources Protection Act of 1988. **PR:6.2** Foster public awareness, public use, and provide opportunities for cave and karst research.				
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
1043	X	X	PR:6.1	Cave and karst areas (7,381 acres) are closed to mineral materials disposal, withdrawn from locatable entry, and closed to mineral leasing. These same restrictions apply to important caves or cave passages and karst resources as they are identified.					
1044	X	X	PR:6.1	Manage cave and karst areas as ROW avoidance areas.					
1045	X	X	PR:6.1	Motorized vehicle use is limited to designated roads and trails in areas over important caves or cave passages.					
1046	X	X	PR:6.2	Manage recreational use of caves under a cave management plan. Goals of the plan will include: • Promoting the significance and importance of cave resources through interpretive and educative programs and techniques. • Protecting and maintaining cave resources, including wildlife species and habitat in and around caves by interpreting, restricting, and/or prohibiting nonconforming uses. • Enhancing user experiences and opportunities by managing use at levels compatible with resource carrying capacity and protection.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
1047	X	X	PR:6.2	Do not require a minimum group size in caves.	For safety reasons, group sizes must be at least three people in all caves where use is allowed.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
1048	X	X	PR:6.1	Accomplish cave resource protection and provide for user safety with controls such as timing of use to avoid crowding and closing caves to use during periods of high water runoff.	Same as Alternative A, except close cave and karst areas during all critical periods for bats and when user safety is at risk due to high water, radon, H_2S, and fire.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
1049	X		PR:6.2	Allow commercial recreational use of Spirit Mountain cave on a case-by-case basis.	Same as Alternative A.	Same as Alternative A, except encourage commercial caving tours for Spirit Mountain cave.	Same as Alternative A, except allow for commercial caving tours of Spirit Mountain cave.	Same as Alternative A.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

1000 PHYSICAL RESOURCES (PR) – Cave and Karst Resources									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
1050	X	X	PR:6.2	Manage cave and karst resources as the Worland Caves SRMA to provide for recreational opportunities.	Manage cave and karst resources under a specific cave and karst ERMA.	Do not manage cave and karst resources under a specific cave and karst ERMA. Manage cave and karst areas consistent with resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
1051	X	X	PR:6.2	Allow scientific research of cave and karst areas on a case-by-case basis.	Actively pursue scientific research of cave and karst areas.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
1052	X	X	PR:6.2	No similar action.	Same as Alternative A.	Same as Alternative A.	Manage caves to protect bats from White Nose Syndrome by requiring decontamination protocol under BLM IM 2010-181 or the National White Nose Syndrome protocol.	Same as Alternative A.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
				GOAL MR:1 Provide opportunities for mineral extraction and energy exploration and development to meet national and local needs, while avoiding or mitigating impacts on other resources. **Objectives:** **MR:1.1** Provide opportunities to explore for, sell and/or permit, and develop leasable, salable, and locatable mineral resources. **MR:1.2** Encourage sound, balanced exploration and development of mineral resources in the Planning Area. **MR:1.3** Provide opportunities for exploring, leasing, and developing conventional and unconventional oil and gas, CBNG, coal, sodium, phosphate, and other leasable minerals including, but not limited to, oil shale and geothermal resources. **GOAL MR:2** Manage leasable fluid mineral resources (oil, gas, CBNG, geothermal) in the Planning Area to meet the Nation's energy needs, without compromising long-term health and diversity of public lands and resources. **Objectives:** **MR:2.1** Provide opportunities to explore and develop federal oil and gas resources and other leasable minerals. **MR:2.2** Provide opportunities for collection of subsurface geological (geophysical) data to aid in the exploration of oil and gas resources in areas open to leasing. **MR:2.3** 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 greater sage-grouse, priority will be given to development in non-habitat areas first and then in the least suitable habitat for greater sage-grouse. The implementation of these priorities will be subject to valid existing rights and any applicable law or regulation, including, but not limited to, 30 U.S.C. 226(p) and 43 C.F.R. 3162.3-1(h). **MR:2.4** Where a proposed fluid mineral development project on an existing lease could adversely affect greater sage-grouse 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 APD for the lease to avoid and minimize impacts to sage-grouse or its habitat and will ensure that the best information about the greater sage-grouse and its habitat informs and helps to guide development of such federal leases. **GOAL MR:3** Manage solid leasable mineral resources (coal, oil shale, tar sands, phosphate, sodium, etc.) to help meet local and regional needs, while avoiding or mitigating effects on other resources. **Objective:** **MR:3.1** Provide opportunities for exploration, leasing, and development of solid leasable minerals consistent with goals and objectives of other natural and cultural resources and values. **GOAL MR:4** Manage salable mineral materials to meet local and regional needs, while avoiding or mitigating effects on other resources. **Objectives:** **MR:4.1** Anticipate need and identify areas suitable for ongoing and future mineral materials disposals to meet needs. **MR:4.2** Provide opportunities for exploration and development of salable minerals in suitable locations while avoiding or mitigating effects to other resources. **GOAL MR:5** Manage locatable minerals activities on lands open to mineral entry, while preventing unnecessary and undue degradation of public lands as defined in 43 CFR 3809.5, and while avoiding or mitigating effects of exploration and production on other resources. **Objective:** **MR:5.1** Provide opportunities for exploration and development of locatable minerals while reducing and mitigating effects of mining on other natural resources.					

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
2000 MINERAL RESOURCES (MR)									
				GOAL MR:6 Provide protections for resource values in areas of conflict with mineral exploration and development. **Objectives:** **MR:6.1** Manage oil and gas operations in the Master Leasing Plan areas to prevent degradation of resources. **MR:6.2** Minimize, avoid, and mitigate impacts of environmental risks on fish and wildlife. **MR:6.3** Manage the direct indirect and cumulative impacts so as to maintain a minimal level of user conflict. **MR:6.4** Manage habitat to conserve, recover, and maintain fish and wildlife consistent with appropriate local, state, and federal management plans. **MR:6.5** Utilize a comprehensive approach to travel planning and management to sustain and enhance use. **MR:6.6** Apply guidelines and appropriate measures to all management actions (including reclamation) affecting soil health to decrease erosion and sedimentation, to achieve and maintain stability, and to support the hydrologic cycle by providing for water capture, storage, and release.				
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
2001	X	X	BR:8.3 BR:8.5	Design, construct, and operate evaporation, reserve, work over, and production pits with protective features to reduce mortality livestock and wildlife due to drowning or entrapment as addressed in BLM Wyoming's *Management of Oil and Gas Exploration and Production Pits* (BLM 2011d). Do not allow infrastructure (such as unlined impoundment ponds/pits, reserve pits, evaporation ponds, and other uses) that could impact water resources and cause contamination in order to protect sensitive water resources (within 500 feet of riparian areas and surface waters, Source Water Protection Areas identified in Wellhead or Source Water Protection Plans approved by the local governing body, and "High" and "Moderately High" sensitivity aquifer systems identified through the use of the Wyoming Groundwater Vulnerability Assessment Handbook or similar document as updated over time), unless anticipated impacts are mitigated (Appendix L).				
Locatable Minerals									
2002	X	X	MR:1.1 MR:5.1	Lands not formally withdrawn or segregated from mineral entry are available for mineral entry for bentonite (Map 4), gypsum (Map 5), and other locatable minerals.					
Leasable Minerals – Coal									
2003	X	X	MR:1.1 MR:1.3 MR:3.1	Allow coal exploration on lands through the coal exploration license process.					
2004	X	X	MR:1.1 MR:1.3 MR:3.1	Consider interest in exploration for, or leasing of, federal coal (Map 6), if any on a case-by-case basis. Allow coal exploration licenses subject to the regulations of 43 CFR 3410, and subject to guidance mitigating for surface-disturbing activities in the *Wyoming BLM Standard Oil and Gas-Lease Stipulations* (Appendix I). Before issuing a coal exploration license, require the authorized officer to prepare an environmental assessment or environmental impact statement, if necessary, of the potential effects of the proposed exploration on the natural and socio-economic environment of the affected area. If an application for a federal coal lease is received, conduct an appropriate land use and environmental analysis, including the coal screening process, to determine whether the area(s) proposed for leasing is (are) acceptable for coal development and leasing (as per 43 CFR 3425). If public lands are determined to be acceptable for further consideration for coal leasing, amend the land use plan as necessary. Only accept federal coal lease applications on those federal coal lands with development potential identified as suitable for further leasing consideration, after application of the coal screens and unsuitability criteria. 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 greater sage-grouse for purposes of the suitability criteria set forth at 43 CFR 3461.5(o)(1).				

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				Leasable Minerals – Geothermal					
2005	X	X	MR:1.1 MR:1.3 MR:2	Unless otherwise noted, BLM-administered land in the Planning Area that is open to oil and gas leasing is open to geothermal leasing, subject to appropriate mitigation developed through use of the mitigation guidelines described in Appendix H. Unless otherwise noted, those lands identified as closed to oil and gas leasing are closed to geothermal leasing.					
2006	X	X	MR:2	Unless otherwise noted, the exploration and development of geothermal resources are subject to restrictions on surface-disturbing activities as they are applied to oil and gas exploration and development activities.					
				Leasable Minerals – Oil and Gas					
2007	X	X	MR:1 MR:2	Protect important resources, including in areas closed to leasing on existing leases (Map 7) to the extent this restriction does not violate the leaseholder/operator lease rights, by applying a NSO restriction and prohibiting surface-disturbing activities. In areas identified as available for leasing, additional planning, analysis, and decision making may be necessary prior to lease issuance under the following criteria: 1) when oil and gas development is resulting in unacceptable multiple-use or natural/cultural resources conflicts, 2) new information evidences increased oil and gas development densities or surface disturbance, or 3) at the discretion of the Field Manager, District Manager, or State Director. Areas closed for oil and gas leasing may be leased with a NSO stipulation to deal with drainage of these resources from federal mineral estate.					
2008	X	X	MR:2.1 MR:2.3 MR:2.4	Determine the routing of access roads and location of well pads after considering the views of the surface owner on split-estate lands (private surface-federal minerals/oil and gas), where possible. Where the federal government owns the mineral estate, and the surface is in non-federal ownership, apply the same stipulations, COAs, and/or conservation measures and RDFs 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. Where the federal government owns the surface and the mineral estate is in non-federal ownership, apply appropriate surface use COAs, stipulations, and mineral RDFs through ROW grants or other surface management instruments, to the maximum extent permissible under existing authorities, in coordination with the mineral estate owner/lessee.					
				Leasable Minerals – Oil and Gas/CBNG Exploration and Development					
2009	X	X	MR:1.1 MR:1.3 MR:2.1 MR:2.3	Process oil and gas lease applications on a case-by-case basis.					
2010	X	X	MR:1.1 MR:1.3 MR:2.1 MR:2.3 MR:2.4	Unless otherwise noted, areas that are open to oil and gas leasing are open to geophysical exploration subject to appropriate mitigation developed through use of the mitigation guidelines described in Appendix I. Areas closed to oil and gas leasing are closed to geophysical exploration. However, geophysical exploration may be permitted on a case-by-case basis so long as the resource goals and objectives under which the area was closed are not compromised.					
2011	X	X	MR:1.1 MR:1.3 MR:2 MR:2.3	In cases where federal oil and gas leases are or have been issued without stipulated restrictions or requirements that are later found to be necessary, or with stipulated restrictions or requirements later found to be insufficient, consider their inclusion before approving subsequent exploration and development activities. Include these restrictions or requirements only as reasonable measures or as conditions of approval in authorizing APDs or Master Development Plans. Conversely, in cases where leases are or have been issued with stipulated restrictions or requirements that are later found to be excessive or unnecessary, the stipulated					

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
2000 MINERAL RESOURCES (MR)									
			MR:2.4	restrictions or requirements may be appropriately modified, excepted or waived in authorizing actions. Both the application of reasonable measures or COAs and the modification, exception, or waiver of stipulated restrictions or requirements must first be based upon site-specific analysis including the necessary supporting NEPA.					
2012	X	X	MR:2.1	On split-estate lands, at the time of APD review, negotiations among the surface owner, operators, and the BLM may be undertaken to incorporate specific needs of the surface owner.					
2013	X	X	MR:1.2	Utilize BMPs in the exploration, development, production, and abandonment of oil and gas resources.					
Leasable Minerals – Other Solid Leasable Minerals									
2014	X	X	MR:1.1 MR:1.3 MR:3.1	Surface disturbance restrictions for geophysical exploration activities for other solid leasable minerals apply to both leased and un-leased lands.					
2015	X	X	MR:1.1 MR:1.3 MR:3.1	Lease solid minerals such as phosphates or sodium, consistent with other resources, on a case-by-case basis.					
Salable Minerals									
2016	X	X	MR:4.1 MR:4.2	Existing BLM-approved mineral material sites (Map 8) are open to mineral materials disposal. New mineral materials disposal sites in areas open to mineral materials disposal are subject to site-specific analysis prior to approval. Ensure that each community pit has an updated site-specific reclamation fee based on a current mining and reclamation plan. Ensure that reclamation occurs in mined-out areas of community pits.					
2017	X	X	MR:1.1 MR:1.2 MR:4.1 MR:4.2	Dispose of mineral materials on a case-by-case basis, subject to site-specific analysis and appropriate mitigation prior to approval, in areas open to mineral materials disposal.					
2018	X	X	MR:1.1 MR:1.2 MR:4.1 MR:4.2	Prohibit disposal of topsoil.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
Locatable Minerals									
2019	X	X	MR:5.1	4,130,352 acres are available for locatable mineral entry in the Planning Area. Maintain a withdrawal from appropriation under the mining laws for locatable minerals on	3,888,990 acres are available for locatable mineral entry in the Planning Area. Pursue a withdrawal from appropriation under the mining laws for locatable minerals on 314,223 acres	4,155,119 acres are available for locatable mineral entry in the Planning Area. Pursue a withdrawal from appropriation under the mining laws for locatable minerals for 48,095 acres	4,120,325 acres are available for locatable mineral entry in the Planning Area. Pursue a withdrawal from appropriation under the mining laws for locatable minerals for 83,321 acres	2,443,901 acres are available for locatable mineral entry in the Planning Area. Pursue a withdrawal from appropriation under the mining laws for locatable minerals on 1,759,312	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				72,861 acres in the Planning Area (Map 9).	in the Planning Area (Map 10).	in the Planning Area (Map 11).	in the Planning Area (Map 12).	acres in the Planning Area (Map 13).	
2020	X		MR:5.1	No similar action.	Pursue a withdrawal from appropriation under the mining laws for federal mineral estate within the Cody Industrial Park area until such time as the mineral estate is disposed of.	Federal mineral estate within the Cody Industrial Park area is available for locatable mineral entry.	Do not open federal mineral estate within the Cody Industrial Park area to locatable mineral entry.	Same as Alternative B.	Same as Alternative D.
				Leasable Minerals – Coal					
2021	X	X	MR:1.1 MR:1.3 MR:3.1	Terminate all coal and phosphate withdrawals and classifications and return the lands involved to operation of the mining laws.	Continue all coal and phosphate withdrawals and classifications, and do not return the lands involved to operation of the mining laws.	Same as Alternative A.	Continue all coal and phosphate withdrawals and classifications unless no longer needed and do not return the lands involved to operation of the mining laws.	Same as Alternative B.	Same as Alternative D.
				Leasable Minerals – Geothermal Resources					
2022		X	MR:5.1	Lands within 15 miles of Hot Springs State Park are open to geothermal leasing.	BLM-administered land or federal mineral estate within 15 miles of Hot Springs State Park in Thermopolis is closed to geothermal leasing.	Same as Alternative A.	BLM-administered land or federal mineral estate within 5 miles of Hot Springs State Park in Thermopolis is closed to geothermal leasing.	Same as Alternative B.	Same as Alternative D.
2023	X	X	MR:5.1	A total of 151,931 acres are closed to geothermal leasing (Map 14). A total of 3,986,094 acres are open to geothermal leasing.	A total of 2,453,193 acres are closed to geothermal leasing (Map 15). A total of 1,684,832 acres are open to geothermal leasing.	A total of 145,836 acres are closed to geothermal leasing (Map 16). A total of 3,993,194 acres are open to geothermal leasing.	A total of 361,777 acres are closed to geothermal leasing (Map 17). A total of 3,776,248 acres are open to geothermal leasing.	Same as Alternative B.	Same as Alternative D.
				Leasable Minerals – Oil and Gas/CBNG Exploration and Development					
2024	X	X	MR:1.1 MR:1.3 MR:2.1 MR:2.3	Approximately 1,354,593 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of	Approximately 405,620 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of	Approximately 2,565,742 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of	Approximately 911,814 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of	Approximately 384,176 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of	Approximately 912,328 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
			MR:2.4	the **standard** lease form only (Map 18).	the **standard** lease form only (Map 19).	the **standard** lease form only (Map 20).	the **standard** lease form only (Map 21). Require geothermal resource monitoring and protection within 5 miles of Hot Springs State Park and within the Thermopolis Anticline.	the **standard** lease form only (Map 22).	the **standard** lease form only (Map 23).
2025	X	X	MR:1.1 MR:1.3 MR:2.1 MR:2.3 MR:2.4	Approximately 1,633,204 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of the standard lease form, as well as **moderate** constraints (Map 18).	Approximately 335,109 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of the standard lease form, as well as **moderate** constraints (Map 19).	Approximately 1,334,491 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of the standard lease form, as well as **moderate** constraints (Map 20).	Approximately 1,714,685 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of the standard lease form, as well as **moderate** constraints (Map 21).	Approximately 319,671 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of the standard lease form, as well as **moderate** constraints (Map 22).	Approximately 1,709,652 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of the standard lease form, as well as **moderate** constraints (Map 23).
2026	X	X	MR:1.1 MR:1.3 MR:2.1 MR:2.3 MR:2.4	Approximately 889,435 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of the standard lease form, as well as **major** constraints (Map 18).	Approximately 932,551 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of the standard lease form, as well as **major** constraints (Map 19).	Approximately 91,956 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of the standard lease form, as well as **major** constraints (Map 20).	Approximately 1,221,142 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of the standard lease form, as well as **major** constraints (Map 21).	Approximately 969,432 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of the standard lease form, as well as **major** constraints (Map 22).	Approximately 1,191,215 acres of federal mineral estate are open to oil and gas leasing subject to the terms and conditions of the standard lease form, as well as **major** constraints (Map 23).
2027	X	X	MR:1.1 MR:1.3 MR:2.1 MR:2.3 MR:2.4	Approximately 260,792 acres of federal mineral estate are **closed** to oil and gas leasing (Map 18).	Approximately 2,464,745 acres of federal mineral estate are **closed** to oil and gas leasing (Map 19).	Approximately 145,836 acres of federal mineral estate are **closed** to oil and gas leasing (Map 20).	Approximately 292,353 acres of federal mineral estate are **closed** to oil and gas leasing (Map 21).	Approximately 2,464,745 acres of federal mineral estate are **closed** to oil and gas leasing (Map 22).	Approximately 324,829 acres of federal mineral estate are **closed** to oil and gas leasing (Map 23).
2028	X	X	MR:1.1 MR:1.3 MR:2.1 MR:2.3 MR:2.4	No similar action.	Prohibit suspension of existing non-producing mineral leases in areas closed to mineral leasing. After such leases expire, do not offer those lands for lease again.	Allow suspension of existing mineral leases (producing or non-producing) in areas closed to mineral leasing. After existing non-producing mineral leases expire in areas closed to mineral leasing, do not offer those lands lease.	Same as Alternative B, except on a case-by-case basis.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
Leasable Minerals – Oil and Gas Management Areas, Master Leasing Plan Areas, and Other Areas									
2029	X	X	MR:1.1 MR:1.3 MR:2.1	No similar action.	Do not delineate **Oil and Gas Management Areas.** However, continue to consider surface resources such as wildlife habitat and livestock forage within existing intensively-developed fields and adjacent areas during review and approval of fluid minerals actions.	Delineate **Oil and Gas Management Areas** (Map 24) (566,345 acres of federal mineral estate) around intensively-developed existing fields, using a buffer zone of up to 2 miles from the outer boundary of the existing field (Map 26). Within these areas, manage primarily for oil and gas exploration and development; consider all other surface uses secondary.	Delineate **Oil and Gas Management Areas** (Map 25) (441,662 acres of federal mineral estate) around existing intensively-developed fields, applying a 2-mile buffer from the outer boundary of the existing field (Map 26); adding enhanced oil recovery areas identified by the Governor's Office Enhanced Oil Recovery Institute and excluding greater sage-grouse PHMAs. Manage these areas primarily for oil and gas exploration and development. Oil and gas development, including enhanced oil recovery operations, within Oil and Gas Management Areas is allowed to take place at the same level and density as the existing development in the field, except in the Oregon Basin Oil Field, where new development must result in no net gain of surface disturbance. Levels and densities beyond the existing field development may require additional reclamation or compensatory offsite	Same as Alternative B, except apply NSO conditions of approval on existing leases to the extent consistent with valid existing rights in greater sage-grouse Key Habitat Areas (Map 27).	Same as Alternative D, except apply NSO conditions of approval on existing leases to the extent consistent with valid existing rights in greater sage-grouse PHMAs (Map 28).

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							mitigation. As oil and gas fields expand or exploration reaches beyond the Oil and Gas Management Areas depicted on Map 25, Oil and Gas Management Areas may be enlarged as appropriate. To enlarge Oil and Gas Management Areas, the expansion area would: i) have to be adjacent to the field and under valid oil and gas lease(s) with stipulations allowing surface occupancy and development; ii) have to have a surface density of, on average, at least four well pads per 640-acres; a determination that additional well density is required to efficiently and adequately produce the oil or gas resource; iii) have a project-specific environmental analysis prepared to analyze the impacts and determine operating methods, mitigation, and BMPs to be used in the efficient and comprehensive development of the field; iv) need surface resources to be satisfactorily mitigated; and v) need commitment to		

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							accelerate reclamation as required by the authorized officer.		
2030	X		MR:1.1 MR:1.3 MR:3.1	No similar action.	Federal mineral estate within the Cody Industrial Park area is closed to mineral leasing.	Federal mineral estate within the Cody Industrial Park area is open to mineral leasing.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
Leasable Minerals – Other Solid Leasables (Oil Shale, Tar Sands, Phosphate, etc.)									
2031	X	X	MR:1.1 MR:1.3 MR:3.1	Sherard Dome and Trapper Canyon are open to mineral leasing.	Sherard Dome and Trapper Canyon tar sands are closed to solid mineral leasing.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
Salable Minerals									
2032	X	X	MR:1.1 MR:4.1 MR:4.2	Dispose of mineral materials (e.g., sand and gravel [Map 29], limestone, and decorative/construction stone) throughout the Planning Area, except where resource values require closure. 3,974,564 acres are open to mineral materials disposal. 228,649 acres are closed to mineral materials disposal (Map 30).	1,612,993 acres are open to mineral materials disposal. 2,590,220 acres are closed to mineral materials disposal (Map 31).	3,859,251 acres are open to mineral materials disposal. 343,962 acres are closed to mineral materials disposal (Map 32).	3,828,320 acres are open to mineral materials disposal. 374,894 acres are closed to mineral materials disposal (Map 33).	1,059,062 acres are open to mineral materials disposal. 3,144,151 acres are closed to mineral materials disposal (Map 34).	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
2033	X		MR:1.1 MR:4.1 MR:4.2	No similar action.	Federal mineral estate within the Cody Industrial Park area is closed to mineral materials disposal.	Federal mineral estate within the Cody Industrial Park area is open to mineral materials disposal.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
Geophysical Exploration and Development									
2034	X	X	MR:1.1 MR:1.3 MR:2.2	Allow geophysical exploration if it can be conducted within the constraints necessary to protect other resources.	Same as Alternative A, but geophysical exploration is subject to motorized vehicle use limitations and restrictions on surface-disturbing activities.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
Carbon Dioxide (CO_2) Sequestration									
2035	X	X	MR:1.2	No similar action.	Prohibit carbon dioxide sequestration research and projects.	Allow carbon dioxide sequestration research and projects.	Allow carbon dioxide sequestration research and projects when/if they meet and do not detract from other resource objectives.	Same as Alternative B.	Same as Alternative D.
Master Leasing Plans (MLPs) -- Absaroka Front									
2036	X	X	MR:6	No similar action.	Do not apply any MLPs. Consistent with the management of other resources and resources uses under this alternative, the Absaroka Front Management Area is closed to mineral leasing.	Same as Alterative B. Consistent with the management of other resources and resources uses under this alternative, the Absaroka Front Management Area is open to mineral leasing.	Apply a MLP to 253,112 acres in the Absaroka Front MLP Analysis Area (Map 35). Zone 1 – 148,658 acres Zone 2 – 5,604 acres Zone 3 – 98,852 acres	Same as Alterative B.	Same as Alternative D.
2037	X		MR:6.1 MR:6.2 MR:6.4	No similar action.	Consistent with the management of other resources and resources uses under this alternative, the Absaroka Front Management Area is closed to mineral leasing.	Same as Alternative A.	Zone 1 – Areas within elk crucial winter range will be offered for lease only after all parcels outside elk crucial winter range have been offered for lease, sold, and explored. Exploration will be	Same as Alterative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							considered complete when a downhole spacing determination has been made by the WOGCC or BLM Wyoming RMG, as appropriate.		
2038	X		MR:6.1 MR:6.2 MR:6.4	Consistent with the management of other resources and resources uses under this alternative, apply a TLS to avoid surface-disturbing and disruptive activities within big game crucial winter range from November 15 through April 30. Apply CSU stipulation for big game migration corridors, narrow ridges, overlapping big game crucial winter range.	Consistent with the management of other resources and resources uses under this alternative, the Absaroka Front Management Area is closed to mineral leasing.	Consistent with the management of other resources and resources uses under this alternative, the Absaroka Front Management Area is open to mineral leasing.	Zone 1 – Areas outside elk crucial winter range are subject to CSU. Oil and gas-related surface disturbances are restricted to no more than 1 location per lease, to include 1 well pad and ancillary facilities. Total surface disturbance per lease at any given time will not exceed 32 acres. A minimum lease size of 640 acres of federal mineral estate would be applied outside elk crucial winter range. The lease can consist of noncontiguous parcels. Smaller parcels may be leased only when 640 acres of federal mineral estate are not available and leasing is necessary to remain in compliance with laws, regulations and policy; for example, to protect the federal mineral estate from drainage or to commit the federal mineral estate to unit or communitization agreements. • Allow additional disturbance pending	Same as Alterative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							acceptable final reclamation. • Co-locate new disturbance where technically feasible. • Utilize unitization to minimize surface disturbance in elk crucial winter range.		
2039	X		MR:6.1 MR:6.2 MR:6.4	Consistent with the management of other resources and resources uses under this alternative, apply a TLS to avoid surface-disturbing and disruptive activities within big game crucial winter range from November 15 through April 30. Apply CSU stipulation for big game migration corridors, narrow ridges, overlapping big game crucial winter range.	Consistent with the management of other resources and resources uses under this alternative, the Absaroka Front Management Area is closed to mineral leasing.	Consistent with the management of other resources and resources uses under this alternative, the Absaroka Front Management Area is open to mineral leasing.	Zone 1 – Areas inside elk crucial winter range are subject to CSU. Oil and gas-related surface disturbances are restricted to no more than 1 location per lease, to include 1 well pad and ancillary facilities. Total surface disturbance per lease at any given time will not exceed 64 acres. A minimum lease size of 1,280 acres of federal mineral estate would be applied inside elk crucial winter range. The lease can consist of noncontiguous parcels. Smaller parcels may be leased only when 1,280 acres of federal mineral estate is not available and leasing is necessary to remain in compliance with laws, regulations and policy; for example, to protect the federal mineral estate from drainage or to commit the federal mineral estate to unit or communitization	Same as Alterative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							agreements. • Allow additional disturbance pending acceptable final reclamation. • Co-locate new disturbance where technically feasible. • Utilize unitization to minimize surface disturbance in elk crucial winter range.		
2040	X		MR:6.1 MR:6.2 MR:6.4	Apply a TLS to avoid surface-disturbing and disruptive activities within big game crucial winter range from November 15 through April 30. Apply CSU stipulation for big game migration corridors, narrow ridges, overlapping big game crucial winter range.	The Absaroka Front Management Area is closed to mineral leasing.	Manage the Absaroka Front Management Area consistent with other resource objectives.	Zone 2 – Areas adjoining the Shoshone National Forest are open to oil and gas leasing but will be managed for the protection of wildlife transitional and/or big game habitats, and to enable consistent management across multiple surface owners. The acreage in Zone 2 will be offered only as 2 parcels (Map 35) requiring a Master Development Plan to minimize impacts to big game crucial winter range or transitional habitat. • Co-locate new disturbance where technically feasible. • Utilize unitization to minimize surface disturbance in big game winter range. The plan must demonstrate to the BLM	Same as Alterative B.	Same as Alterative D.

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							authorized officer's satisfaction how the operator will meet the following performance standards: • Consult with the Shoshone National Forest and State of Wyoming to ensure consistent management objectives are achieved. • Design oil and gas development to avoid or reduce unnecessary disturbances, wildlife conflicts, and habitat impacts. • Plan the pattern and rate of development to avoid the most important habitats and generally reduce the extent and severity of impacts. • Cluster drill pads, roads and facilities in specific, "low-impact" areas, if geologically feasible. • Consider "liquid gathering systems" (LGS) to eliminate surface storage tanks and reduce truck trips for removal of liquids. • To the extent practicable, place infrastructure within		

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							or near previously disturbed locations. • Minimize infrastructure development and operational activity during life of field by using consolidation (e.g., "unitized") development techniques.		
2041		X	MR:6.1 MR:6.2 MR:6.4	Apply a TLS to avoid surface-disturbing and disruptive activities within big game crucial winter range from November 15 through April 30. Apply CSU stipulation for big game migration corridors, narrow ridges, overlapping big game crucial winter range.	The Absaroka Front Management Area is closed to mineral leasing.	Manage the Absaroka Front Management Area consistent with other resource objectives.	Zone 3 – Areas inside elk crucial winter range are subject to CSU. Oil and gas-related surface disturbances are restricted to no more than 1 location per lease, to include 1 well pad and ancillary facilities. Total surface disturbance per lease will not exceed 64 acres. A minimum lease size of 1,280 noncontiguous acres of federal mineral estate is required inside elk crucial winter range. Smaller parcels may be leased only when 1,280 acres of federal mineral estate are not available and leasing is necessary to remain in compliance with laws, regulations and policy; for example, to protect the federal mineral estate from drainage or to commit the federal mineral estate to unit or communitization	Same as Alterative B.	Same as Alterative D.

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							agreements. • Allow additional disturbance pending acceptable final reclamation. • Co-locate new disturbance where technically feasible. • Utilize unitization to minimize surface disturbance in elk crucial winter range.		
2042		X	MR:6.1 MR:6.2 MR:6.4	Determine the appropriate DPC to manage vegetation on a case-by-case basis to in areas identified as habitat for special status species, or crucial winter range for big game.	The Absaroka Front Management Area is closed to mineral leasing.	Manage vegetation in areas identified as habitat for special status species, or crucial winter range for big game to the DPC that is a combination community that benefits all grazing/browsing animals.	Zone 3 – Apply a CSU to avoid locating new surface disturbance within forest type vegetation in areas identified as habitat for big game crucial winter range (Map 37).	Same as Alterative B.	Same as Alterative D.
2043		X	MR:6.3	Apply a NSO restriction on portions of the Absaroka Foothills SRMA.	The Absaroka Front Management Area is closed to mineral leasing.	Manage the Absaroka Front Management Area consistent with other resource objectives.	Zone 3 – Apply a TLS for surface-disturbing or disruptive activity from September 1-November 15 to maintain recreational settings for hunting within the Absaroka Mountain Foothills SRMA.	Same as Alterative B.	Same as Alterative D.
Master Leasing Plans (MLPs) – Fifteenmile									
2044		X	MR:6	No similar action.	Do not apply an MLP.	Same as Alterative B.	Apply a MLP to 180,816 acres in the Fifteenmile MLP Analysis Area (Map 35).	Same as Alterative B.	Same as Alterative D.

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
2045		X	MR:6.3 MR:6.6	Review mineral leases on a case-by-case basis and apply stipulations and mitigation consistent with other resource objectives.	Apply a NSO restriction in the Fifteenmile area.	Same as Alternative A.	Apply a CSU restriction within the Fifteenmile MLP Analysis Area. Allow no more than 1 surface disturbance per lease, to include 1 well pad and ancillary facilities, to maintain recreational settings, and conserve geologic features, LRP soils, allow no more than 1 surface disturbance per lease. Total surface disturbance per lease will not exceed 32 acres. A minimum lease size of 640 acres of federal mineral estate would be applied within the analysis area. The lease can consist of noncontiguous parcels. Smaller parcels may be leased only when 640 acres of federal mineral estate are not available and leasing is necessary to remain in compliance with laws, regulations and policy; for example, to protect the federal mineral estate from drainage or to commit the federal mineral estate to unit or communitization agreements. • Allow additional disturbance pending acceptable final reclamation. • Co-locate new disturbance where	Same as Alterative B.	Same as Alterative D.

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							technically feasible. • Utilize unitization to control the pace and density of development.		
2046		X	MR:6.6	Allow surface-disturbing activities on fragile soils, biological crusts, soils with low reclamation potential, and soils with highly erosive characteristics on a case-by-case basis.	Same as Alternative A.	Same as Alternative A.	Apply a lease notice to restrict surface disturbance on LRP soils and unique geologic features unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts, which may include, but not be limited to include an Erosion, Revegetation and Restoration Plan. The plan must demonstrate to the BLM authorized officer's satisfaction how the operator will meet the following performance standards: • The disturbed area will be stabilized with no evidence of accelerated erosion features. • The disturbed area shall be managed to ensure soil characteristics approximate an appropriate reference site with regard to erosional features to maintain soil	Same as Alterative B.	Same as Alterative D.

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							productivity and sustainability. • Slope stability is maintained preventing slope failure and erosion. • Sufficient viable topsoil is maintained for ensuring successful final reclamation. At locations where interim reclamation will be completed, this will be accomplished by respreading all salvaged topsoil over the areas of interim reclamation. • The original landform and site productivity will be partially restored during interim reclamation and fully restored as a result of final reclamation.		
2047		X	MR:6.5	Allow OHV use in areas with limited travel designations for NOS level casual use actions.	Prohibit OHV use in areas with limited travel designations for NOS level casual use actions.	Same as Alternative A.	Limit off-road vehicular use for NOS level casual use actions within the Fifteenmile MLP Analysis Area. Allow OHV and mechanized (mountain bike) travel up to 300 feet from established roads in areas with limited travel designations to allow for staking activities, provided that: 1) no resource damage occurs; 2) no new routes are	Same as Alterative B.	Same as Alterative D.

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							created; and 3) such access is not otherwise prohibited by the BLM authorized officer.		
				Master Leasing Plans (MLPs) – Big Horn Front					
2048	X	X	MR:6	No similar action.	Manage the Big Horn Front area consistent with other resource objectives.	Do not apply an MLPs.	Apply an MLP to 379,308 acres in the Big Horn Front MLP Analysis Area (Map 35).	Same as Alterative B.	Same as Alterative D.
2049	X	X	MR:6.1 MR:6.2 MR:6.4	Address traditional migration and travel corridors for big game wildlife species and migratory birds on a case-by-case basis.	Prohibit surface-disturbing activities within ½ mile of big game migration corridors.	Identify and develop management for traditional migration and travel corridors for big game wildlife species.	Apply a NSO restriction: Prohibit surface-disturbing activities within ½ mile of big game migration corridors within the Big Horn Front MLP Analysis Area.	Same as Alterative B.	Same as Alterative D.
2050	X	X	MR:6.1 MR:6.2 MR:6.4	Apply a TLS to avoid surface-disturbing and disruptive activities within big game crucial winter range from November 15 through April 30.	Prohibit surface-disturbing and disruptive activities and apply a NSO restriction within big game crucial and winter range.	Same as Alternative A.	Same as Alternative A. In addition, apply a TLS to avoid surface-disturbing and disruptive activities within elk winter range from November 15 through April 30 within the Big Horn Front MLP Analysis Area. Apply a CSU: Within elk crucial winter range, oil and gas-related surface disturbances would be restricted to no more than 1 location per lease, to include 1 well pad and ancillary facilities. A minimum lease size of 1,280 acres of federal mineral estate would be required. The lease can consist of noncontiguous	Same as Alterative B.	Same as Alterative D.

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							parcels. Total surface disturbance per lease will not exceed 64 acres. Smaller parcels may be leased only when 1,280 acres of federal mineral estate is not available and leasing is necessary to remain in compliance with laws, regulations and policy; for example, to protect the federal mineral estate from drainage or to commit the federal mineral estate to unit or communitization agreements. • Allow additional disturbance pending acceptable final reclamation. • Co-locate new disturbance where technically feasible. • Utilize unitization to minimize surface disturbance in crucial winter range.		

Table 2-9. Detailed Alternatives (Continued)

2000 MINERAL RESOURCES (MR)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
2051	X	X	MR:6.5	Allow OHV vehicle use in areas with limited travel designations for NOS level casual use actions.	Prohibit OHV vehicle use in areas with limited travel designations for NOS level casual use actions.	Same as Alternative A.	Limit off-road vehicular use for NOS level casual use actions within the Big Horn Front MLP Analysis Area. Allow OHV and mechanized (mountain bike) travel up to 300 feet from established roads in areas with limited travel designations to allow for staking activities, provided that: 1) no resource damage occurs; 2) no new routes are created; and 3) such access is not otherwise prohibited by the BLM authorized officer.	Same as Alterative B.	Same as Alterative D.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
3000 FIRE AND FUELS MANAGEMENT (FM)									
				GOAL FM:1 Reducing risk to firefighters and the public is the first priority in every fire management activity. Protect life, property, and resource values by responding to wildland fires based on ecological and social consequences of the fire and the circumstances under which it occurs. **Objectives:** **FM:1.1** Maintain partnerships with the public and interagency cooperators to strengthen coordination of all fire management activities and encourage the creation of fire safe communities. **FM:1.2** Enhance the wildland fire public education prevention program regarding wildland fire. **FM:1.3** Manage fuels to restore and maintain landscapes, and promote fire-adapted communities and infrastructure. Fire and fuels management actions will focus on restoring natural fire regimes and frequencies, and accomplishing DPC objectives. **FM:1.4** Utilize fire management strategies and tactics that are appropriate for the values at risk while also minimizing impacts on resource values. **FM:1.5** Following wildland fires, conduct appropriate emergency stabilization and rehabilitation when and where needed. In priority sage-grouse habitat areas, prioritize suppression immediately after life and property to conserve the habitat. In general sage-grouse habitat, prioritize suppression where wildfires threaten priority sage-grouse habitat. **FM:1.6** Management of fire and fuels will be as consistent as possible with approved local fire plans in coordination with counties, cooperators, and stakeholders. **GOAL FM:2** Restore natural fire regimes and frequencies to the landscape, and utilize fire and vegetation treatments to accomplish DPC objectives. **Objectives:** **FM:2.1** Consult and cooperate with adjacent landowners, state and local governments, and other stakeholders to plan and implement prescribed fire and other vegetation treatments across the landscape. In areas of general sage-grouse habitat, design and implement fuels treatments with an emphasis on protecting existing sagebrush ecosystems. **FM:2.2** Implement and maintain a FMP for the Planning Area; the FMP identifies the site-specific fire management practices and fuels treatment actions needed to meet this RMP's goals and objectives and includes a focus on restoring natural fire regimes and frequencies or accomplishing DPC objectives.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
3001	X	X	FM:2.1	Ensure all prescribed burning activities comply with Wyoming DEQ air quality standards and smoke management rules.					
3002	X	X	FM:1.5	Implement the BLM Emergency Stabilization and Rehabilitation standards located in the *BLM Burned Area Emergency Stabilization and Rehabilitation Handbook* (BLM 2007a).					
3003	X	X	FM:1.4 FM:1.1	Base the response to wildfires consistent with objectives and the cost/benefits of the resources at risk.					
3004	X	X	FM:1.4 HR:3.3	Restrict or prohibit the use of fire retardant chemicals as appropriate to protect rock art. Avoid aerial application of fire suppressant chemicals within 300 feet of perennial waters. Consider ground-based application on a case-by-case basis.					
3005	X	X	HR:3.3	Prohibit the use of bulldozers in areas of important cultural resources or historic trails for fire suppression unless an archeologist and/or resource advisor is present.					
3006	X	X	HR:1.2	Assign an archeologist to all fires with heavy equipment employed beyond Minimum Impact Suppression Techniques (see Glossary) to assist in determinations of appropriate suppression strategies.					
3007	X	X	FM:1 FM:2	Maintain and implement an FMP consistent with this RMP to address fire management on a landscape scale. Under the appropriate environmental conditions the use of unplanned ignitions for resource benefit and prescribed fire to meet resource management objectives is allowed in the entire Planning Area.					
3008	X	X	FM:1	Suppress fires threatening greater sage-grouse habitats and crucial winter wildlife habitat within Wyoming big sagebrush communities. Where fire would be utilized to meet					

Table 2-9. Detailed Alternatives (Continued)

3000 FIRE AND FUELS MANAGEMENT (FM)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				resource objectives, work closely with resource specialists to protect and improve greater sage-grouse habitat. If prescribed fire is used in greater sage-grouse habitat, the NEPA analysis for the Burn Plan will address: • why alternative techniques were not selected as a viable options; • how greater sage-grouse goals and objectives would be met by its use; • how the COT Report objectives would be addressed and met; and • a risk assessment to address how potential threats to greater sage-grouse habitat would be minimized. Prescribed fire as a vegetation or fuels treatment in greater sage-grouse habitat 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 greater sage-grouse habitat in PHMAs (e.g., creation of 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, used as a component with other treatment methods to combat annual grasses and restore native plant communities). Prescribed fire in known crucial winter wildlife habitat shall only be considered after the NEPA analysis for the Burn Plan has addressed the four bullets outlined above. Any prescribed fire in and/or around crucial winter wildlife habitat must be strategically-designed to reduce wildfire risk and protect winter range habitat quality.				
3009	X	X	FM:1	Protect facilities or habitable structures from fire.					
3010	X	X	FM:2	Cooperate with other agencies and landowners to conduct landscape treatments, resulting in enhanced fuels management and/or restoration of fire-adapted ecosystems.					
3011	X	X	FM:1.1 BR:4.3	In cooperation with the WGFD, identify waters that contain high-risk aquatic invasive species. Avoid using these identified water sources for suppression activities except in cases where public and firefighter safety are threatened.					
3012	X	X	FM:1.1 BR:4.3	Clean (i.e., disinfect) fire-fighting equipment where water sources containing high-risk aquatic invasive species must be utilized.					
3013	X	X	FM:2	Reduce hazardous fuels in the wildland urban interface.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
3014	X	X	FM:1.4 FM:1.1	Base the response to wildland fire on the ecological, social, and legal consequences of the fire.	Response to wildland fire may vary from full suppression in areas where fire is undesirable, to monitoring fire behavior in areas where fire can be used as a management tool.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

3000 FIRE AND FUELS MANAGEMENT (FM)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
3015	X	X	FM:2.1 FM:2.2	Utilize wildland fires (wildfires managed for resource benefit and prescribed fires) to restore fire-adapted ecosystems and reduce hazardous fuels.	Utilize wildland fires (wildfires managed for resource benefit and prescribed fires) and other vegetation treatments to restore fire-adapted ecosystems for natural resource systems and reduce hazardous fuels.	Utilize wildland fires (wildfires managed for resource benefit and prescribed fires) and other vegetation treatments to restore fire-adapted ecosystems and enhance forage for commodity production and reduce hazardous fuels.	Utilize wildland fires (wildfires managed for resource benefit and prescribed fires) and other vegetation treatments to restore fire-adapted ecosystems, reduce hazardous fuels, and accomplish resource management objectives.	Same as Alternative B.	Same as Alternative D.
3016	X	X	FM:2.1 FM:2.2	Use mechanical, chemical, and biological treatments across the landscape as needed to restore vegetative diversity and reduce the risk of unnatural fire within those ecosystems.	Use mechanical, chemical, or biological treatments only in the wildland-urban interface to protect structures and private property from the effects of unwanted fire.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Vegetation – Forests, Woodlands, and Forest Products									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				GOAL BR:1 Maintain, enhance, or restore forest stand community health, composition, and diversity taking into account density, basal area, canopy cover, age class, stand health, and understory components. **Objectives:** **BR:1.1** Maintain overall forest health by managing forest and woodland stands for endemic populations of native insects and disease. **BR:1.2** Provide for commercial and local forest product needs in consideration of other resource values.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
4001	X	X	BR:1.1 BR:1.2	Close campgrounds to cutting of timber and firewood, except for purposes of public safety and campground management.					
4002	X	X	BR:1.1	Regenerate all harvest areas by natural or artificial means consistent with BLM policy. If at the end of fifteen years any clear-cut area fails to regenerate naturally, use planting and other methods to assure regeneration unless converting vegetation to another type is the objective.					
4003	X	X	BR:1.1	Slash resulting from timber harvesting will be made available for biomass, piled or lopped and scattered, roller chopped, or burned to provide watershed protection, promote reforestation, provide nutrient recycling, and improve wildlife habitat.					
4004	X	X	BR:1.1	Require a permit for harvesting firewood and other forest products on BLM-administered land, except for small amounts used onsite for camping, cooking, or warming.					
4005	X	X	BR:1.1	Surface-disturbing activities associated with all types of forest management are subject to appropriate mitigation developed through use of the mitigation guidelines described in the Wyoming Forestry BMPS (Appendix L).					
4006	X	X	BR:1.1	Consider the commercial harvest of forest products and other vegetative treatments on all forest and woodland areas, except those areas excluded from harvest by law or statute, to accomplish wildlife, watershed, and forest management objectives. Base actual harvest levels on treatments needed to meet management objectives to restore historic processes, composition, and structures of the forests and woodlands.					
4007	X	X	BR:1.1 BR:1.2	Allowable cut figures, when calculated, reflect the level of harvest needed to develop and maintain the desired structure of forestland base.					
4008	X	X	BR:1.2	Allow the sale of permits to meet public demand for personal use and harvest of forest products including posts, poles, firewood, sawlogs, Christmas trees, and other vegetative products consistent with wildlife habitat requirements. After NEPA analysis, authorize commercial use for seed collections for use in habitat restoration or research.					
4009	X	X	BR:1.1	Apply forest management techniques to attain the management goals of timber production and enhancement of other resource values if traditional forms of logging are not possible or if stands are not purchased when offered for sale. These may include: (1) burning instead of logging, (2) disease treatment by spraying, (3) spraying grasses and shrubs to eliminate competition with tree species, or (4) non-commercial mechanical treatments.					
4010	X	X	BR:1	Manage forestland on Rattlesnake Mountain as a restricted management area where forest management and timber and firewood cutting emphasize maintenance or improvement of forest, wildlife, watershed, and recreation resource values.					
4011	X	X	BR:1.2	Manage all forestlands outside the Rattlesnake Mountain area to enhance or maintain resources or multiple resource uses, such as recreation opportunities, livestock grazing, forest products, wildlife, watershed, and scenic values where appropriate for the forest type. Some of these lands are on the west slope of the Big Horn Mountains, Absaroka Mountains, and on Little Mountain.					
4012	X	X	BR:1.1	Apply partial cutting, extended forest crop rotations, or other restrictions on forest management where applicable.					
4013	X	X	BR:1.1	Evaluate the size, extent, distance from roads, and characteristics of forestland vegetation, when forest harvests are considered, to maintain or improve the effectiveness of residual wildlife security areas.					

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Vegetation – Forests, Woodlands, and Forest Products									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
4014	X	X	BR:1.1	Maintain sustainable populations of forest and woodland tree species, including limber pine, subalpine fir, whitebark pine, cottonwood, willow, Rocky Mountain juniper, Utah juniper, and aspen, while enhancing the management of intermingled resources and resources uses, such as watersheds, wildlife habitat, scenic values, recreation opportunities, and livestock grazing.					
4015	X	X	BR:1.1	Actively promote aspen regeneration throughout the Planning Area using a variety of vegetation treatments and natural processes.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
4016	X	X	BR:1.1 BR:1.2	Plant conifer areas exposed by wildfire and harvesting with conifer species if they do not regenerate naturally within 15 years.	Same as Alternative A, except plant if exposed areas do not regenerate within 20 years.	Same as Alternative A, except plant if exposed areas do not regenerate within 10 years.	Same as Alternative A, except plant in managed or desired forest and woodland areas on a priority basis.	Same as Alternative B.	Same as Alternative D.
4017	X	X	BR:1.1	No similar action.	Retain old growth forest areas over a 30-year period in an appropriate proportion to other timber classes within a HUC Level 4 sub-basin, unless altered by natural processes. Identify old growth forest characteristics for the various forest types. Adopt connectivity of existing or potential old growth areas if appropriate and consistent with other management.	Retain old growth forest areas at appropriate locations and distribution levels, within a HUC Level 4 sub-basin as evaluations occur. Identify old growth forest characteristics for the various forest types. Adopt connectivity of existing or potential old growth areas whenever feasible.	Projects in old growth stands must fully maintain, or contribute toward the restoration of the structure and composition of old growth stands according to pre-suppression old growth condition characteristics of the forest type, taking into account the contribution of the stand to landscape fire adaptation and watershed health, and retaining the large trees contributing to old growth structure. Identify old growth forest characteristics for the various forest types. Adopt connectivity of existing or potential old growth areas whenever feasible.	Same as Alternative B.	Same as Alternative D.
4018	X	X	BR:1.1	Allow salvage of dead stands on a case-by-case basis.	Manage outbreaks of endemic insect and disease outbreaks only as necessary for human	Manage endemic insect and disease with the full range of silviculture techniques and treatment	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Vegetation – Forests, Woodlands, and Forest Products									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					health and safety (endemic insect and disease outbreaks are a natural part of the forest life-cycle).	methods.			
4019	X	X	BR:1.1	Allow salvage of dead stands on a case-by-case basis with appropriate levels of snag retention.	Conduct salvage operations where necessary to improve wildlife habitat, including appropriate levels of snag retention and as necessary for human health and safety.	Conduct salvage operations for the removal of dead stands where economically feasible.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
4020	X	X	BR:1.2	Allow precommercial thinning in overstocked areas and regenerated timber sale areas when trees in those areas reach the 20- to 30-year age class.	Do not allow precommercial thinning except for fuels treatment.	Same as Alternative A, except allow precommercial thinning when trees reach the 10- to 20-year age class or when the regenerated trees are 5- to 15-feet tall.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
4021	X	X	BR:1	Assess the need to close existing and future timber access and haul roads on a case-by-case basis. Generally, close spur roads after completion of timber management.	Close roads not required for other existing uses.	Allow spur roads to remain open to meet other resource goals and objectives or for new recreational purposes.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
4022	X	X	BR:1.1	Perform treatments in all woodland types, including but not limited to juniper, aspen, cottonwood, and ponderosa, limber, and whitebark pine woodlands.	Same as Alternative A, except allow treatments only where natural processes are unable to accomplish forest health goals.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
4023	X	X	BR:1.1	Manage wildland fire s and logging or timbering whenever possible to	Use natural processes to revitalize decadent stands, improve stand density, and	Use logging or timbering before wildland fire and other natural processes to	Use logging, timbering, or wildland fire when appropriate to revitalize	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Vegetation – Forests, Woodlands, and Forest Products									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				revitalize decadent stands, improve stand density, and increase canopy cover.	increase canopy cover.	revitalize decadent stands, improve stand density, and increase canopy cover.	decadent stands and improve stand density.		
4024	X	X	BR:1.1	Manage conifer encroachment to improve wildlife habitat and forest health conditions.	Same as Alternative A.	Manage conifer encroachment to enhance livestock grazing.	Manage conifer encroachment to improve wildlife habitat and forest health conditions as well as make progress toward potential natural communities, as determined by the site's ESD.	Same as Alternative B.	Same as Alternative A.
4025	X	X	BR:1.2	Within the areas classified as commercial forestland, conduct timber harvesting in a manner that protects and benefits watershed, wildlife, and riparian/wetland habitat values; emphasize areas where forest health is a primary concern.	Same as Alternative A, except only conduct timber harvesting where natural processes are unable to accomplish forest health goals.	Allow timber harvesting within areas classified as commercial forestland.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
4026	X	X	BR:1.1	Use a variety of silvicultural practices and cutting methods, such as clear cutting, shelterwood, individual tree and group selection, and various regeneration treatments.	First use natural processes to accomplish forest health goals, followed by silvicultural practices if natural processes are not effective.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Vegetation – Forests, Woodlands, and Forest Products									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
4027	X	X	BR:1.1	In important seasonal wildlife habitat areas, generally restrict clear cuts to no more than 300 yards in any direction, unless a long-term benefit to wildlife habitat would result.	Prohibit clear cuts and harvest methods that create clear cuts.	Same as Alternative A, except generally restrict clear cuts to no more than 100 acres unless salvaging dead or dying timber.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Vegetation – Grassland and Shrubland Communities									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				GOAL BR:2 Manage vegetation resources to meet DPC objectives. **Objectives:** **BR:2.1** Manage native plant communities to restore, maintain, or enhance vegetation community health, composition, and diversity to provide a mix of successional stages that incorporate diverse structure and composition into the desired vegetation types. **BR:2.2** Maintain, improve, enhance, or restore native plant communities to facilitate the conservation, recovery, and maintenance of populations of native and desirable nonnative plant species and wildlife habitat. **BR:2.3** Maintain, improve, or enhance areas of ecological importance, priority plant species and habitats, and unique plant associations with native plant communities. **BR:2.4** Manage native plant communities across landscapes through cooperation with adjacent landowners, state and local governments, and other stakeholders. **BR:2.5** Coordinate with local, state, and federal agencies, and stakeholders to protect and recover native plant communities, and their included vegetative resources and habitat components affected by extreme environmental conditions. **BR:2.6** In PHMAs, 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 [BLM2005c]).					
				MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES					
4028	X	X	BR:2.1 BR:2.2 BR:2.4 BR:2.6	Manage native plant communities (Map 36) in accordance with *Wyoming Standards for Healthy Rangelands*. Use ESDs and other available information, resource objectives established in this RMP, and specific management practices to maintain or achieve the standards.					
4029	X	X	BR:2	Continue to monitor and evaluate climatic and vegetative data. Compile and share data with other land management agencies and partners within the Planning Area using a cooperative, collaborative approach. Should the analysis of data indicate that the vegetative resource is either not meeting or making significant progress towards meeting the *Wyoming Standards for Healthy Rangelands* or other site specific vegetative objectives, corrective management actions will be implemented to achieve desired results.					
				MANAGEMENT ACTIONS BY ALTERNATIVE					
4030	X	X	BR:2.1-2.4 BR:2.6	Implement DPC objectives for Watershed Protection, Forestland Management, and Livestock Grazing. Use the following DPC objectives to emphasize watershed protection, forestland health, and livestock grazing on at least 600,000 acres of BLM-administered land in the Planning Area not	Manage to achieve or make progress towards the reference state plant community based on the ESD for the site. The appropriate functional structural plant groups must be present for the site. Manage areas at a lower level of ecological status to provide preferred habitat for wildlife species with	Manage to achieve or make progress toward the appropriate community phase for the site. Manage areas at a lower level of ecological status to provide preferred habitat for wildlife species with unique habitat requirements on a case-by-case basis.	Manage to achieve or make progress toward the In plant communities determined to be meeting *Wyoming Standards for Healthy Rangelands*, manage to maintain or improve those communities. The appropriate community phase for the site. Potentially manage some areas for a higher plant	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Vegetation – Grassland and Shrubland Communities									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				containing important wildlife habitat (all percentages listed below are expressed in terms of composition by weight): • Salt Desert Shrub Communities: shrubs 30 to 60 percent, grasses 30 to 60 percent, forbs 5 to 15 percent, with shrubs increasing on high saline sites • Salt Bottom Communities: shrubs 20 to 40 percent, grasses 50 to 70 percent, forbs 5 to 15 percent • Basin Grassland/Shrub Communities: shrubs 10 to 20 percent, grasses 60 to 80 percent, forbs 10 to 20 percent • Foothills-Mountain Grassland/Shrub Communities: shrubs 10 to 30 percent, grasses 60 to 80 percent, forbs 10 to 20 percent • Low Gradient/Alluvial Riparian Communities: shrubs 0 to 15 percent, grasses and grass-likes 70 to 90 percent, forbs 5 to 15 percent	unique habitat requirements on a case-by-case basis.		community state or phase (based on state and transition models in ESDs) where site-specific management objectives determine that a higher plant community state or phase is desirable. In these areas the desired plant community states or phases will be determined on a site-specific basis at the implementation level. Manage areas at a lower level of ecological status to provide preferred habitat for wildlife species with unique habitat requirements on a case-by-case basis.		

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Vegetation – Grassland and Shrubland Communities									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				• Intermediate Riparian Communities: trees and shrubs 10 to 30 percent, grasses and grass-likes 50 to 70 percent, forbs 10 to 30 percent • Desert Cottonwood Riparian Communities: trees and shrubs 10 to 30 percent, grasses and grass-likes 50 to 70 percent, forbs 10 to 30 percent • Woodland Communities: Same as Foothills-Mountain Grassland/Shrub Communities on areas where invasion of limber pine and juniper has occurred on deeper soils (there is no specific objective where woodlands occur on very shallow soils)					
4031	X	X	BR:2.1-2.3 BR:2.6	No similar action.	Manage to maintain contiguous blocks of native plant communities and minimize fragmentation; allow for appropriate mosaic of interrelated plant communities while allowing for other resource uses.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Vegetation – Riparian/Wetland Resources									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				GOAL BR:3 Manage riparian/wetland areas to provide a natural combination of vegetation and landform to provide the habitat and the water conditions necessary for aquatic and terrestrial species. **Objectives:** **BR:3.1** Manage vegetation, soil, landform, and water to meet PFC. **BR:3.2** Manage priority riparian/wetland areas to attain desired future conditions unique to the landscape setting. **BR:3.3** Manage riparian/wetland areas with consideration of the effects of all herbivory. **BR:3.4** Manage riparian/wetland areas in consideration of the working landscape. **BR:3.5** Manage riparian/wetland vegetation communities to attain an appropriate mix of wetland plant species and age-classes, with high vigor and extensive root systems, capable of withstanding high streamflow events.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
4032	X	X	BR:3.1 BR:3.2 BR:3.4 BR:3.5	Manage to meet PFC and *Wyoming Standards for Healthy Rangelands* in lotic and lentic riparian/wetland areas.					
4033	X	X	BR:3.1 BR:3.2 BR:3.4 BR:3.5	Consider linear watercourse crossings on a case-by-case basis.					
4034	X	X	BR:3.1 BR:3.2 BR:3.4 BR:3.5	Ensure all actions comply with EO 11988, *Floodplain Management*, and EO 11990, *Protection of Wetlands,* and the Wyoming DEQ water quality standards, applicable regulations, and permitting requirements, including US Army Corps of Engineers Section 404 permits, storm water, and other Wyoming Pollutant Discharge Elimination System permits.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
4035	X	X	BR:3.1 BR:3.2 BR:3.4 BR:3.5	Manage all riparian/wetland areas (23,957 acres) to meet or make progress towards PFC.	Manage all riparian/wetland areas (23,957 acres) to achieve DPC. Prioritize those areas not meeting PFC.	Manage all riparian/wetland areas to meet or make progress towards PFC giving priority to those areas that are functioning at risk with a downward trend or that are in non-functioning condition.	Same as Alternative C, plus manage streams with unique recreational or aquatic values to obtain PFC.	Same as Alternative B.	Same as Alternative D.
4036	X	X	BR:3.1 BR:3.2 BR:3.4 BR:3.5	Prohibit surface-disturbing activities within 500 feet of surface water and	Prohibit surface-disturbing activities within ¼ mile of or within riparian/wetland areas (162,887 acres).	Allow surface-disturbing activities in flood plains or riparian/wetland areas on a case-by-case basis.	Same as Alternative A.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Vegetation – Riparian/Wetland Resources									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				riparian/wetland areas (70,715 acres) except when such activities are necessary and when their impacts can be mitigated.	Allow sediment reduction structures on a case-by-case basis.				
4037	X	X	BR:3.1 BR:3.2 BR:3.4 BR:3.5	No similar action.	Apply a NSO restriction on wetland areas greater than 40 acres.	Same as Alternative A.	Apply a NSO restriction on wetland areas greater than 20 acres and on designated 100-year flood plains.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
4000 BIOLOGICAL RESOURCES (BR) – Invasive Species and Pest Management									
				GOAL BR:4 Manage for healthy native plant communities by reducing, preventing expansion of, or eliminating the occurrence of undesirable invasive, nonnative species, undesirable, nonnative, or noxious weeds (predatory plant pests or disease) by implementing management actions consistent with national guidance and state and local weed management plans. **Objectives:** **BR:4.1** Maintain internal (BLM) and external support for managing invasive species using an integrated approach for the detection, control, or eradication of new infestations. **BR:4.2** Maintain adequate baseline information regarding the extent and control of invasive species to make informed decisions, evaluate effectiveness of management actions, and assess progress toward goals to improve invasive species management. **BR:4.3** Continue coordination of invasive species detection and control activities across the working landscape including non BLM-administered lands, and include provisions for invasive species management for all BLM-funded or authorized actions.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
4038	X	X	BR:4.1-4.3	Manage invasive plant species in the Planning Area in conjunction with local counties and other stakeholders consistent with the ROD for the Final PEIS addressing *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States* (BLM 2007b), and current with policy and similar guidance updated over time.					
4039	X	X	BR:4.1-4.3	Manage invasive plant species using an Integrated Pest Management approach consistent with DOI Manual 517, *Integrated Pest Management* (DOI 2007).					
4040	X	X	BR:4	Avoid raptor and migratory bird nesting seasons and other times when loss of cover or disturbance by equipment used in a treatment is determined to be detrimental.					
4041	X	X	BR:4.1-4.3	In cooperation with APHIS and other stakeholders, work to control outbreaks of grasshopper and Mormon crickets on BLM-administered land in the Planning Area in accordance with the MOU between BLM and APHIS.					
4042	X	X	BR:4.1 BR:4.3	Use certified noxious weed-seed free vegetation products on all BLM-administered land in the Planning Area.					
4043	X	X	BR:4	Allow the application of pesticides within the Spanish Point Karst ACEC when drinking water will not be impacted.					
4044	X	X	BR:4.2	Develop and maintain an invasive species and pest management plan. If necessary, review and update this plan annually based on available funding and input from other agencies, organizations, and interested stakeholders.					
4045	X	X	BR:4.2 BR:4.3	Reduce and prevent the expansion of cheatgrass through cooperation with other agencies, organizations, and interested stakeholders.					
4046	X	X	BR:4.2 BR:4.3	Reduce and prevent beet leafhopper infestations on BLM-administered land through cooperation with appropriate government and state agencies, private industry, and other interested stakeholders.					
4047	X	X	BR:4.3	Cooperate and coordinate with appropriate government agencies, private industry, and other interested stakeholders in public education, research, management, and control of aquatic invasive species.					
4048	X	X	BR:4.3	In cooperation with other agencies, organizations, and interested stakeholders, seek opportunities to promote public awareness and prevention of noxious and invasive species through public outreach, volunteer programs, signage, and other appropriate measures.					

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Invasive Species and Pest Management									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
4049	X	X	BR:4	Allow aerial application of pesticides on a case-by-case basis in coordination with the authorized officer.	Prohibit aerial application of pesticides within ½ mile of riparian/wetland areas and aquatic habitats. Allow exceptions to manage riparian weed species.	Prohibit aerial application of pesticides within 100 feet of riparian/wetlands areas and aquatic habitats. Allow exceptions to manage riparian weed species.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
4050	X	X	BR:4.1-4.3	Require livestock flushing on a case-by-case basis.	Allow the authorized officer to require livestock be flushed for a period of 72 hours before allowing them to move onto or within BLM-administered land when the authorized officer determines that livestock are likely carrying ingested invasive, nonnative plant species seeds.	Do not require livestock flushing.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
4000 BIOLOGICAL RESOURCES (BR) – Fish and Wildlife Resources									
				GOAL BR:5 In compliance with the *Wyoming Standards for Healthy Rangelands*, manage for the biological integrity of terrestrial and aquatic ecosystems to sustain or enhance fish and wildlife habitat, while providing for multiple uses of BLM-administered lands. **Objectives:** **BR:5.1** Manage habitat to conserve, recover, and maintain fish and wildlife consistent with appropriate local, state, and federal management plans. **BR:5.2** Work cooperatively with the WGFD to recommend adjustments to herd objectives based upon habitat condition trends and recommend wildlife use adjustments if monitoring data indicate adjustments are necessary. **BR:5.3** Manage fish and wildlife habitats in consideration of the working landscape. **GOAL BR:6** Manage environmental risks and associated impacts in a manner compatible with sustaining plant, fish, and wildlife populations. **Objectives:** **BR:6.1** Minimize, avoid, and mitigate impacts of environmental risks on fish and wildlife. **BR:6.2** Manage pesticide, rodenticide, and herbicide application in a manner compatible with fish and wildlife health. **BR:6.3** Coordinate with other agencies to prevent or control diseases that threaten the health of humans, wildlife, livestock, and vegetation. **BR:6.4** Coordinate with other agencies who manage native and nonnative predatory animals that pose a threat to the health or productivity of natural ecosystems.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES (All Fish and Wildlife)									
4051	X	X	BR:5.1 BR:5.3	Coordinate with WGFD to design reservoirs with consideration of fish and wildlife habitat values.					
4052	X		BR:5.1 BR:5.3	Continue the Bald Ridge Area human presence seasonal closure currently January 1 to April 30 in cooperation with stakeholders. The closure date may be adjusted to correspond with big game hunting seasons.					

Table 2-9. Detailed Alternatives (Continued)

4000 – BIOLOGICAL RESOURCES (BR) – Fish and Wildlife Resources – Fish									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				Fish					
				MANAGEMENT ACTIONS BY ALTERNATIVE					
4053	X	X	BR:5.1 BR:5.3 BR:6.1	Direct priority management in planning/actions for fisheries to perennial waters containing fish or contributing directly to fisheries on a case-by-case basis.	Direct priority management in planning/actions for fisheries to perennial waters containing fish or contributing directly to fisheries.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
4054	X	X	BR:5.1 BR:5.3	Manage intermittent streams on a case-by-case basis.	Manage intermittent streams judged as having potential to become, or return to being, perennial streams with fish on a watershed scale to acquire perennial flows values in compliance with Wyoming water laws.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
4055	X	X	BR:5.1 BR:5.3 BR:6.1	Apply a NSO restriction and manage surface-disturbing activities using standard restrictions (see surface-disturbing guidelines in Appendix H) within 500 feet of surface water and riparian areas.	Apply a NSO restriction and prohibit surface-disturbing activities within ¼ mile of any waters rated by the WGFD as Blue Ribbon or Red Ribbon (trout streams of national or statewide importance) and the Bighorn River, Nowood River, Paint Rock Creek, Shell Creek, Clarks Fork of the Yellowstone River, Shoshone River and its North and South Forks. All other fisheries are subject to a minimum buffer of 500 feet.	Same as Alternative A.	Apply a NSO restriction and prohibit surface-disturbing activities within 500 feet and apply a CSU and avoid surface-disturbing activities within ¼ mile of any waters rated by the WGFD as Blue Ribbon or Red Ribbon (trout streams of national or statewide importance).	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

4000 – BIOLOGICAL RESOURCES (BR) – Fish and Wildlife Resources – Fish									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
4056	X	X	BR:5.1 BR:5.3 BR:6.1	Perform restoration of streams and fisheries habitat on a case-by-case basis.	Restore or reclaim important stream segments for fisheries habitat, through upland management and hydrologic function enhancement actions on at least 10 lotic miles and 80 lentic acres.	Same as Alternative A.	On a priority basis and in coordination with stakeholders, restore and reclaim important stream segments for fisheries habitat with the highest priority given to species listed on the *State Species of Greatest Conservation Need*.	Same as Alternative B.	Same as Alternative D.
4057	X	X	BR:5.1 BR:5.3 BR:6.1	Manage fisheries habitat to improve and enhance its value through the implementation of management practices such as vegetation manipulation and planting, installing sediment and erosion control structures, fencing, and acquiring, developing, and maintaining water sources.	Same as Alternative A, plus implement management practices such as acquiring, developing, and maintaining land and water sources.	Manage fisheries habitat to improve and enhance its value without impeding resource development except per law and policy.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

4000 – BIOLOGICAL RESOURCES (BR) – Fish and Wildlife Resources – Fish									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
4058	X	X	BR:5.1 BR:5.3 BR:6.1	Encourage reservoir design to enhance fisheries and to establish minimum pools sufficient to maintain viable fisheries. Maintain existing reservoir and stream fishery habitat. Existing reservoirs are managed by the ROW stipulations attached to them at the time of their construction and the BLM encourages managing for minimum pool levels, but cannot require them after issuing a ROW.	In cooperation with WGFD, require mitigation that includes minimum pool depths sufficient to maintain viable fisheries and adequate public access routes to the water for applications for ROWs for the construction of new impoundments on BLM-administered land, where practical. Manage existing reservoirs, under existing ROWs, to the extent possible, while encouraging minimum pool management.	Encourage but do not require mitigation for creating or maintaining viable fisheries, unless required by law or policy.	Same as Alternative A.	Same as Alternative B.	Same as Alternative D.
4059	X	X	BR:5.1 BR:5.3 BR:6.1	No similar action.	Design or retrofit culverts in streams containing fish to allow fish passage, both upstream and downstream, in both low and high water flows. Harden low water crossings to minimize sediment movement. Low water crossings should be perpendicular to streams and located in straight stream reaches to avoid flow modification that could cause erosion of banks.	Design culverts and crossings to current standards.	Same as Alternative B, except on a priority basis.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Fish and Wildlife Resources – Wildlife									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				Wildlife					
				MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES					
4060	X	X	BR:5.1	Maintain or improve important wildlife habitats through vegetative manipulations, habitat improvement projects, livestock grazing strategies and the application of *The Wyoming Guidelines for Managing Sagebrush Communities with Emphasis on Fire Management* (Wyoming Interagency Vegetation Committee 2002) and the *Wyoming BLM Standard Mitigation Guidelines for Surface-Disturbing and Disruptive Activities* (Appendix H), BMPs (Appendix L), and similar guidance updated over time.					
4061	X	X	BR:5.1	Continue to implement the following existing HMPs and update as necessary to include management objectives and prescriptions for wildlife: West Slope HMP, Bighorn River HMP, and Absaroka Front HMP.					
4062	X	X	BR:5.1 BR:6.1	Prohibit surface-disturbing and disruptive activities in the Bighorn River HMP/RAMP tracts and the BLM-administered tracts in Yellowtail WHMA and apply a NSO restriction as appropriate. Exceptions include casual use and uses related to the development of recreation facilities or wildlife habitat, including vegetation treatments.					
4063	X	X	BR:5.1 BR:5.2	In cooperation with the USFS, WGFD, and other stakeholders, work to maintain and enhance healthy bighorn sheep habitat.					
4064	X	X	BR:5.1-5.3	In cooperation with the USFS, USFWS, WGFD, and other stakeholders, work to determine the feasibility of reestablishing bighorn sheep at other suitable locations.					
4065	X	X	BR:5.1-5.3	Consider transmission of disease between wildlife and domestic livestock in grazing authorizations. Follow the recommendations for the protection of bighorn sheep in the *Statewide Bighorn/Domestic Sheep Interaction Report* (Wyoming State-wide Bighorn/Domestic Sheep Interaction Working Group 2004), and *Western Association of Fish and Wildlife Agencies (WAFWA) Wild Sheep Working Group Initial Subcommittee Recommendations for Domestic Sheep and Goat Management in Wild Sheep Habitat June 12, 2007* (WAFWA 2007), and similar guidance that is updated over time.					
4066	X	X	BR:5.1 BR:5.2	In cooperation with stakeholders on a case-by-case basis, manage for the augmentation and/or reintroduction of important wildlife species within suitable habitats and in accordance with applicable policy and guidance (e.g., BLM Manual 1745, *Introduction, Transplant, Augmentation and Reestablishment of Fish, Wildlife and Plants*).					
4067	X	X	BR:5.2 BR:6.4	Coordinate authorized animal damage control with federal and state wildlife agencies, and other agencies, as appropriate, using guidance provided by the existing MOU (APHIS and BLM 2003).					
4068	X	X	BR:6.1	Consult with the WGFD in applying mitigation for wildlife needs and before waiving, allowing exceptions to, or modifying wildlife-related land use restrictions and mitigation in conformance with MOU WY131 Appendix 5 (g).					
4069	X	X	BR:6.1	In consideration of other resources, provide, to the extent possible, suitable habitat to support wildlife populations defined in the Cody Region Big Game Job Completion Report (http://gf.state.wy.us/wildlife/index.asp) objectives. Cooperatively consider proposals by the BLM or WGFD to change population objective levels based on habitat capability and availability.					
4070	X	X	BR:5.1	In cooperation with WGFD, local governments, and other stakeholders, limit access (including public access via all modes-of-transport) where necessary in crucial habitat and sensitive species habitat. The type of limitation, if any, depends on the kind of resource value being protected.					
4071	X	X	BR:5.1 BR:5.2	In cooperation with WGFD and other stakeholders, work to develop water sources for wildlife and special status species in coordination with the WGFD and the BLM Water Development Handbook (H-1741-2).					

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Fish and Wildlife Resources – Wildlife									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
4072	X	X	BR:5.1 BR:5.3	Conduct prescribed burns on 150-500 acres of BLM-administered land per year, based on potential for initial burns and then as needed for repeat cyclic burning.	Conduct habitat enhancement vegetation treatments within sagebrush communities on at least 200 acres of BLM-administered land per year.	Conduct habitat enhancement vegetation treatments within sagebrush communities as opportunities and funding allow, consistent with EO 2011-5.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
4073	X	X	BR:5.1 BR:6.1	Modify identified hazard fences, and analyze and construct new fences in accordance with appropriate wildlife needs and the BLM Fencing Handbook 1741-1.	When opportunities arise due to fire or permittee interest, modify identified hazard fences and analyze and construct new fences in accordance with appropriate wildlife needs and the BLM fencing handbook, 1741-1.	Same as Alternative A.	Modify identified hazard fences, and analyze and construct new fences in accordance with wildlife needs, the BLM Fencing Handbook 1741-1, and WO IM 2010-022, *Managing Structures for the Safety of Sage-grouse, Sharp-tailed grouse, and Lesser Prairie-chicken*, and similar guidance and policy as updated over time.	Same as Alternative B.	Same as Alternative D.
4074	X	X	BR:5.1-5.3	Restore and maintain 25-200 acres of aspen stands per year until 2,000-4,000 acres are under management.	Restore 100 acres per year of aspen stands for wildlife values.	Do not restore aspen stands for wildlife values.	Conduct vegetation treatments within aspen stands for wildlife values as opportunities and funding allow.	Same as Alternative B.	Same as Alternative D.
4075	X	X	BR:5.1 BR:5.3	Pursue exchanges to enhance public access or improve management of important wildlife habitat areas by consolidating public land. Emphasize the acquisition of access to public lands on the Bighorn, Shoshone, Clarks Fork of the Yellowstone, and Greybull rivers; Gooseberry Creek; the upper portions of	Same as Alternative A, plus in cooperation with willing sellers and other stakeholders, consider all land tenure adjustment authorities for the acquisition of, and interest in, lands for the improved management of important wildlife habitat.	Do not acquire lands or interest in lands to enhance public access or improve management of important wildlife habitat.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Fish and Wildlife Resources – Wildlife									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				Cottonwood and Grass Creeks; and on lands where other riparian areas occur.					
4076	X	X	BR:6.1	Apply a TLS to avoid surface-disturbing and disruptive activities within big game crucial winter range (1,324,371 acres) from November 15 through April 30.	Prohibit surface-disturbing and disruptive activities and apply a NSO restriction within big game crucial winter range (1,324,371 acres).	Same as Alternative A, except exempt Oil and Gas Management Areas (Map 24) and ROW corridors from discretionary wildlife seasonal stipulations.	Same as Alternative A, except exempt Oil and Gas Management Areas (Map 25) from discretionary big game seasonal stipulations.	Same as Alternative B.	Same as Alternative D.
4077	X	X	BR:6.1	Apply CSU stipulation for big game migration corridors (Map 39), narrow ridges, overlapping big game crucial winter range (72,850 acres of BLM-administered surface land; 145,312 acres of federal mineral estate).	Absaroka Front Management Area (130,872 acres of BLM-administered surface land; 253,117 acres of federal mineral estate): • closed to mineral leasing • manage as a renewable energy avoidance area • close to geophysical exploration • manage as a ROW avoidance area • partially closed to motorized vehicle use and limited to designated roads and trails on the rest of the area Allow and seasonally stipulate, where feasible, vegetative/silviculture treatments; invasive, nonnative pest species control; fuels management; and maintenance of existing facilities.	Absaroka Front Management Area (130,872 acres of BLM-administered surface land; 253,117 acres of federal mineral estate): • open to oil and gas and other leasable minerals • open to locatable mineral entry • open to renewable energy development • open to geophysical exploration • open to ROW authorizations on a case-by-case basis • motorized vehicle use is limited to designated roads and trails and subject to seasonal limitations Allow and seasonally stipulate, where feasible, vegetative/silviculture treatments; invasive, nonnative pest species control; fuels management; and	Same as Alternative B, except: • 130,872 acres of BLM-administered surface land; 253,117 acres of federal mineral estate: • a mix of TLS (4,857 acres), CSU (111,410 acres), NSO (41,177 acres), and closed to leasing (87,755 acres) on the federal mineral estate (Map 37) • areas available for leasing are open to geophysical exploration with specific resource protection	Same as Alternative B.	Same as Alternative B, except: • 130,872 acres of BLM-administered surface land; 253,117 acres of federal mineral estate: • a mix of TLS (23,076 acres), CSU (128,606 acres), NSO (14,209 acres), and closed to leasing (87,755 acres) on the federal mineral estate (Map 38) • areas available for leasing are open to geophysical exploration with specific resource protection

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Fish and Wildlife Resources – Wildlife									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
						maintenance of existing facilities.			
4078	X	X	BR:6.1	Prohibit water developments for livestock in elk crucial winter range unless adverse effects can be avoided, minimized and/or compensated based on site-specific analysis. Allow existing uses pending site-specific analysis.	Prohibit new livestock water development projects in big game crucial winter range, greater sage-grouse nesting habitat, and areas important for special status species unless no negative effect on wildlife can be demonstrated.	Allow new livestock water development projects in big game crucial winter range, greater sage-grouse nesting habitat, and areas important for special status species to meet multiple use objectives.	Allow water development projects in crucial elk winter range and in greater sage-grouse nesting habitat with 10 inches or less annual precipitation only when adverse effects can be avoided, minimized and/or compensated based on site-specific analysis. Allow existing uses pending site-specific analysis on a priority basis.	Same as Alternative B.	Same as Alternative D.
4079	X	X	BR:6.1	Determine wildlife seasonal protections for surface-disturbing and disruptive activities related to the maintenance and operation (including production) of project on a case-by-case basis.	Apply wildlife seasonal protections for surface-disturbing and disruptive activities to maintenance and operation (including production) of projects when the actions are determined to be detrimental to wildlife. (Appendix H lists detrimental actions).	Do not apply wildlife seasonal protections to maintenance and operation actions.	Same as Alternative B.	Same as Alternative B.	Same as Alternative D.
4080	X	X	BR:5.1 BR:6.1	Address traditional migration and travel corridors for big game wildlife species and migratory birds on a case-by-case basis.	Identify and preserve traditional migration and travel corridors for big game wildlife species and migratory birds. Prohibit surface-disturbing activities within ½ mile of big game migration corridors (97,808 acres) (Map 40). Avoid constriction of big game corridors.	Identify and develop management for traditional migration and travel corridors for big game wildlife species and migratory birds (Map 41).	Same as Alternative A, except in the Big Horn Front MLP Analysis Area, prohibit surface-disturbing activities within ½ mile of big game migration corridors (97,808 acres) (Map 42).	Same as Alternative B.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Fish and Wildlife Resources – Wildlife									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
4081	X	X	BR:5.1	Determine the appropriate DPC to manage vegetation on a case-by-case basis in areas identified as habitat for special status species or crucial winter range for big game.	Manage vegetation in areas identified as habitat for special status species or crucial winter range for big game to the DPC that will be the most beneficial for the identified species while also considering the habitat needs of other species.	Manage vegetation in areas identified as habitat for special status species or crucial winter range for big game to the DPC that is a combination community that benefits all grazing/browsing animals.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
4082	X	X	BR:6.1	Manage the location of wind energy projects on a case-by-case basis consistent with the Wind Energy Programmatic EIS ROD (BLM 2005a) and IM 2009-043, *Wind Energy Development Policy*.	Avoid wind energy projects in big game crucial winter range, raptor concentration areas, and greater sage-grouse nesting, brood-rearing, and winter areas.	Allow wind energy projects on a case-by-case basis in big game winter crucial range, raptor concentration areas, and greater sage-grouse nesting, brood-rearing, and winter areas.	Avoid wind energy projects in big game crucial winter range and raptor concentration areas. Avoid Wind-energy development in sage-grouse PHMAs (Map 42), unless it can be sufficiently demonstrated that the development activity would not result in declines of sage-grouse PHMA populations. Sufficient demonstration of "no declines" should be coordinated with the WGFD and USFWS.	Same as Alternative B.	Same as Alternative D.
4083	X	X	BR:5.1	Use produced water, where reasonable and practical, to develop and enhance waterfowl, special status species, and other wildlife habitats.	Do not use produced water to develop and enhance waterfowl, special status species, and other wildlife habitats (Refer to 1043).	At the discretion of the BLM and its stakeholders, use produced water to develop and enhance waterfowl, special status species, and other wildlife habitats in accordance with federal, state, and local laws and regulations.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Fish and Wildlife Resources – Wildlife									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
4084	X	X	BR:5.1 BR:6.1	No similar action.	Motorized vehicle use is limited to designated roads and trails with seasonal closures in the following areas: • Big game crucial winter range (1,324,371 acres) with a seasonal closure November 15 through April 30 (Map 44).	Manage motorized vehicle use in crucial big game winter ranges consistent with other resource objectives.	Allow temporary closures of designated roads, trails, or geographic areas within big game crucial winter range depending on impacts to big game, weather conditions, and/or human caused disturbance levels.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				GOAL BR:7	**WILDLIFE –** Manage for the biological integrity and habitat functionality to facilitate the conservation, recovery, and maintenance of populations of fish and wildlife to avoid contributing to the listing of or jeopardizing the continued existence or recovery of special status species and their habitats.				
					Objectives:				
					BR:7.1 Maintain or enhance areas of ecological importance for special status wildlife species.				
					BR:7.2 Conserve and recover special status wildlife species by determining and implementing conservation strategies including restoration opportunities, use restrictions, and management actions.				
					BR:7.3 Manage specific environmental hazards, risks, and impacts in a manner compatible with special status wildlife species health.				
					BR:7.4 Maintain sufficient undisturbed or minimally disturbed habitats to protect special status wildlife species resource values while providing for multiple use management.				
					BR:7.5 Develop and implement HMPs, activity plans, or use other mechanisms to protect high priority special status wildlife species.				
					BR:7.6 Manage special status fish and wildlife species in consideration of the working landscape.				
				GOAL BR:8	**PLANTS –** Manage for the biological integrity and habitat function to facilitate the conservation, recovery, and maintenance of populations of BLM special status plant species and to avoid contributing to the listing of or jeopardizing the continued existence or recovery of special status species and their habitats.				
					Objectives:				
					BR:8.1 Manage the habitats of special status plants to meet or exceed the *Wyoming Standard #4 for Healthy Rangelands.*				
					BR:8.2 Protect or enhance habitat for BLM special status plant species.				
					BR:8.3 Maintain sufficient undisturbed or minimally disturbed habitats to protect special status plant species resource values while providing for multiple use management.				
					BR:8.4 Manage specific environmental hazards, risks, and impacts in a manner compatible with BLM special status plant species' health.				
					BR:8.5 Manage BLM special status plant species in consideration of the working landscape.				
				GOAL BR:9	**SAGE-GROUSE –** Sustain the integrity of the sagebrush biome to provide the amount, continuity, and quality of habitat that is necessary to maintain sustainable populations of greater sage-grouse and other species by achieving the objectives below.				
					Objectives:				
					BR:9.1 Maintain large patches of high quality sagebrush habitats, with emphasis on patches occupied by greater sage-grouse.				
					BR:9.2 Maintain connections between sagebrush habitats, with emphasis on connections between habitats occupied by greater sage-grouse.				
				GOAL BR:10	Identify the amount of habitat that should undergo restoration and/or rehabilitation during the life of the plan and initiate restoration and/or rehabilitation by achieving the objective below.				
					Objective:				
					BR:10.1 Reconnect large patches of sagebrush habitat with emphasis on reconnecting patches occupied by stronghold and isolated populations of greater sage-grouse.				

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
All Special Status Species									
4085	X	X	BR:7.1-7.4 BR:7.6 BR:8.1-8.5	Postpone or modify projects that may affect special status species to protect these species. Consult with USFWS in such cases, as required by the Endangered Species Act.					
4086	X	X	BR:7.1-7.4 BR:7.6 BR:8.1-8.5	Consult with stakeholders early in the permitting process to design projects in a manner that would minimize or avoid potential adverse effects to special status species.					
4087	X	X	BR:7.2 BR:8.3 BR:9.1 BR:9.2 BR:10.1	Assist authorized agencies in the restoration, reintroduction, augmentation, or re-establishment of threatened, endangered, and other special status species populations and/or habitats.					
4088	X	X	BR:7.1-7.4 BR:7.6 BR:8.1-8.5	Motorized vehicle use is limited to designated roads and trails in essential and recovery habitat for threatened or endangered species as identified and designated by USFWS.					
Greater Sage-Grouse									
4089	X	X	BR:9.1	Discourage the use of broad-spectrum insecticides where insect control is required. Target pest control toward key problem areas and schedule applications to be effective in minimum doses in greater sage-grouse brood-rearing areas. Field Offices may implement treatments within sage-grouse habitat utilizing reduced agent-area treatments (RAATS) protocols.					
4090	X	X	BR:9.1	Avoid aerial pesticide spraying in favor of ground applications to minimize drift into non-target areas in greater sage-grouse habitat unless benefits of treatments are likely to outweigh impacts.					
4091	X	X	BR:9.1	Avoid applying pesticides to greater sage-grouse breeding habitat during the nesting and early brood-rearing season (March 15 through June 30) to reduce the loss of food supply to chicks and avoid the chance of secondary poisoning unless benefits of treatments are likely to outweigh impacts.					
4092	X	X	BR:10.1	Maintain seeps, springs, wet meadows, and riparian vegetation in a functional and diverse condition for young greater sage-grouse and other species that depend on forbs and insects associated with these areas. Consider management actions if desirable green vegetation associated with these wet areas is not available, accessible, or cannot be maintained with current livestock, wildlife, or wild horse use, and the impacts are outweighed by the improved habitat quality.					
4093	X	X	BR:10.1	Restore greater sage-grouse brood-rearing habitats in riparian/wetland areas.					

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
4094	X	X	BR:10.1	Restore lost riparian functioning systems by repairing abnormally incised drainages to raise water tables and increase water storage and brood-rearing habitats within greater sage-grouse habitat.					
4095	X	X	BR:9.1	Manage vegetation diversity and structure to provide suitable habitat and adequate cover for greater sage-grouse during nesting periods, determined by ecological site description.					
4096	X	X	BR:10.1	Maintain sagebrush and understory diversity (relative to ecological site description) in crucial seasonal greater sage-grouse habitats unless such removal is necessary to achieve greater sage-grouse habitat management objectives. For example, thinning small patches of dense sagebrush may increase desirable forbs in early brood-rearing habitat.					
4097	X	X	BR:10.1	Increase the composition and canopy cover of Wyoming big sagebrush, within existing nonnative grass seedings with less than 5 percent sagebrush canopy cover, to greater than or equal to neighboring sagebrush communities or historical levels. (See Shrubland-Salt Desert/Salt Bottom on Map 36; deeper soiled, and gentler sloped portions of the Shrubland-Salt Desert/Salt Bottom, colored in pink, would be those areas where sagebrush restoration efforts could be conducted.)					
4098	X	X	BR:10.1	Investigate opportunities to increase sagebrush in lower precipitation zones.					
4099	X	X	BR:9.1	Plan and construct mining and mineral development activities, to the degree possible given state water rights, to minimize disturbances that would result in alterations to springs and riparian greater sage-grouse habitat. Alternative water sources may be developed to replace natural sources that have been affected or destroyed during these development activities.					
4100	X	X	BR:8.3 BR:8.5	Treat constructed or non-natural water storage impoundments to control mosquito breeding (and the associated spread of West Nile virus), to prevent disease spread to greater sage-grouse on priority basis.					
4101	X	X	BR:9.1	In cooperation with stakeholders, manage to promote the growth and persistence of native shrubs, grasses, and forbs needed by greater sage-grouse for seasonal food and concealment.					
4102	X	X	BR:9.1	In cooperation with stakeholders, design and locate fences so as not to disturb important greater sage-grouse habitat areas. Increase the visibility of existing fences in these areas to reduce hazards to flying greater sage-grouse.					
4103	X	X	BR:9.1	Conduct fire management activities to minimize overall wildfire size and frequency in sagebrush plant communities where greater sage-grouse habitat objectives are at risk. General priorities for habitat protection: Priority # 1 – Protection of greater sage-grouse PHMAs. Priority # 2 – Wyoming big sagebrush communities outside greater sage-grouse PHMAs and habitats recovering from disturbance within or adjacent to greater sage-grouse PHMAs.					
4104	X	X	BR:9.1	Annually maintain FMPs to incorporate updated sagebrush habitat information as well as fire suppression priorities in sagebrush habitats. Incorporate fire management objectives for the management of sagebrush ecosystems into FMPs. Provide fire management objectives for sagebrush ecosystems to initial attack personnel at the beginning of each fire season.					
4105	X	X	BR:10.1	Establish fuels treatment projects at strategic locations to minimize size of wildfires and limit loss of greater sage-grouse habitat.					
4106	X	X	BR:10.1	Reintroduce appropriate fire regimes to limit conifer encroachment into the sagebrush plant communities. Take into account invasive herbaceous species and Fire Regime Group and FRCC (measure of departure from historic fire regime) with treatments. Where possible, achieve a balance between treating areas that have significantly departed from the historic fire regime (Condition Class 3) and areas that are functioning within an appropriate fire regime (Condition Class 1).					
4107	X	X	BR:10.1	Remove conifers encroaching into sagebrush habitats. Prioritize treatments closest to occupied sage-grouse habitats and near occupied leks, and where juniper encroachment is phase 1 or phase 2 as defined in Miller et al. (2005). Refine the location of specific priority areas to be treated by utilizing site-specific analysis and principles like those included in the FIAT report (Chambers et. al. [2014]) and other ongoing modeling efforts to address conifer encroachment.					

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
4108	X	X	BR:7.1-7.4 BR:9.1 BR:9.2	The BLM will collaborate with appropriate Federal agencies, and the State of Wyoming as contemplated under Governor Executive Order 2013-3, to: 1) develop appropriate conservation objectives; 2) define a framework for evaluating situations where greater sage-grouse conservation objectives are not being achieved on federal land, to determine if a causal relationship exists between improper grazing (by wildlife or wild horses or livestock) and greater sage-grouse conservation objectives; and 3) identify appropriate site-specific actions to achieve greater sage-grouse conservation objectives within the framework.					
				Raptors					
4109	X	X	BR:7.2 BR:7.6	Implement, where appropriate, conservation measures, terms and conditions, and appropriate BMPs and reasonable and prudent measures within existing state programmatic biological opinions for the bald eagle.					
4110	X	X	BR:6.1 BR:10.1	Work with proponents to design powerlines following USFWS guidelines to protect raptors from electrocution and to reduce predation on other special status species. Work with ROW holders to retrofit existing lines.					
				Migratory Birds					
4111	X	X	BR:7.1-7.4 BR:10 BR:11.1	Avoid taking migratory birds through timing limitations, project design modifications, pre-disturbance surveys and buffers. Direct impacts to migratory bird species or their nests/eggs/young can often be avoided by requiring pre-disturbance clearance surveys or using seasonal timing windows and nesting buffers to avoid disturbance during occupancy periods and minimizing habitat loss. USFWS identifies migratory bird nesting periods between February 1 and August 31 for species protected by MBTA. Seasonal timing limitations should be adjusted to shorter periods to match the habitat, species and condition of the project site. Migratory bird mortalities can also be avoided by including or requiring designs that exclude migratory birds from facilities that are known to pose a preventable mortality risk and marking structures that have known collision risks.					
				Mammals					
4112	X	X	BR:7.1-7.4	Implement conservation measures, terms and conditions, and appropriate BMPs and reasonable and prudent measures within existing state programmatic biological opinions for the Canada lynx, gray wolf, and black-footed ferret.					
4113	X	X	BR:7.1-7.4	Control surface-disturbing activities to avoid, minimize and/or compensate adverse effects on about 1,300 BLM-administered surface acres of active prairie dog colonies within the Meeteetse complex. This requirement will remain in effect until completion of a site-specific activity plan being prepared to manage ferrets in this area. The restriction will then be reassessed for its continued appropriateness. This restriction applies to such things as mineral leasing, geophysical exploration (except casual use), and construction activities.					
4114	X	X	BR:7.1-7.4	Implement conservation measures, terms and conditions, BMPs, and reasonable and prudent measures within the existing state programmatic biological opinion for the grizzly bear and in accordance with the Interagency Grizzly Bear Conservation Strategy signed by the BLM in 2006.					
				Fish					
4115	X	X	BR:7.1-7.6	Give priority to special status species fish over other fish species in planning and management.					
				Plants					
4116	X	X	BR:8.2 BR:8.3 BR:8.5	Implement conservation measures, terms and conditions, and appropriate BMPs and reasonable and prudent measures within existing state programmatic biological opinions for the Ute ladies'-tresses.					

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
Greater Sage-Grouse									
4117	X	X	BR:7.2 BR:9.1	Apply a CSU stipulation for discretionary actions to prohibit surface-disturbing and disruptive activities within ¼ mile of occupied greater sage-grouse leks (21,352 acres) (Map 39).	Prohibit surface-disturbing and disruptive activities and apply a NSO restriction within a 0.6-mile radius of the perimeter of occupied greater sage-grouse leks (117,398 acres) (Map 40). For discretionary actions, manage areas within a 0.6-mile radius of the perimeter of occupied greater sage-grouse leks (117,398 acres) as ROW exclusion areas. Apply a CSU stipulation for all greater sage-grouse seasonal habitats (nesting and early brood-rearing habitat and winter concentration areas) to allow only 1 to 15 acres of well location, or 15 acres of habitat removal, per 640-acre section. The one location and cumulative disturbance value will not exceed 5 percent of sagebrush habitat within those same 640 acres. Key Habitat Areas (1,232,583 acres) are closed to mineral leasing and are managed as ROW avoidance areas.	Same as Alternative A.	**Inside PHMAs** Prohibit surface-disturbing and disruptive activities and apply a NSO restriction on or within a 0.6-mile radius of the perimeter of occupied sage-grouse leks. The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of greater sage-grouse (Map 42). Leases should be a minimum of 640 contiguous acres of federal mineral estate. Smaller parcels may be leased only when 640 contiguous acres of federal mineral estate is not available and leasing is necessary to remain in compliance with laws, regulations and policy; for example, to protect the federal mineral estate from drainage or to commit the federal mineral estate to unit or	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							communitization agreements. Preliminary parcels reviewed for possible offering in a lease sale should comply with this minimum lease size. Expressions of interest that are less than this minimum lease size would be evaluated and modified by the BLM to meet the minimum lease size, where possible, prior to review for possible offering in a lease sale. The BLM's goal inside sage-grouse PHMAs is to maintain or enhance seasonal habitats, thereby providing support for sage-grouse population management objectives of the State of Wyoming. **Outside PHMAs** Prohibit surface-disturbing and disruptive activities and apply a NSO restriction within a ¼-mile radius of the perimeter of occupied sage-grouse leks (Map 42). Outside sage-grouse PHMAs, the BLM's goal is to sustain important habitats that support core populations and to maintain lek persistence over the long term in sufficient proportions of the sage-grouse population to facilitate		

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							movement and genetic transfer between core populations, including those found in adjacent states.		

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
4118	X	X	BR:7.2 BR:9.1	Apply a TLS to avoid surface-disturbing and disruptive activities in greater sage-grouse nesting and early brood-rearing habitats within 2 mile radius of the perimeter of the occupied greater sage-grouse leks (834,543 acres), or in identified greater sage-grouse nesting and brood-rearing habitat outside the 2 mile buffer (626,564 acres) from March 15 to July 15 (CYFO seasonal restrictions are from Feb 1 to July 31) (Map 39).	Apply a TLS to avoid surface-disturbing and disruptive activities in greater sage-grouse nesting and early brood-rearing habitat within a 3-mile radius of the perimeter of occupied greater sage-grouse leks (1,215,528 acres), or in identified nesting and early brood-rearing habitat outside the 3-mile lek buffer (310,749 acres), from February 1 to July 31 (Map 40).	Apply a TLS to avoid surface-disturbing and disruptive activities in greater sage-grouse nesting and early brood-rearing habitat within a 2-mile radius of the perimeter of occupied leks (834,543 acres), or in identified greater sage-grouse nesting and brood-rearing habitat outside the 2-mile lek buffer (626,564 acres) from March 15 to July 15 (Map 41). Exempt Oil and Gas Management Areas (Map 24) and ROW corridors from discretionary wildlife seasonal stipulations.	**Inside PHMAs** Apply a TLS to restrict disruptive activity within a 0.6-mile radius of the perimeter of occupied sage-grouse leks from March 15 to June 30 (112,249). **Outside PHMAs** Apply a TLS to restrict disruptive activity within a ¼ mile radius of the perimeter of occupied sage-grouse leks from March 15 to June 30 (4,273). **Inside PHMAs** Apply a TLS to prohibit or restrict surface-disturbing and/or disruptive activities in sage-grouse nesting and early brood-rearing habitat within PHMAs, regardless of distance from the lek from March 15 to June 30 (1,526,277). **Outside PHMAs** Apply a TLS to prohibit or restrict surface-disturbing and/or disruptive activities in sage-grouse nesting and early brood-rearing habitat within a 2-mile radius of the perimeter of occupied sage-grouse leks from March 15 to June 30.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
4119	X	X	BR:7.2 BR:9.1	Apply a TLS to avoid surface-disturbing and disruptive activities within greater sage-grouse winter concentration areas (172,779 acres) from November 15 to March 14.	Avoid surface-disturbing and disruptive activities and apply a NSO restriction within greater sage-grouse winter concentration areas (172,779 acres) from November 15 to March 14.	Same as Alternative A, except exempt Oil and Gas Management Areas (Map 24) and ROW corridors from discretionary wildlife seasonal stipulations.	Apply a TLS to prohibit or restrict surface-disturbing and disruptive activities within greater sage-grouse winter concentration areas (172,809 acres) from December 1 to March 14.	Same as Alternative B.	Same as Alternative D.
4120	X	X	BR:7.2 BR:9.1	No similar action.	Same as Alternative A.	Same as Alternative A.	**Density of Disturbances:** In greater sage-grouse PHMAs, the density of disturbance of energy or mining facilities would be limited to an average of one site per square mile (640 acres) within the DDCT, subject to valid existing rights. The one location and cumulative value of existing disturbances would not exceed 5 percent of habitat. Utilize the greater sage-grouse density disturbance calculation tool described in Appendix Y. Inside PHMA, all suitable habitat disturbed (any program area) will not exceed 5 percent within the DDCT area using the DDCT process. Consolidate anthropogenic features from development and transmission on the landscape. Allow on a case-by-case basis high profile structures within greater sage-grouse nesting habitat.	Same as Alternative A.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							Manage PHMAs (1,232,583 acres) as ROW avoidance areas. Work with proponents to design ROW applications to protect greater sage-grouse. Buried utilities constructed in designated utility corridors are not subject to DDCT analysis. Sagebrush Treatment: Sagebrush eradication is considered disturbance and will contribute to the 5 percent disturbance factor. In stands with less than 15 percent cover, treatment should be designed to maintain or improve sagebrush habitat. Sagebrush treatments that maintain sagebrush canopy cover at or above 15 percent total canopy cover within the treated acres will not be considered disturbance. Treatments that reduce sagebrush canopy cover below 15 percent will be allowed if all such treated areas make up less than 20% of the suitable sagebrush habitat within the DDCT, and any point within the treated area is within 60 meters of sagebrush habitat with 5 percent or greater canopy cover. Treatments		

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							to enhance sagebrush/grassland will be evaluated based upon the existing habitat quality and the functional level post-treatment. Wildfire burns will be treated as disturbed if sagebrush is reduced below 5 percent unless there is an implementation plan outlining restoration efforts and 3 years of data showing a trend back to suitable habitat. Although seasonal restrictions on activities may apply, vegetation treatments that do not make the habitat unsuitable for greater sage-grouse are not considered in the density calculation.		
4121	X	X	BR:7.2 BR:9.1	No requirements to locate facilities or reduce noise levels of equipment to minimize the impacts of continuous noise on greater sage-grouse or other species relying on aural cues for successful breeding currently exist.	Limit new noise levels to 10 dBA above ambient noise measured at the perimeter of a lek from 6 PM to 8 AM during initiation of breeding (March 1 to May 15). Actual thresholds may be adjusted upon evaluation and acceptance of ongoing research.	Limit noise sources to 10 dBA above natural, ambient noise measured at the perimeter of occupied greater sage-grouse leks from March 1 to May 15. Exempt Oil and Gas Management Areas (Map 24).	Noise levels at the perimeter of the lek should not exceed 10 dBA above ambient noise. The BLM would work with proponents to limit project-related noise where it would be expected to reduce functionality of habitats that support PHMA area populations. The BLM would evaluate the potential for limitation of new noise sources on a case-by-case basis as	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							appropriate. The BLM's near-term goal would be to limit noise sources that would be expected to negatively impact PHMA sage-grouse populations and to continue to support the establishment of ambient baseline noise levels for occupied PHMA leks. As additional research and information emerges, specific new limitations appropriate to the type of projects being considered would be evaluated and appropriate limitations would be implemented where necessary to minimize potential for noise impacts on sage-grouse PHMA population behavioral cycles. As new research is completed, new specific limitations would be coordinated with the WGFD and partners.		

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
4122	X	X	BR:7.1-7.4 BR:9.1 BR:9.2	No similar action.	Motorized vehicle use is limited to designated roads and trails in greater sage-grouse Key Habitat Areas with a seasonal closure from February 1 to July 31. Manage new road construction in and adjacent to greater sage-grouse habitat consistent with applicable restrictions on surface-disturbing and disruptive activities.	Allow motorized vehicle use in greater sage-grouse PHMAs consistent with other resource objectives. Manage new road construction in and adjacent to greater sage-grouse habitat consistent with applicable restrictions on surface-disturbing and disruptive activities.	Same as Alternative C, except locate new roads that will have relatively high levels of activity (i.e., accessing multiple wells, housing developments, etc.) greater than 1.9 miles from the perimeter of occupied sage-grouse leks within PHMAs. Locate other new roads greater than 0.6 miles from the perimeter of occupied sage-grouse leks within PHMAs. Construct roads to minimum design standards needed for production activities.	Same as Alternative B.	Same as Alternative D.
				Raptors					
4123	X	X	BR:6.1	Apply a TLS to prohibit any activity or surface-disturbing activity within a ¾ mile radius of any active raptor nest sites (592,529 acres) from February 1 through July 31 (Map 39). Actual distances and dates will vary based on topography, species, season of use, and other pertinent factors.	To protect nesting raptors, apply a TLS to prohibit surface-disturbing and disruptive activities within: • 1 mile of active raptor nests (542,759 acres) during specific species nesting period, or until young birds have fledged (Map 40). See Appendix K for species nesting periods. • 2 miles of active ferruginous hawk nests (47,258 acres) from March 1 to July 31, or until young birds have fledged (Map 40). To protect the actual nest	Apply a TLS to avoid surface-disturbing and disruptive activities within ¼ mile of active raptor nests (47,651 acres) during specific species nesting period, or until young birds have fledged (Map 41). See Appendix K for species nesting periods.	To protect nesting raptors, apply a TLS on 126,241 acres to prohibit surface-disturbing and disruptive activities within: • ¼ mile of active raptor nests and ½ mile of active golden eagle, bald eagle, northern goshawk, merlin, and prairie and peregrine falcon nests during specific species nesting period or until young birds have fledged (Map 42). See Appendix K for species nesting periods. • 1 mile of active	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					site, apply a year-round CSU stipulation within ¼ mile of all raptor nests (47,258 acres) (Map 40). Actual distances and dates will vary based on topography, species, season of use, and other pertinent factors.		ferruginous hawk nests from March 1 to July 31 or until young birds have fledged (Map 42). To protect the actual nest site, apply a year-round CSU stipulation within ¼ mile of all raptor nests (47,651 acres) (Map 42). Actual distances and dates will vary based on topography, species, season of use, and other pertinent factors.		
				Migratory Birds					
4124	X	X	BR:7.1 BR:7.2	Implement conservation measures, terms and conditions, and appropriate BMPs and reasonable and prudent measures within existing state programmatic biological opinions for the mountain plover.	Same as Alternative A, plus manage a portion of the Chapman Bench area (23,326 acres) as the Chapman Bench ACEC for the retention, enhancement, and success of the greater sage-grouse, mountain plover, and long-billed curlew. See ACECs for management of the Chapman Bench ACEC.	Apply a TLS to protect mountain plover identified breeding and nesting habitat from surface-disturbing activities from April 10 through July 10.	Same as Alternative A, plus manage a portion of the Chapman Bench area as the Chapman Bench Management Area (3,425 acres of BLM-administered surface ownership): • manage for the retention and success of the mountain plover, long-billed curlew, and other sensitive species habitat • apply a NSO restriction (Map 37) open to geophysical exploration prohibit mineral materials disposal pursue a withdrawal from appropriation under the mining laws renewable energy and ROW avoidance area • allow surface-	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							disturbing activities consistent with other resource objectives Allow and stipulate, where feasible, vegetative treatments, invasive and nonnative pest species control, fuels management, and maintenance of existing facilities.		
				Mammals					
4125	X	X	BR:7.1-7.4	No similar action.	If the USFWS and WGFD determine that large prairie dog colonies and/or complexes within the Planning Area are suitable for black-footed ferret reintroduction, apply a NSO restriction on these areas.	No similar action.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
4126	X	X	BR:7.1-7.4	Implement, where appropriate, conservation measures, Biological Evaluations, and inter-agency coordination memorandums for all prairie dogs.	Same as Alternative A, plus prohibit prairie dog poisoning.	In the Sage Creek Town area only, implement conservation measures, terms and conditions, BMPs and reasonable and prudent measures for white- and black-tailed prairie dog colonies. Allow surface-disturbing and disruptive activities in all prairie dog colonies.	Same as Alternative A, plus prohibit prairie dog poisoning.	Same as Alternative B.	Same as Alternative D.
4127	X		BR:10.2 BR:10.5	Implement conservation measures outlined in the Biological Evaluation for black-tailed prairie dogs in the Sage Creek Prairie Dog Town (182 acres) (BLM 2005d).	Same as Alternative A, but also apply a NSO restriction on the Sage Creek Prairie Dog Town (182 acres) (Map 40).	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
4128	X		BR:10.2 BR:10.5	Manage the Sage Creek Prairie Dog Town (182 acres) as a ROW avoidance area.	Manage the Sage Creek Prairie Dog Town (182 acres) as a ROW Exclusion area.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
				Amphibians and Reptiles					
4129	X	X	BR:7.1-7.4	Stipulate and/or implement the appropriate management guidelines identified in *Habitat Management Guidelines for Amphibians and Reptiles of the Northwestern U.S. and Canada, PARC Technical Publication HMG-4* (Pilliod and Wind 2008), and similar future guidance for activities that have the potential to impact known or potential amphibian/reptile habitat.	Same as Alternative A.	On a case-by-case basis, stipulate and/or implement the appropriate management guidelines identified in *Habitat Management Guidelines for Amphibians and Reptiles of the Northwestern U.S. and Canada, PARC Technical Publication HMG-4* (Pilliod and Wind 2008), and similar future guidance for activities that have the potential to impact known or potential amphibian/reptile habitat.	Same as Alternative A.	Same as Alternative B.	Same as Alternative C.
4130	X	X	BR:7.1-7.4	When cleaning or removing sediment from wet reservoirs, where feasible, retain riparian vegetation such as cottonwoods, willows, cattails, sedges, and rushes for wildlife habitat values.	Same as Alternative A, plus avoid reservoir work during amphibian mating and metamorphosis periods (April – July).	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				Fish					
4131	X	X	BR:7.3	Restore stream segments for fisheries habitat on a case-by-case basis.	Restore or reclaim important fisheries habitat through upland management and hydrologic function enhancement actions on at least 3 miles of lotic stream segments.	Same as Alternative A, except restore or improve important stream segments only for special status species fisheries habitat.	Restore or reclaim fisheries habitat with present or potential special status species fish populations through upland management and hydrologic function enhancement actions on a priority basis consistent with other resource uses.	Same as Alternative B.	Same as Alternative D.
4132	X	X	BR:7.1-7.3 BR:7.6	Construct barriers to prevent nonnative fish from colonizing habitat occupied by native fish species on a case-by-case basis.	Construct barriers to prevent nonnative fish from colonizing habitat occupied by native fish species. Remove barriers or construct fish passageways to enable native fish to occupy all suitable habitats.	Do not construct or remove barriers to prevent nonnative fish from colonizing habitat that would impede or constrain other resource uses.	Same as Alternative B, except on a priority basis.	Same as Alternative B.	Same as Alternative D.
4133	X	X	BR:7.3 BR:7.6	Prohibit surface-disturbing activities within 500 feet of surface water and/or riparian habitat, including those supporting special status fish species, except when such activities are necessary and when their impacts can be mitigated or avoided.	Prohibit surface-disturbing and disruptive activities within ¼ mile of any waters containing special status fish species, except when such activities are necessary and when their impacts can be mitigated or avoided.	Same as Alternative A.	Prohibit surface-disturbing activities within 500 feet and avoid surface-disturbing activities within ¼ mile of perennial surface water and riparian/wetland areas except when their impacts can be mitigated to an acceptable level.	Same as Alternative B.	Same as Alternative D.
4134	X	X	BR:7.1-7.3 BR:7.6	Consider working with WGFD and other stakeholders to restore Yellowstone cutthroat trout to its historically occupied watersheds on a case-by-case basis.	Pursue coordination with WGFD and other stakeholders in restoring Yellowstone cutthroat trout to its historically occupied watersheds wherever feasible.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
4135	X	X	BR:7.1-7.3 BR:7.6	Work with WGFD and other stakeholders to introduce special status fish species to waters outside of their historic range on a case-by-case basis.	If environmentally feasible, pursue coordination with WGFD and other stakeholders to introduce special status fish species to waters outside of their historic range.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
				Plants					
4136	X	X	BR:8.1-8.3 BR:8.5	Review all range improvement projects for potential impacts to BLM special status plant species. Implement avoidance and mitigation measures on a case-by-case basis.	Prohibit range improvement projects such as troughs, reservoirs, fences, and other surface-disturbing activities within ½ mile of known BLM special status plant species, unless the improvement is determined to be beneficial to the plant species.	Prohibit range improvement projects such as troughs, reservoirs, fences, and other surface-disturbing activities within 300 feet of BLM special status plant species, unless the improvement is determined to be beneficial to the plant species. Exceptions may be allowed by the authorized officer.	Avoid range improvement projects that may concentrate herbivory within ¼ mile of BLM special status plant species populations unless the project is determined to be beneficial or neutral to the plant species.	Same as Alternative B.	Same as Alternative D.
4137	X	X	BR:8.1-8.3 BR:8.5	No similar management action.	Prohibit forage supplements within ½ mile of BLM special status species plant populations.	On a case-by-case basis, allow placement of forage supplements after considering the location of BLM special status plant species.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
4138	X	X	BR:8.1-8.3 BR:8.5	Review all action and use authorizations on split-estate lands for potential impacts to BLM special status plant species. Implement avoidance and mitigation measures on a case-by-case basis.	Require surveys for BLM special status species plant species prior to approving any project or activity on federal lands or on split-estate lands in potential habitats for these species that may affect that species. If populations are identified, apply appropriate mitigation.	Require surveys for BLM special status species plant species prior to approving any project or activity on federal lands; however, do not require surveys for BLM special status plant species before approving any project or activity on split-estate lands, except for federally listed, proposed, and candidate	Review all federal actions and authorizations for potential impacts to BLM special status plant species. Implement avoidance, mitigation or compensation measures in coordination with surface owners on split-estate.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Special Status Species									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
						species. If populations are identified, apply appropriate mitigation.			
4139	X	X	BR:8.2-8.4	Review all herbicide treatments for potential impacts on BLM special status species plants. Implement avoidance and mitigation measures on a case-by-case basis.	Prohibit aerial applications of herbicides within 1 mile of BLM special status plant species. Allow vehicle and hand application of herbicides within ½ mile of special status plant species.	Prohibit aerial applications of herbicides within ½ mile of BLM special status plant species. Allow vehicle and hand application of herbicides on a case-by-case basis.	Avoid aerial applications of herbicides within ½ mile of BLM special status plant species. Allow vehicle and hand application of herbicides.	Same as Alternative B.	Same as Alternative D.
4140	X	X	BR:8.5	Review fire suppression effects on BLM special status plant species and implement mitigation measures on a case-by-case basis.	Same as Alternative A, except do not allow the use of fire suppression or chemicals, including foaming agents and surfactants, within ¼ mile of known BLM special status plant species populations.	Same as Alternative A.	Allow the application of fire suppression chemicals within ¼ mile of known/documented populations of BLM special status plant species with the consent of the authorized officer.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
4000 BIOLOGICAL RESOURCES (BR) – Wild Horses									
				GOAL BR:11 Manage and maintain healthy wild horses and herds inside HMAs in a thriving natural ecological balance within the productive capacity of their habitat while preserving multiple use relationships. **Objectives:** **BR:11.1** Adjust and maintain wild horse numbers and HMAs to comply with federal policies. **BR:11.2** Maintain or enhance herd viability and genetic integrity. **BR:11.3** Provide opportunities for wild horse interpretation, scientific research, and viewing. **BR:11.4** Manage wild horses to comply with local planning documents to the greatest extent practicable.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
4141		X	BR:11.1	The size of the Fifteenmile HMA (Map 45) will remain at 70,527 acres of BLM-administered land, out of the original 261,868 acres of BLM-administered land within the Fifteenmile HA.					
4142	X	X	BR:11.1	The Sand Draw HA is 15,302 acres (total acres in Planning Area, including BLM-administered, BOR, state, and private lands). The Zimmerman Springs HA is 12,277 acres (total acres in Planning Area, including BLM-administered, BOR, state, and private lands). The Alkali Spring Creek HA is 5,183 acres (total acres in Planning Area, including BLM-administered, BOR, state, and private lands). The Foster Gulch HA is 141,300 acres (total acres in Planning Area, including BLM-administered, BOR, state, and private lands). The North Shoshone HA is 22,626 acres (total acres in Planning Area, including BLM-administered, BOR, state, and private lands). These HAs (Map 45) will not be managed for wild horses.					
4143		X	BR:11.1	Manage the Fifteenmile HMA for an initial appropriate management level of 70 to 160 wild horses, not counting foals, in an attempt to maintain a population of 100 adult wild horses adjusted as necessary based upon monitoring.					
4144	X		BR:11.1	Manage the McCullough Peaks HMA for an initial appropriate management level of 70 to 140 wild horses, not counting foals, in an attempt to maintain a population of 100 adult wild horses adjusted as necessary based upon monitoring.					
4145	X	X	BR:11.1	Base future adjustments to the appropriate management level on monitoring information and multiple use considerations through development of and/or revisions to HMA Plans. Update HMA plans to include greater sage-grouse objectives.					
4146	X	X	BR:11.1	Manage BLM-administered land within the Fifteenmile and McCullough Peaks HMAs to maintain or enhance conformance with the *Wyoming Standards for Healthy Rangelands*.					
4147	X	X	BR:11.2	Employ selective removal criteria, in accordance with current national policies, during periodic gathers to increase desired genetic characteristics and avoid genetic depression.					
4148	X	X	BR:11.1	Consider the use of natural and artificial population control measures as needed to maintain the wild horse populations within the established appropriate management level ranges.					
4149	X	X	BR:11.1	Conduct all activities in compliance with relevant court orders and agreements as applicable to the management situation.					

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Wild Horses									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
4150	X		BR:11.3	Provide opportunity for the public to view wild horses in the McCullough Peaks HMA.	Same as Alternative A.	Same as Alternative A, except actively promote opportunities for public viewing, education, and interpretation of wild horses within the McCullough Peaks HMA.	Promote opportunities for public viewing, education, and interpretation of wild horses within the McCullough Peaks HMA.	Same as Alternative B.	Same as Alternative D.
4151		X	BR:11.3	Provide opportunity for the public to view wild horses in the Fifteenmile HMA.	Do not actively promote the Fifteenmile HMA to the public and retain the current remote natural characteristics.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
4152	X	X	BR:11.1	Within the Fifteenmile HMA, subject surface-disturbing and disruptive activities (public land uses) associated with wild horse management to appropriate mitigation developed through use of the mitigation guidelines.	Apply seasonal restrictions from February 1 to July 31 to prevent foal abandonment or jeopardy of wild horse health and welfare, as appropriate, to surface-disturbing and disruptive activities in the McCullough Peaks and Fifteenmile HMAs.	Do not apply seasonal restrictions.	Same as Alternative B.	Same as Alternative B.	Same as Alternative D.
4153	X	X	BR:11.3	Consider organized special recreation permit-related base camps, events, or activities in the McCullough Peaks and Fifteenmile HMAs on a case-by-case basis.	Prohibit organized special recreation permits using domestic horses in the McCullough Peaks and Fifteenmile HMAs.	Allow organized special recreation permit-related base camps, events, or activities with horses.	Avoid and discourage organized special recreation permits using domestic horses in the McCullough Peaks and Fifteenmile HMAs.	Same as Alternative B.	Same as Alternative D.
4154	X		BR:11.1	Maintain the McCullough Peaks HMA at about 103,863 acres, out of the original 177,863 acres within the McCullough Peaks HA (Map 45).	Adjust the western boundary of the McCullough Peaks HMA (113,938 acres) to resolve resource conflicts (Map 45). Expansion of the HMA would not be the basis for a change to the appropriate management	Same as Alternative A.	Adjust the western boundary of the McCullough Peaks HMA (113,714 acres) to resolve resource conflicts (Map 45). Expansion of the HMA would not be the basis for a change to livestock AUMs or the appropriate	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

4000 BIOLOGICAL RESOURCES (BR) – Wild Horses									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					level, and any future changes to the appropriate management level would be done through the HMAP.		management level, and any future changes to these numbers would be done through the HMAP or the grazing permit renewal process.		
4155	X	X	BR:11.1	Do not allow wild horse gathers to occur between March 1 and June 30.	Avoid wild horse gathers 6-weeks before or 6-weeks after peak foaling season. To the extent possible, conduct wild horse gathers in the fall, after peak foaling has occurred and when temperatures are lower to reduce stress on the animals.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
4156	X		BR:11.2	Evaluate fences in the McCullough Peaks HMA on a case-by-case basis.	Evaluate and remove, on a case-by-basis, interior fences in the McCullough Peaks HMA to provide for wild horse movement and improved retention of genetic viability.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
5000 HERITAGE AND VISUAL RESOURCES (HR) – Cultural Resources									
				GOAL HR:1 Identify, preserve, and protect cultural resources and ensure that they are available for appropriate uses by present and future generations (FLPMA, Section 103(c), 201(a) and (c); National Historic Preservation Act, Section 110(a); Archeological Resources Protection Act, Section 14(a)). **Objectives:** **HR:1.1** Manage each type of cultural resource according to their proper use allocation, and monitor those resources' condition and use. **HR:1.2** Reduce imminent threats to cultural resources from natural or human-caused deterioration. **HR:1.3** Develop and maintain working relationships with those tribes having an interest in the area through regular meetings. Consult with tribal governments regarding proposed land uses having the potential to impact cultural resources identified as having tribal interests or concerns. Determine the types of resources of concern to various tribes, and take tribal views into consideration when making land use allocations or decisions. **HR:1.4** Develop activity plans for special areas or cultural resources identified as high risk for adverse impacts. **GOAL HR:2** Promote stewardship, conservation, and appreciation of cultural resources. **Objectives:** **HR:2.1** Maintain and enhance programs that provide opportunities for scientific research of cultural resources. **HR:2.2** Provide opportunities for public education, interpretation, and scientific research of cultural resources. Continue Project Archeology teaching courses, and continue to conduct public presentations for schools, community organizations, and the public. Provide for appropriate interpretation of sites of high public interest. Provide selected cultural resources for scientific research. **HR:2.3** Coordinate with other BLM programs preplanning measures to prevent potential conflicts before they occur. **GOAL HR:3** Protect important cultural resources while minimizing economic and social impacts to private landowners and local communities. **Objectives:** **HR:3.1** Consult and coordinate with affected landowners and local communities when devising protection measures for cultural resources. **HR:3.2** Consult and coordinate with affected landowners and local communities when devising recreational use plans for cultural resources. **HR:3.3** Preserve and stabilize important cultural resources, especially resources that face immediate threat or are in high public use areas.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
5001	X	X	HR:1.2	Investigate all alleged violations of the Archaeological Resources Protection Act.					
5002	X	X	HR:1.1	Categorize all cultural properties according to six use allocations: scientific use, conservation use, public use, traditional use, experimental use, and discharged from public use. Develop programmatic guidance for the first five categories of use that promote appropriate educational, recreational, and scientific interpretive use. Through the NEPA process, develop appropriate management prescriptions and monitoring plans to protect the identified use.					
5003	X	X	HR:1.4	Complete emergency site stabilization and long-term protection projects on important sites as appropriate, including the Hanson Site and several rock art occurrences.					
5004	X	X	HR:1.3	Continue existing relationships and develop new relationships with Native American tribes, in order to identify sites, areas, and resources important to them. Document and keep confidential sites, areas, and resources which are worthy of protection. Incorporate the information obtained from the tribes into the planning system, to identify conflicts in the earliest stages, and to avoid conflicts whenever possible. Manage identified areas of tribal importance to minimize disturbance to them and to ensure continued access.					
5005	X	X	HR:1.3	Ensure that areas of importance to Native American Tribes are not transferred from federal ownership, physically modified, or affected by management actions in ways that restrict or deny access and/or use.					

Table 2-9. Detailed Alternatives (Continued)

5000 HERITAGE AND VISUAL RESOURCES (HR) – Cultural Resources									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
5006	X	X	HR:1.1-1.4 HR:2.3	Appropriately protect sites listed on the NRHP. Protect and manage sites that are eligible for or listed on the NRHP. Manage sites allocated for conservation, traditional use, or public use to avoid adverse effects; manage sites allocated for scientific or experimental use for their research potential. Protect and manage National Historic Landmarks through management of non-compatible uses.					
5007	X	X	HR:1.4	Identify areas of significant prehistoric cultural resources, which are at high risk from development, as data becomes available.					
5008	X	X	HR:1.1 HR:2.3	Pursuant to Section 106 of the National Historic Preservation Act of 1966 as amended, the National Programmatic Agreement (BLM, ACHP, and National Conference of SHPO 2012), and the State Protocol (BLM and Wyoming SHPO 2014), case-by-case reviews for specific undertakings require analysis and assessments of effects. Such analysis and assessment may reveal the need for additional restrictions beyond those specifically described in this RMP.					
5009	X	X	HR:1.1-1.4 HR:2.1-2.3 HR:3.1-3.3	In cooperation with local government and stakeholders, consider the economic and social impacts of protecting cultural resources.					
5010	X	X	HR:3.1	Coordinate with affected landowners, local communities, and agencies on any decisions that could affect their use or operations. Consistent with cultural resource protection goals and objectives, devise management actions that complement the objectives of private landowners or local communities.					
5011	X	X	HR:1.3	Inventory potentially sensitive cultural places identified during Native American consultation independent of specific land-use actions. Apply tools (such as site avoidance and SCZ to protect sensitive cultural sites, as necessary.					
5012	X	X	HR:1.4 HR:2.1-2.3 HR:3.1-3.3	Prepare Activity Plans for important sites as appropriate, including the Hanson Site and several rock art occurrences, Ten Sleep Raid, Minick Sheep Camp Raid, historic trails including the Bridger Trail, and the Fort Washakie to Red Lodge stage route.					
5013		X	HR:1.1-1.4 HR:2.3	Manage the Legend Rock Petroglyph Site for public education in cooperation with the Sate of Wyoming. Work to acquire the private land portions of the Legend Rock Petroglyph Site from willing landowners, preferably through an exchange.					
5014	X	X	HR:3.3	Apply a NSO restriction on the Legend Rock Petroglyph Site.					
5015	X	X	HR:1.1-1.4 HR:2.1-2.3 HR:3.1-3.3	Surface-disturbing activities associated with the construction and use of sites and facilities are subject to appropriate mitigation developed through implementation of the National Programmatic Agreement (BLM, ACHP, and National Conference of SHPO 2012) and the State Protocol (BLM and Wyoming SHPO 2014).					
5016	X	X	HR:1.2	For the protection of important cultural sites, pursue a withdrawal from appropriation under the mining laws on a case-by-case basis.					

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
5000 HERITAGE AND VISUAL RESOURCES (HR) – Cultural Resources									
5017	X	X	HR:2.2	Develop additional cultural resource interpretive sites making use of scenic overlooks, signs, and walking trails. Sites could include congressionally designated Nez Perce (Neeme-poo), and historic trails such as the Thermopolis to Meeteetse Trail, the Fort Washakie to Red Lodge Trail, the Mexican Pass Trail, and the Bridger Trail.					
5018	X	X	HR:1.2 HR:3.3	Motorized vehicle use is limited to designated roads and trails in areas containing important cultural and paleontological resources.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
5019	X		HR:1.1-1.4 HR:2.3	Gain additional information on the remaining intact deposits of the Hanson Prehistoric Occupation to facilitate nomination of the site as a National Historic Landmark. Upon Landmark designation, if feasible, nominate the site to the World Heritage List.	Same as Alternative A, except identify and test other deposits of similar age in the drainage to determine the full extent of the Folsom age deposits.	Same as Alternative A, except identify and test other deposits of similar age in the drainage to determine the full extent of the Folsom age deposits and do not seek to nominate the Hanson Prehistoric Occupation site to the World Heritage List.	Same as Alternative A, except do not seek to nominate the site to the World Heritage List.	Same as Alternative B.	Same as Alternative D.
5020	X	X	HR:1.1-1.4 HR:2.3	Manage rock art, as well as other prehistoric and historic archeological sites and districts associated with specific time periods or cultures, for scientific, public, and socio-cultural use. Manage general areas for research, with emphasis on interpreting former ecosystems. Preserve specific sites or areas for future study and use.	Same as Alternative A, except avoid surface-disturbing activities (see Glossary) and ROW authorizations in view within 5 miles of important cultural sites where integrity of setting is a contributing element of NRHP significance, except within designated utility corridors.	Same as Alternative A, except avoid surface-disturbing activities (see Glossary) and ROW authorizations in view within 1/4 mile of important cultural sites where integrity of setting is a contributing element of NRHP significance, except within designated utility corridors.	Same as Alternative A, except avoid surface-disturbing activities and protect the foreground of important cultural sites (see Glossary for definitions of these terms) up to 3 miles or the visual horizon, whichever is closer (the SCZ), where setting is an important aspect of the integrity for the site. Use BMPs (Appendix L) to avoid, minimize and/or compensate adverse effects.	Same as Alternative B.	Same as Alternative D.
5021	X	X	HR:1.2	Pursue leasable mineral restrictions for the protection of cultural sites on a case-by-case basis.	Apply a NSO restriction for leasable minerals within 3 miles and a CSU stipulation in view within 5 miles of important cultural sites	Apply a NSO restriction for leasable minerals within ¼ mile and a CSU stipulation within 1 mile of important cultural sites (see Glossary	Protect the foreground of important cultural sites (see Glossary for definitions of these terms) up to 3 miles or the visual	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

5000 HERITAGE AND VISUAL RESOURCES (HR) – Cultural Resources									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					(see Glossary and Appendix L).	and Appendix L).	horizon whichever is closer (the SCZ) where setting is an important aspect of the integrity for the site. Use BMPs (Appendix L) to avoid, minimize and/or compensate adverse effects.		
5022	X	X	HR:1.2	Pursue restrictions on mineral materials disposal for the protection of important cultural sites on a case-by-case basis.	Prohibit mineral materials disposal within 3 miles, or in view within 5 miles of important cultural sites.	Prohibit mineral materials disposal within ¼ mile, or in view within 1 mile of important cultural sites.	Avoid surface-disturbing activities and protect the foreground of important cultural sites (see Glossary for definitions of these terms) up to 3 miles or the visual horizon, whichever is closer (the SCZ) where setting is an important aspect of the integrity for the site. Use BMPs (Appendix L) to avoid, minimize and/or compensate adverse effects.	Same as Alternative B.	Same as Alternative D.
5023	X	X	HR:1.1 HR:1.3	Determine the location of renewable energy development on a case-by-case basis consistent with applicable policy and guidance and other resource management and objectives.	Manage areas within 5 miles of trails and sites eligible for the NRHP and Traditional Cultural Properties as renewable energy (specifically wind turbine) exclusion areas, unless structures are screened from the site by intervening topography.	Manage areas within 5 miles of trails and sites eligible for the NRHP and Traditional Cultural Properties as renewable energy (specifically wind turbine) avoidance areas, unless structures are screened from the site by intervening topography.	Avoid surface-disturbing activities and protect the foreground of important cultural sites (see Glossary for definitions of these terms) up to 3 miles or the visual horizon, whichever is closer (the SCZ) where setting is an important aspect of the integrity for the site. Use BMPs (Appendix L) to avoid, minimize and/or compensate adverse effects and manage these areas as renewable energy avoidance areas.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

5000 HERITAGE AND VISUAL RESOURCES (HR) – Cultural Resources									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
5024		X	HR:1.1-1.4 HR:2.3	Manage portions of the town of Gebo and adjacent coal mining areas on BLM-administered land for preservation and interpretation of cultural and historic values.	Same as Alternative A, except identify additional trails for foot travel. Include comprehensive information, photographs, and maps on the BLM web site.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
5025	X	X	HR:1.1-1.4 HR:2.3	Manage historic resources in oil and gas fields for scientific and public use. Include the following fields: Elk Basin, Silvertip, Oregon Basin, Hamilton Dome, Grass Creek, Little Buffalo Basin, Walker Dome, Enos Creek, Golden Eagle, Gooseberry, Hidden Dome, Little Grass Creek, and Gebo.	No similar action.	Same as Alternative A, plus include the installation of interpretive signs where fields can be safely viewed.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
5026	X	X	HR:3.3	No similar action.	Motorized vehicle use is limited to designated roads and trails on BLM-administered land along the Bighorn Slope, Bridger, Owl Creek, and Absaroka Foothills to manage (minimize issues such as looting) for cultural and paleontological resources.	Same as Alternative B.	Motorized vehicle use is limited to existing roads and trails, except where other resources impose more restrictive conditions, on BLM-administered land along the Bighorn Slope, Bridger, Owl Creek, and Absaroka Foothills to manage (minimize issues such as looting) for cultural and paleontological resources.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
5000 HERITAGE AND VISUAL RESOURCES (HR) – Paleontological Resources									
				GOAL HR:4 Manage, preserve, and protect paleontological resources and areas on BLM-administered land in the Planning Area. **Objectives:** **HR:4.1** Reduce threats to paleontological resources from natural or human-caused deterioration. **HR:4.2** Implement the PFYC as a standard part of review for all surface-disturbing activities in the Planning Area. **GOAL HR:5** Promote and enhance scientific knowledge of paleontological resources in the Planning Area. **Objectives:** **HR:5.1** Provide paleontological research opportunities for qualified scientists/academia on public lands within the Planning Area in conjunction with the Wyoming State Office Paleontologist, implementing the paleontology permitting program. **HR:5.2** Provide opportunities for research projects relative to paleoclimate studies in the Planning Area. **GOAL HR:6** Promote and implement stewardship, conservation, and appreciation of paleontological resources in the Planning Area. **Objectives:** **HR:6.1** Provide opportunities for the public to enjoy limited recreational collection of common invertebrate and plant fossils in portions of the Planning Area. **HR:6.2** Develop interpretive areas relative to paleontological resources.				
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
5027	X	X	HR:4.1	Enlist assistance of permittees, consultants, and the interested public in preventing theft, trespass, and vandalism of paleontological resources.					
5028	X	X	HR:4.2	Protect vertebrate and scientifically significant paleontological resources on BLM-administered land from proposed surface-disturbing activities that could damage or destroy these resources.					
5029	X	X	HR:4.1	Avoid surface-disturbing activities in areas in the immediate vicinity of scientifically significant paleontological resource sites.					
5030	X	X	HR:4	Avoid adverse effects on resource values to sites listed in National Park Service inventories of possible National Natural Landmarks.					
5031	X	X	HR:5.1	Manage scientifically significant paleontological resources for scientific and public use.					
5032	X	X	HR:4.1	Standard stipulations for paleontological resources permits include protection of cultural resources, human remains, and potential areas of concern to Native Americans.					
5033	X	X	HR:6.1	Provide opportunities for the public to enjoy limited recreational collection of common invertebrate and plant fossils in portions of the Planning Area.					
5034	X	X	HR:6.1	Allow for personal casual-use collection of common invertebrate or plant fossils in reasonable quantities on BLM-administered land.					
5035	X	X	HR:4.1	Close or restrict uses upon discovery of vertebrate or scientifically significant paleontological resources on a case-by-case basis.					
5036	X	X	HR:5.1	Recommend application of Standard Terms and Conditions (see Glossary) for Paleontological Resources Excavation permits, issued by the State Office, to address: 1. Permit assignment 2. Approved timeframes for the permit 3. Costs 4. Access 5. Ownership of the paleontological resources 6. Removal of stakes, flagging, or other site identification materials 7. Citing in reports 8. Restoration of surface disturbance					

Table 2-9. Detailed Alternatives (Continued)

5000 HERITAGE AND VISUAL RESOURCES (HR) – Paleontological Resources									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				9. Reports 10. Stipulations regarding cultural resources, human remains, or areas of religious or cultural concern to Native Americans					
				MANAGEMENT ACTIONS BY ALTERNATIVE					
				Law Enforcement/Protection					
5037	X	X	HR:4.1	Close areas with vertebrate or other scientifically significant paleontological resources that are at risk for damage from illegal activities, including theft and vandalism, on a case-by-case basis.	Protect areas with vertebrate or other scientifically significant paleontological resources that are at risk for damage from illegal activities, including theft and vandalism.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
5038	X	X	HR:4.2	Implement the PFYC system (Map 46) as a standard part of review for all surface-disturbing activities in the Planning Area (see Glossary).	Same as Alternative A.	Implement the PFYC system for permitted use exceeding 5 acres.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
5039	X	X	HR:4.1 HR:4.2	Require an on-the-ground survey prior to approval of a surface-disturbing activity or land-disposal action, and monitor surface-disturbing activities for all PFYC 4 and 5 formations. PFYC 3 formations may or may not require a survey prior to approval of these actions.	Require an on-the-ground survey prior to approval of a surface-disturbing activity or land-disposal action, and monitor surface-disturbing activities for PFYC 3, 4, and 5 formations.	Require an on-the-ground survey prior to approval of a surface-disturbing activity or land-disposal action, and monitor surface-disturbing activities for PFYC 5 formations.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
5040	X	X	HR:4.2	Attach standard Paleontological Resources Protection Stipulations (see Glossary) to authorizations for surface-disturbing activities on PFYC 3, 4 or 5 formations.	Attach standard Paleontological Resources Protection Stipulations (see Glossary) to authorizations for surface-disturbing activities in all areas, regardless of PFYC (i.e., 1 through 5).	Attach standard Paleontological Resources Protection Stipulations (see Glossary) to authorizations for surface-disturbing activities in PFYC 4 or 5 only.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

5000 HERITAGE AND VISUAL RESOURCES (HR) – Paleontological Resources									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
5041	X	X	HR:4.1	Within 50 feet of a paleontological discovery, prohibit the resumption of activity until written authorization to proceed is issued by the authorized officer.	Within 100 feet of a paleontological discovery, prohibit the resumption of activity until written authorization to proceed is issued by the authorized officer.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
5042	X	X	HR:4.1	Prohibit surface-disturbing activities within at least 50 feet of the outer edge of the paleontological locality.	Prohibit surface-disturbing activities within at least 100 feet of the outer edge of the paleontological locality.	Same as Alternative A.	Allow surface-disturbing activities within at least 100 feet of the outer edge of the paleontological locality if the impacts can be adequately mitigated.	Same as Alternative B.	Same as Alternative D.
5043	X	X	HR:4.1	Consider retention and acquisition of lands for significant paleontological resources on a case-by-case basis.	Retain BLM-administered land having vertebrate or other scientifically significant paleontological resources. Pursue opportunities to acquire private lands with vertebrate or other scientifically significant paleontological resources and values adjacent to public lands for protection, via exchange, purchase, or donation on a willing seller, willing buyer basis.	Same as Alternative B, except do not acquire private lands with vertebrate or other scientifically significant paleontological resources and values.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
5044	X	X	HR:5.1 HR:5.2	Provide paleontological research opportunities for qualified scientists/academia on BLM-administered land within the Planning Area in conjunction with the Wyoming State Office Paleontologist, implementing the paleontology permitting program.	Same as Alternative A, except actively solicit paleontological research.	Same as Alternative A.	Same as Alternative A, except encourage paleontological research.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

5000 HERITAGE AND VISUAL RESOURCES (HR) – Paleontological Resources									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
Education & Interpretation									
5045	X	X	HR:6.1	Do not specifically identify areas for casual use collection of common invertebrate or plant fossils by the public.	Identify and designate areas for casual use/collection of common invertebrate or plant fossils by the public. Manage these areas by restricting all surface use as necessary and restricting paleontological resource collecting as necessary.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
5046	X	X	HR:6.2	Consider development of additional paleontological interpretive areas on a case-by-case basis.	Do not develop, or pursue only minimal development, of additional paleontological resources interpretive areas in the Planning Area.	Develop paleontological interpretive areas within the Planning Area where scientifically significant paleontological resources are known to occur, such as designated paleontological areas or ACECs.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
5000 HERITAGE AND VISUAL RESOURCES (HR) – Visual Resource Management									
				GOAL HR:7 Maintain the overall scenic (visual) quality of BLM-administered land where consistent with resource values. **Objectives:** **HR:7.1** Class 1 Objective: Preserve the existing character of the landscape. Provide for natural ecological changes; however, preserving the landscape will not preclude very limited management activity. The level of change to the characteristic landscape will be very low and will not attract attention. **HR:7.2** Class 2 Objective: Retain the existing character of the landscape. The level of change to the characteristic landscape will be low. Management activities may be seen, but will not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. **HR:7.3** Class 3 Objective: Partially retain the existing character of the landscape. The level of change to the characteristic landscape will be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes will repeat the basic elements found in the predominant natural features of the characteristic landscape. **HR:7.4** Class 4 Objective: Provide for management activities which require major modification to the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt will be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.					
				MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES					
5047	X	X	HR:7	Manage visual resources in accordance with VRM class objectives.					
5048	X	X	HR:7	Meet the VRM objectives before authorizing land uses that may affect the visual character of the landscape.					
5049	X	X	HR:7	Allow surface-disturbing activities in areas managed as VRM Class II only if the level of change to the landscape from the activities are low, and will not attract the attention of the casual observer, or the project can be mitigated to meet these objectives.					
5050	X	X	HR:7.1	Manage WSAs under VRM Class I objectives.					
				MANAGEMENT ACTIONS BY ALTERNATIVE					
5051	X	X	HR:7	VRM Class allocations for BLM-administered surface lands (Map 47) are as follows: • Class I – 141,127 acres (4.4%) • Class II – 340,784 acres (10.6%) • Class III – 890,482 acres (27.9%) • Class IV – 1,815,043 acres (56.9%) • Unclassified – 23 acres (0.001%)	VRM class allocations for BLM-administered surface lands (Map 48) are as follows: • Class I – 154,359 acres (4.8%) • Class II – 1,784,854 acres (55.9%) • Class III – 394,106 acres (12.3%) • Class IV – 858,263 acres (26.9%) • Unclassified – 24 acres (0.001%)	VRM class allocations for BLM-administered surface lands (Map 49) are as follows: • Class I – 140,976 acres (4.4%) • Class II – 333,027 acres (10.4%) • Class III – 510,535 acres (16.0%) • Class IV – 2,202,825 acres (69.1%) • Unclassified – 24 acres (0.001%)	VRM class allocations for BLM-administered surface lands (Map 50) are as follows: • Class I – 141,127 acres (4.4%) • Class II – 731,812 acres (22.9%) • Class III – 738,531 acres (23.1%) • Class IV – 1,580,470 acres (49.5%) • Unclassified – 37 acres (0.001%)	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

5000 HERITAGE AND VISUAL RESOURCES (HR) – Visual Resource Management									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
5052	X	X	HR:7.1-7.3	The project proponent may be required to submit VRM contrast rating worksheets on a case-by-case basis.	The project proponent must complete VRM contrast rating worksheets for all proposed actions in areas managed as VRM Classes I, II, or III.	Same as Alternative A, except the project proponent is exempt for all mineral actions and activities in designated ROW corridors.	The project proponent must complete VRM contrast rating worksheets for all proposed actions in areas managed as VRM Classes I or II and for all projects with a high degree of visual impact.	Same as Alternative B.	Same as Alternative D.
5053	X	X	HR:7.1-7.3	The project proponent may be required to submit visual simulations on a case-by case-basis.	The project proponent will complete a visual simulation and mitigation design where required prior to approval for all proposed actions within or viewable from areas managed as VRM Classes I and II (Map 48).	The project proponent is not required to submit visual simulations on any projects.	Same as Alternative A.	Same as Alternative B.	Same as Alternative D.
5054	X	X	HR:7.1 HR:7.2	No similar action.	Work with willing landowners and partners to pursue conservation easements on lands adjacent to areas managed as VRM Classes I and II.	Do not pursue conservation easements on lands adjacent to areas managed as VRM Classes I and II.	Work with willing landowners and partners to pursue conservation easements on lands adjacent to areas managed as VRM Classes I and II on a case-by-case basis.	Same as Alternative B.	Same as Alternative D.
5055	X	X	HR:7	Motorized vehicle use is limited to designated roads and trails in areas managed as VRM Classes I and II.	Motorized vehicle use is limited to designated roads and trails in areas managed as VRM Class II. Areas managed as VRM Class I are closed to motorized vehicle use.	Motorized vehicle use is not limited by VRM Classes.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Lands and Realty									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				GOAL LR:1 Manage the acquisition, disposal, withdrawal, and use of public lands to meet the needs of internal and external customers and to preserve important resource values. **Objectives:** **LR:1.1** Develop and maintain a land-ownership pattern that will provide access for managing and protecting public lands. **LR:1.2** Use appropriate actions such as disposal and acquisition to resolve issues related to intermixed land-ownership patterns and to acquire non-federal land having high resource/recreation value(s). **LR:1.3** Maintain availability of public lands to meet the habitation, trade, mineral development, recreation, and manufacturing needs of external customers and the general public. **LR:1.4** Utilize withdrawals to meet resource protection needs.					
				MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES					
6001	X	X	LR:1.1 LR:1.3	Consider land use authorizations (permits, leases, etc.) on a case-by-case basis consistent with other resource objectives. Do not classify, open, or make available any BLM-administered lands for agricultural leasing or agricultural entry under the Desert Land Act that meet one or more of the following criteria: unsuitable topography, presence of sensitive resources or resource conflicts, lack of water or access, small parcel size, or unsuitable soils.					
6002	X	X	LR:1.4	When supported by RMP decisions to protect or manage other resources, pursue newly proposed BLM protective withdrawals and other agency withdrawal requests on a case-by-case basis.					
6003	X	X	LR:1.3 LR:1.4	Retain all public water reserve withdrawals (2,765 acres), except where no longer needed.					
6004	X	X	LR:1.3 LR:1.4	Review 14,381 acres of other agencies' withdrawals within the Planning Area under Section 204 of FLPMA.					
6005	X	X	LR:1.3 LR:1.4	Review of 16,143 acres of BLM-administered power withdrawals and classifications within the Planning Area.					
6006	X	X	LR:1.3	Revoke 3,287 acres of C&MU lands. Upon revocation, manage the lands in accordance with adjacent BLM-administered lands.					
6007	X		LR:1.3	Open restored BOR lands to mineral location on a case-by-case basis, except where said lands should remain closed to mineral entry in order to meet other resource objectives.					
6008	X	X	LR:1.3 LR:1.4	Continue existing classifications/segregations on 156,617 acres, unless no longer needed.					
6009	X	X	LR:1.1 LR:1.3	Manage lands and/or interests in lands acquired, and former withdrawn lands relinquished, in a manner consistent with adjacent or nearby BLM-administered land including surface and mineral estate management and pursuing withdrawals as appropriate. Subject to further NEPA analysis, where there is a reversionary interest, land may be disposed where the land is not suitable for return to the public domain.					
6010	X	X	LR:1.1-1.3	Acquire private or state lands or interest in land from willing sellers on a case-by-case basis to consolidate land ownership and enhance the ability to manage important recreation opportunities and wildlife habitats such as migration corridors, crucial big game habitat, and riparian/wetland areas. Except for lands acquired using monies from the Westside Irrigation project conveyance described below, exchange is the preferred method of acquisition.					

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Lands and Realty									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6011		X	LR:1.1-1.3	Convey all right, title, and interest (excluding federal mineral interest) in a parcel of public land located in Big Horn County and Washakie County, comprising approximately 16,122 acres, after completion of an environmental analysis under NEPA. Acreage may be added to or subtracted from the land to be conveyed as necessary to satisfy any mitigation requirements under NEPA consistent with resource considerations. Conveyance is to be made to the Westside Irrigation District at current appraised value. Lands within the boundary of the project which are not conveyed under the final decision for this transfer, will be retained in federal ownership, and not available for other disposal actions. Monies paid for Westside Irrigation project lands will be used to acquire lands, also within the Bighorn Basin, with priority purchases defined by BLM in cooperation with stakeholder agencies (WGFD and SHPO).					
6012	X	X	LR:1.1 LR:1.2	Unauthorized use (trespass) on public land will be investigated and resolved on a priority basis. Resolution may include requiring the trespassing party to remove the trespass and restore public lands. Resolution for inadvertent trespass, and especially for long-term, unknowing trespass, may include the sale or exchange of lands at fair market value to the trespassing party, or by modified competitive sale. In the interim, until a decision is made, continued use may be authorized, if determined to be in the public interest. If disposal is selected to resolve the trespass, and the disposal method is to be a FLPMA sale, the parcel size would be the smallest affected parcel, and in accordance with policy.					
6013	X	X	LR:1.3	Consider access easements (including acquisition and exchange) across private lands for access to BLM-administered land. See Appendix M for a list of general areas of interest for easement acquisition based on recreation needs.					
6014	X	X	LR:1.1-1.3	Consider classifications for Recreation and Public Purpose lease and conveyance of BLM-administered land on a case-by-case basis.					
6015	X		LR:1	Retain classification of BLM-administered land south of Cody for the future expansion of Park County landfill and lands to the north, south, and west of the Worland landfill.					
6016	X	X	LR:1.1 LR:1.3	Consider R&PP Act applications from qualified applicants on a case-by-case basis. NOTE: The entire Planning Area is open to applications for conveyances to qualified applicants under the Recreation and Public Purpose Act.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
Retention, Disposal, and Acquisition									
6017	X	X	LR:1.1 LR:1.2	Retain approximately 3,071,909 acres of BLM-administered land. 115,905 acres of BLM-administered land are available for disposal by sale, exchange or other means (Map 51) (Appendix M). Disposal can include none, some, or all of the mineral estate as allowed by 43 CFR 2720 and FLPMA Section 209(b)(1). A mineral potential report would determine if a surface estate disposal includes none, some, or all of the mineral estate.	Retain approximately 3,164,261 acres of BLM-administered land. 24,042 acres of BLM-administered land are available for disposal by sale, exchange or other means (Map 52) (Appendix M). Disposal can include none, some, or all of the mineral estate as allowed by 43 CFR 2720 and FLPMA Section 209(b)(1). Note: All land actions to acquire or dispose of lands would require a site specific analysis under	Retain approximately 3,069,967 acres of BLM-administered land. 117,845 acres of BLM-administered land are available for disposal by sale, exchange or other means (Map 53) (Appendix M). Disposal can include none, some, or all of the mineral estate as allowed by 43 CFR 2720 and FLPMA Section 209(b)(1). Note: All land actions to acquire or dispose of lands would require a site specific analysis under	Retain approximately 3,121,558 acres of BLM-administered land. 66,363 acres of BLM-administered land are available for disposal by sale, exchange or other means (Map 54) (Appendix M). Disposal can include none, some, or all of the mineral estate as allowed by 43 CFR 2720 and FLPMA Section 209(b)(1). A mineral potential report would determine if a surface estate disposal includes none, some, or	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Lands and Realty									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					NEPA.	NEPA.	all of the mineral estate. Lands classified as PHMAs for Greater Sage-Grouse will be retained in federal management unless: (1) the agency can demonstrate that disposal of the lands will provide a net conservation gain to the Greater Sage-Grouse or (2) the agency can demonstrate that the disposal of the lands will have no direct or indirect adverse impact on conservation of the greater sage-grouse. For lands in GHMAs that are identified for disposal, the BLM will only dispose of such lands consistent with the goals and objectives of this plan, including, but not limited to, the land use plan objective to maintain or increase greater sage-grouse abundance and distribution. Note: All land actions to acquire or dispose of lands would require a site specific analysis under NEPA.		
				Disposal					
6018	X		LR:1.2	No similar action.	Dispose of the locatable mineral estate in the Cody Industrial Park area to entities who wish to purchase the surface	Maintain the locatable mineral estate in the Cody Industrial park area in federal ownership. A mineral potential report	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Lands and Realty									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					estate, depending on locatable mineral potential for the property and as allowed by 43 CFR 2720 and FLPMA Section 209(b)(1). A mineral potential report would determine if a surface estate disposal includes none, some, or all of the mineral estate.	would determine if a surface estate disposal includes none, some, or all of the mineral estate.			
				Land Use Classification[3]					
6019	X	X	LR:1.3	1,409 acres are classified as open for entry under the Desert Land Act. Consider DLE applications for unclassified lands on a case-by-case basis subject to DLE criteria (43 CFR §2520).	Revoke 1,409 existing acres of classified DLE lands. Do not classify new lands for DLE.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
				Withdrawals					
6020	X	X	LR:1.4	Continue the withdrawal of 188,803 acres in the Planning Area (Map 9).	Withdraw 314,223 acres in the Planning Area (Map 10).	Withdraw 48,095 acres in the Planning Area (Map 11). Existing withdrawals and segregations that are not carried forward will be allowed to expire.	Withdraw 83,321 acres in the Planning Area (Map 12).	Same as Alternative B.	Same as Alternative D.
6021	X		LR:1.4	Pursue a withdrawal from appropriation under the mining laws for the Beck Lake Scenic Area (708 acres).	Same as Alternative A.	Do not pursue a withdrawal from appropriation under the mining laws in the Beck Lake Scenic Area (708 acres).	Same as Alternative A, further do not issue an order that opens the land to mineral entry.	Same as Alternative A.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
6000 LAND RESOURCES (LR) – Renewable Energy									
				GOAL LR:2 Manage and provide opportunities for appropriate renewable energy facilities on public lands. **Objectives:** **LR:2.1** Make lands available for renewable energy development consistent with goals and objectives of other resources. **LR:2.2** In cooperation with project proponents, promote and enhance scientific knowledge of renewable energy resources in the Planning Area (Map 56).				
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
6022	X	X	LR:2.1 LR:2.2	Programmatic policies and BMPs for wind-energy development are identified in the *Record of Decision for Implementation of a Wind Energy Development Program and Associated Land Use Plan Amendments* (BLM 2005e) and IM 2009-043.					
6023	X	X	LR:2.1	Consider authorization of renewable energy projects consistent with the management of other resource values.					
6024	X	X	LR:2.1	Initiate government-to-government consultation with the appropriate Tribal governments if it is determined that renewable energy development proposals might directly and substantially affect the Tribe.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
6025	X	X	LR:2.1	Consider renewable energy development on a case-by-case basis.	The Planning Area is open to renewable energy development unless managed as renewable energy or ROW exclusion or avoidance areas to meet other resource objectives (Map 57). A total of 251,203 acres is open to renewable energy development. Manage a total of 1,691,663 acres as renewable energy avoidance areas. Manage a total of 1,244,948 acres as renewable energy exclusion areas. Geothermal resources are discussed in the minerals section.	The Planning Area is open to renewable energy development unless managed as renewable energy or ROW exclusion or avoidance areas to meet other resource objectives (Map 58). A total of 1,428,360 acres is open to renewable energy development. Manage a total of 1,611,040 acres as renewable energy avoidance areas. Manage a total of 148,413 acres as renewable energy exclusion areas. Geothermal resources are discussed in the minerals section.	The Planning Area is open to renewable energy development unless managed as renewable energy or ROW exclusion or avoidance areas to meet other resource objectives (Map 59). A total of 1,315,309 acres is open to renewable energy development. Manage a total of 1,500,395 acres as renewable energy avoidance areas. Manage a total of 372,110 acres as renewable energy exclusion areas. Geothermal resources are discussed in the minerals section.	The Planning Area is open to renewable energy development unless managed as renewable energy or ROW exclusion or avoidance areas to meet other resource objectives (Map 60). A total of 254,151 acres is open to renewable energy development. Manage a total of 988,459 acres as renewable energy avoidance areas. Manage a total of 1,945,204 acres as renewable energy exclusion areas. Geothermal resources are discussed in the minerals section.	The Planning Area is open to renewable energy development unless managed as renewable energy or ROW exclusion or avoidance areas to meet other resource objectives (Map 61). A total of 607,429 acres is open to renewable energy development. Manage a total of 2,507,581 acres as renewable energy avoidance areas. Manage a total of 292,949 acres as renewable energy exclusion areas. Geothermal resources are discussed in the minerals section.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
6000 LAND RESOURCES (LR) – Rights-of-Way and Corridors									
				GOAL LR:3 Manage public lands to meet transportation and ROW needs consistent with goals and objectives of other resources. **Objectives:** **LR:3.1** Provide opportunities to meet ROW demands while protecting important resources. **LR:3.2** Maintain and acquire appropriate ingress, egress, and access routes across state/private lands to BLM-administered land for recreational opportunities and management of public land resources. **LR:3.3** Maintain a transportation management system in cooperation with appropriate state and local agencies to meet public and resource management needs.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
6026	X	X	LR:3.1	In accordance with the *Record of Decision for Programmatic Environmental Impact Statement, Designation of Energy Corridors on Federal Land in the 11 Western States* (DOE and BLM 2008a), designate energy corridor 79-216 in the Planning Area.					
6027	X	X	LR:3.1	Develop communication site management plans for all communication site concentration areas (Map 63).					
6028	X	X	LR:3.1 LR:3.3	The preferred location of new ROW will be in or adjacent to existing disturbed areas associated with existing ROW or high traffic gravel roads or highways, where possible.					
6029	X	X	LR:3.1	Avoid ROW authorizations in areas having a 25 percent or greater average slope (Map 62).					
6030	X	X	LR:3.1	Provide reasonable access across BLM-administered land to private land, subject to other resource concerns.					
6031	X	X	LR:3.1 LR:3.2	Acquire and maintain access easements to BLM-administered land across private/state lands from willing sellers on a case-by-case basis to meet other resource needs.					
MANAGEMENT ACTIONS BY ALTERNATIVE[4]									
6032	X	X	LR:3.1	Authorize communication site facilities on a case-by-case basis. Encourage development within designated areas. Co-locate new communication sites where possible.	Allow communication sites in all areas not managed as ROW avoidance or exclusion areas. Require co-location of new communication sites unless there is a demonstrated need to locate communication sites in other locations.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
6033	X	X	LR:3.1	Designate ROW corridors as shown on Map 63.	Designate ROW corridors as shown on Map 64.	Designate ROW corridors as shown on Map 65.	Designate ROW corridors as shown on Map 66. In PHMA, major overhead powerlines will not be authorized unless co-located with an existing 115 kilovolt or greater	Designate ROW corridors as shown on Map 67.	Designate ROW corridors as shown on Map 68.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Rights-of-Way and Corridors									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							powerline, as close as technically feasible, not to exceed 0.5 miles or within a designated corridor authorized for overhead powerlines. Distribution lines may be authorized when effectively mitigated to protect greater sage-grouse and the Authorized Officer determines that overhead installation is the action alternative with the fewest adverse impacts. Agricultural and residential lines will be considered to be adequately mitigated for greater sage-grouse if constructed at least 0.6 mile from the lek perimeter with appropriate timing constraints and installation of raptor deterrents. These ROW authorizations will be subject to approval by the State Director.		
6034	X	X	LR:3.1	Manage 940,943 acres as ROW avoidance areas (Map 63).	Manage 2,710,695 acres as ROW avoidance areas (Map 64).	Manage 1,173,162 acres as ROW avoidance areas (Map 65).	Manage 2,408,662 acres as ROW avoidance areas (Map 66).	Manage 1,610,792 acres as ROW avoidance areas (Map 67).	Manage 2,315,730 acres as ROW avoidance areas (Map 68).
6035	X	X	LR:3.1	Manage 61,147 acres as ROW exclusion areas (Map 63).	Manage 225,447 acres as ROW exclusion areas (Map 64).	Manage 7,586 acres as ROW exclusion areas (Map 65).	Manage 40,802 acres as ROW exclusion areas (Map 66).	Manage 1,322,879 acres as ROW exclusion areas (Map 67).	Manage 133,734 acres as ROW exclusion areas (Map 68).
6036	X		LR:3.1	Avoid placement of above-ground facilities, such as powerlines, along major transportation routes.	Where possible, concentrate placement of above-ground facilities along major	Same as Alternative A.	Avoid placement of above-ground powerlines within one mile on each side of the Greybull	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Rights-of-Way and Corridors									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					transportation routes. Where not possible, do not construct above-ground facilities in exclusion areas, and apply adequate mitigation in consideration of resource values within avoidance areas.		Highway (14-16-20) from the City of Cody to the intersection with Highway 32 near the community of Emblem. Avoid placement of above-ground powerlines within one mile on each side of Highway 32 between Emblem and the BLM-BOR boundary to the north. Avoid placement of above-ground powerlines within one mile on each side of Highway 120 between the City of Cody and the Wyoming-Montana state line. Avoid placement of above-ground powerlines within 1 mile on each side of Highway 120 between the City of Cody and the Meeteetse Rim to the south. Avoid placement of above-ground powerlines within one mile on each side of Highway 14-16-20 between the City of Cody and the community of Wapiti.		
6037	X	X	LR:3 LR:3.3	No similar action.	Consider night skies in evaluation of ROW applications and apply BMPs as appropriate.	Do not consider night skies in the evaluation of ROW applications.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Comprehensive Travel and Transportation Management									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				GOAL LR:4 Utilize a comprehensive approach to travel planning and management to sustain and enhance use. **Objectives:** **LR:4.1** All BLM-administered lands will be classified as open, limited, or closed to motorized travel in consideration of other resource program goals and objectives, primary travelers, objectives for allowing travel in the area, setting (recreation, visual, archeological) characteristics that are to be maintained, and primary means of travel. **LR:4.2** Integrate concepts of habitat connectivity into OHV planning to minimize habitat fragmentation. **LR:4.3** Manage OHV use by type, season, intensity, distribution, and/or duration to minimize the impact on plant and wildlife habitats. If seasonal closures become appropriate to minimize adverse OHV impact(s) on public lands resources, strive to preserve public access by designating alternative routes. **GOAL LR:5** Manage the use of OHVs in partnership with other land-management agencies, local governments, communities, and stakeholders. **Objectives:** **LR:5.1** Pursue the acquisition of resources for implementing transportation and travel management. **LR:5.2** Coordinate public outreach efforts when implementing travel management decisions. **GOAL LR:6** Utilize adaptive trails and travel management to protect public land natural resources and settings, promote safety for all public land users, and minimize conflicts among OHV users and various other uses of public lands. **Objectives:** **LR:6.1** Promote responsible-use recreational opportunities and experiences, visitor access/safety, and resource conservation and education. **LR:6.2** Promote trail etiquette, environmental ethics, and a responsible-use stewardship ethic (e.g., tread lightly, leave no trace). **LR:6.3** Promote user safety and minimize user conflict.				
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
6038	X	X	LR:4.1	Unless otherwise specified in other management actions, motorized vehicle use on BLM-administered land is limited to existing roads and trails on an interim basis until completion of travel management planning. Designation changes from "limited to existing roads and trails" to "limited to designated roads and trails" upon the completion of a travel management plan. Terms "interim existing roads and trails", or "existing roads and trails" are used throughout the document to identify areas of low travel management planning priority. Interim existing roads and trails may be maintained for continued access until completion of a travel management plan.					
6039	X		LR:4	The Lovell shooting range and the Cody Archery Range are closed to motorized and mechanized vehicle use, except where permitted.					
6040	X	X	LR:4	The following areas are closed to motorized vehicle use: Duck Swamp-Bridger Trail Environmental Education Area, the rifle range west of Worland, Salt Lick Trail, Gooseberry Badlands Interpretive Trail, Paint Rock Trail, Lone Tree Trail, Canyon Creek Access Trail, Cottonwood Canyon Trail, and Five Springs Road beyond the locked gate in the CYFO.					
6041	X	X	LR:4	Route designation will be through site specific travel management planning, motorized vehicle use is limited to existing roads and trails unless and until route designations are implemented. Subsequent travel management plans will address maintenance of roads, ways, and trails on a site specific basis, in cooperation with stakeholders.					
6042	X	X	LR:6	Motorized travel use is allowed throughout the Planning Area for emergency and administrative use, through other authorities, and maintenance and operations as authorized by permit on case-by-case basis.					
6043	X	X	LR:4	Pedestrian and equestrian travel are not restricted, and use may occur on or off-roads or trails, except for very limited seasonal restrictions that are specifically defined elsewhere in this section, or specifically defined in subsequent travel management plans.					

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Comprehensive Travel and Transportation Management									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6044	X	X	LR:5	Implement the existing travel management plans within the following areas: • Carter Mountain ACEC • Little Mountain • Upper Nowood • South Brokenback • Renner (Upper and Lower) Wildlife Habitat Management Units • Medicine Lodge Wildlife Habitat Management Units • Paint Rock Area • Cooperative Management Agreement between Bureau of Land Management, Worland District, LU Sheep Company, the Wyoming Game and Fish Department, and the Wyoming State Board of Land Commissioners (LU Management Agreement) • Rattlesnake Mountain					
6045	X	X	LR:4 LR:5	Motorized vehicle use (including snowmobile use) is limited to designated roads and trails with a seasonal closure in the following areas: • Little Mountain Travel Management Plan area (9,898 acres), with a seasonal closure, currently December 1 – April 30, in accordance with the travel management plan. • Bald Ridge Area (5,739 acres), with a seasonal closure currently January 1 – April 30 in accordance with the travel management plan. • Twin Creek Trail, with a seasonal closure currently January 1 – April 30 in accordance with the travel management plan. • Carter Mountain Travel Management Plan area (10,951 acres), with a seasonal closure currently November 15 – June 15 in accordance with the travel management plan. • Medicine Lodge Wildlife Habitat Management Area (1,791 acres), with a seasonal closure currently December 1 – June 30 in accordance with the travel management plan. • Upper Renner Wildlife Habitat Management Area (9,184 acres), with a seasonal closure currently December 1 – May 31 in accordance with the travel management plan. Seasonal closure dates may be adjusted to correspond to with big game hunting seasons.					
6046	X	X	LR:4	Over-the-snow vehicles are subject to the same requirements and limitations as all other motorized vehicles until activity planning specifically addresses their use or unless precluded by other resource needs.					
6047	X	X	LR:6.3	Allow temporary closures to motorized vehicle use in areas that pose public health and safety risks, and/or where resource damage is imminent. In PHMAs and GHMAs, temporary closures will be considered in accordance with 43 CFR subpart 8364 (Closures and Restrictions); 43 CFR subpart 8351 (Designated National Area); 43 CFR subpart 6302 (Use of Wilderness Areas, Prohibited Acts, and Penalties); 43 CFR subpart 8341 (Conditions of Use). Temporary closure or restriction orders under these authorities are enacted at the discretion of the authorized officer to resolve management conflicts and protect persons, property, and public lands and resources. Where an authorized officer determines that off-highway vehicles are causing or will cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources, the affected areas shall be immediately closed to the type(s) of vehicle causing the adverse effect until the adverse effects are eliminated and measures implemented to prevent recurrence. (43 CFR 8341.2) A closure or restriction order should be considered only after other management strategies and alternatives have been explored. The duration of temporary closure or restriction orders should be limited to 24 months or less; however, certain situations may require longer closures and/or iterative temporary closures. This may include closure of routes or areas.					
6048	X	X	LR:4.2 LR:4.3	Canada lynx analysis units are closed to motorized over-snow travel (Map 39).					

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Comprehensive Travel and Transportation Management									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
6049	X	X	LR:4	Allow off-road motorized (OHV) (and/or mechanized) vehicle use in areas with limited travel designations to allow direct access for big game retrieval and dispersed campsites, provided that: 1) no resource damage occurs, 2) no new routes are created, and 3) such access is not otherwise prohibited by the BLM authorized officer.	Prohibit off-road motorized (OHV) (and/or mechanized) vehicle use for big game retrieval or dispersed campsites in areas with limited travel designations.	Allow off-road motorized (OHV) (and/or mechanized) vehicle use in areas with limited travel designations to allow direct access for big game retrieval and dispersed campsites, provided that: 1) no resource damage occurs; 2) such access is not otherwise prohibited by the BLM authorized officer; 3) new, dispersed campsites are established on a case-by-case basis.	Allow off-road motorized (OHV) and mechanized travel up to 300 feet from established roads in areas with limited travel designations to allow direct access for big game retrieval and dispersed campsites, provided that: 1) no resource damage occurs; 2) no new routes are created; and 3) such access is not otherwise prohibited by the BLM authorized officer.	Same as Alternative B.	Same as Alternative D.
Comprehensive Travel Management									
6050	X	X	LR:4	To protect resource values, approximately 68,115 acres of BLM-administered land in the Planning Area are closed to motorized vehicle use (Map 69). Areas closed to motorized vehicle use are defined in the corresponding special designation and resource alternatives, and also include: • Owl Creek WSA, Red Butte WSA, Bobcat Draw Badlands WSA, and Sheep Mountain WSA • Paint Rock • Duck Swamp Environmental Education Area	To protect resource values, approximately 170,253 acres of BLM-administered land in the Planning Area are closed to motorized vehicle use (Map 70). Areas closed to motorized vehicle use are defined in the corresponding special designation and resource alternatives, and also include: • Cottonwood Creek Trail (also closed to mechanized use) • Five Springs Road • Pete's Canyon Trail • Spanish Point Karst ACEC • Threatened and	To protect resource values, approximately 9,274 acres of BLM-administered land in the Planning Area are closed to motorized vehicle use (Map 71). Areas closed to motorized vehicle use are defined in the corresponding special designation and resource alternatives, and also include: • Cottonwood Creek Trail (also closed to mechanized use) • Five Springs Road • Pete's Canyon Trail • Spanish Point Karst ACEC	To protect resource values, approximately 61,010 acres of BLM-administered land in the Planning Area are closed to motorized vehicle use (Map 72). Areas closed to motorized vehicle use are defined in the corresponding special designation and resource alternatives, and also include: • Owl Creek WSA, Sheep Mountain WSA, Red Butte WSA, and Bobcat Draw Badlands WSA • Paint Rock • Duck Swamp Environmental Education Area	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Comprehensive Travel and Transportation Management									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				• Cottonwood Creek Trail (also closed to mechanized use) • Five Springs Road • Pete's Canyon Trail • Spanish Point Karst ACEC • Threatened and endangered species habitat (14,238 acres)	endangered species habitat (14,238 acres)		• Spanish Point Karst ACEC • Cottonwood Creek Trail (also closed to mechanized use) • Five Springs Road beyond the locked gate • Pete's Canyon Trail • Lovell Shooting Range • Cody Archery Range		
6051	X	X	LR:4	To protect resource values until each route is designated as open or closed in a corresponding travel management plan, motorized vehicle use is limited to existing roads and trails on approximately 2,315,896 acres of BLM-administered land in the Planning Area (Map 69). Areas where motorized vehicle use is limited to existing roads and trails are defined in the corresponding special designation and resource alternatives, and also includes: • Gebo/Crosby Area (13,350 acres)	To protect resource values until each route is designated as open or closed in a corresponding travel management plan, motorized vehicle use is limited to existing roads and trails on approximately 592,563 acres of BLM-administered land in the Planning Area (Map 70). Areas where motorized vehicle use is limited to existing roads and trails are defined in the corresponding special designation and resource alternatives.	To protect resource values until each route is designated as open or closed in a corresponding travel management plan, motorized vehicle use is limited to existing roads and trails on approximately 2,137,574 acres of BLM-administered land in the Planning Area (Map 71). Areas where motorized vehicle use is limited to existing roads and trails are defined in the corresponding special designation and resource alternatives, and also includes: • Gebo/Crosby Area (13,350 acres)	To protect resource values until each route is designated as open or closed in a corresponding travel management plan, motorized vehicle use is limited to existing roads and trails on approximately 1,955,943 acres of BLM-administered land in the Planning Area (Map 72).	Same as Alternative B.	To protect resource values until each route is designated as open or closed in a corresponding travel management plan, motorized vehicle use is limited to existing roads and trails on approximately 1,295,072 acres of BLM-administered land in the Planning Area (Map 74).

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Comprehensive Travel and Transportation Management									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6052	X	X	LR:4 LR:5	To protect resource values, travel management to designate roads and trails is prioritized on approximately 797,077 acres of BLM-administered land in the Planning Area (Map 69). Areas where motorized vehicle use is limited to designated roads and trails are defined in the corresponding special designation and resource alternatives, and also include: • Areas with fragile soils	To protect resource values, travel management to designate roads and trails is prioritized on approximately 2,416,378 acres of BLM-administered land in the Planning Area (Map 70). Areas where motorized vehicle use is limited to designated roads and trails are defined in the corresponding special designation and resource alternatives, and also includes: • Gebo/Crosby Area (13,350 acres)	To protect resource values, travel management to designate roads and trails is prioritized on approximately 1,020,748 acres of BLM-administered land in the Planning Area (Map 71). Areas where motorized vehicle use is limited to designated roads and trails are defined in the corresponding special designation and resource alternatives.	To protect resource values, travel management to designate roads and trails is prioritized on approximately 1,159,557 acres of BLM-administered land in the Planning Area (Map 72). Areas where motorized vehicle use is limited to designated roads and trails are defined in the corresponding special designation and resource alternatives, and also include: • Essential and recovery habitat for threatened and endangered species • Areas over important caves or cave passages • The West Slope of the Big Horn Mountains, Canyon Creek, Middle Fork of the Powder River, Bighorn River, Newton Lake Ridge, Rivers (North and South Forks of the Shoshone River and Clarks Fork of the Yellowstone River), Beck Lake, Absaroka Mountain Foothills, and Badlands SRMAs • The Absaroka, Southern Bighorns, and Red Canyon Creek	Same as Alternative B.	To protect resource values, travel management to designate roads and trails is prioritized on approximately 1,820,427 acres of BLM-administered land in the Planning Area (Map 74). Areas where motorized vehicle use is limited to designated roads and trails are defined in the corresponding special designation and resource alternatives, and also include: • Essential and recovery habitat for threatened and endangered species • Areas over important caves or cave passages • The West Slope of the Big Horn Mountains, Canyon Creek, Middle Fork of the Powder River, Bighorn River, Newton Lake Ridge, Rivers (North and South Forks of the Shoshone River and Clarks Fork of the Yellowstone River), Beck Lake, Absaroka Mountain Foothills, and Badlands SRMAs • The Absaroka, Southern Bighorns, and Red Canyon Creek

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Comprehensive Travel and Transportation Management									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							ERMAs • The Cedar Mountain, Alkali Creek, Medicine Lodge, Trapper Creek, and Honeycombs WSAs • Absaroka Front Management Area • The Red Gulch Dinosaur Tracksite and Upper Owl Creek ACECs • McCullough Peaks (including McCullough Peaks WSA), Little Mountain, Rattlesnake Mountain, and Carter Mountain TMP Areas.		ERMAs • The Cedar Mountain, Alkali Creek, Medicine Lodge, Trapper Creek, and Honeycombs WSAs • Absaroka Front Management Area • The Greater Sage-Grouse PHMAs, Red Gulch Dinosaur Tracksite, and Upper Owl Creek ACECs • McCullough Peaks (including McCullough Peaks WSA), Little Mountain, Rattlesnake Mountain, and Carter Mountain TMP Areas.
6053	X	X	LR:4	Approximately 1,311 acres of BLM-administered land in the Planning Area are open to motorized vehicle use (after an activity plan is developed) (Map 69). Areas open to motorized vehicle use are: • Worland OHV Area (1,044 acres) • Hills Area near Lovell (Bentonite Hills) (42 acres) • Lovell Lakes "Motocross" area (158 acres) • Red Lakes OHV Play Area (67 acres)	Approximately 3,132 acres of BLM-administered land in the Planning Area are open to motorized vehicle use (after an activity plan is developed) (Map 70). Areas open to motorized vehicle use are: • Worland OHV Area (1,311 acres) • Basin Gardens Play Area RMZ (1,821 acres)	Approximately 14,830 acres of BLM-administered land in the Planning Area are open to motorized vehicle use (after an activity plan is developed) (Map 71). Areas open to motorized vehicle use are: • Worland OHV area (1,311 acres) • Hills area near Lovell (Bentonite Hills) (273 acres) • Lovell Lakes "Motocross" area (158 acres) • Hill climbing areas near Cowley (272 acres)	Approximately 5,885 acres of BLM-administered land in the Planning Area are open to motorized vehicle use (after an activity plan is developed) (Map 72). Areas open to motorized vehicle use are: • Worland OHV area (1,044 acres) • Basin Gardens Play Area SRMA (4,421 acres) • Hills area near Lovell (Bentonite Hills) (273 acres) • Lovell Lakes "Motocross" area (146 acres) Additional Open OHV	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Comprehensive Travel and Transportation Management									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
						• Diamond Basin area near Cody (unidentified area) • Red Lakes area near Cody (67 acres) • Rattlesnake Ridge SRMA (7,996 acres) • Basin Gardens Play Area ERMA (4,421 acres) • Areas near Powell and Greybull (unidentified areas) • Area near Park County Landfill (619 acres).	Areas may be pursued through R&PP leases or patent.		
				Over-Snow Travel					
6054	X	X	LR:4	Areas open to over-snow vehicle use are considered on a case-by-case basis.	In consideration of the presence of resources, areas opened through activity planning to over-snow vehicle use must have a minimum average of 12 inches of snow or be recognized as a groomed motorized trail. If these conditions do not exist then the over-land travel decisions regulate travel in the area.	Areas are open to over-snow vehicle use unless precluded by other resource needs.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
6055	X	X	LR:4	No similar action.	The following areas are closed to over-snow vehicle use: • All ACECs (302,490 acres) • All lands with wilderness characteristics (476,349 acres)	Areas are closed to over-snow vehicle use on a case-by-case-basis.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Comprehensive Travel and Transportation Management									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					• All WSAs (141,068 acres) • All WSRs 27,317 acres) • Greater sage-grouse winter concentration Areas • Big game crucial winter ranges (1,324,371 acres) (Map 44)				

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
6000 LAND RESOURCES (LR) – Recreation									
				GOAL LR:7 Respond to distinct recreation customer demand by providing for customer realization of diverse activity, experience, and benefit opportunities. **Objectives:** **LR:7.1** Manage SRMAs for specific: visitors, affected community residents, local governments and private sector businesses, or other constituents and the communities or other places where these customers originate (recreation-tourism market). Manage ERMAs in order to address recreation use, demand or recreation and visitor services program investments. ERMAs are managed to support and sustain the principal recreation activities and the associated qualities and conditions of the ERMA. **LR:7.2** Manage for outcome focused objectives, recreation setting character conditions, and the administrative, marketing, and monitoring framework. **LR:7.3** Manage subunits, also known as RMZs, within SRMAs using planning tools to establish distinct recreation niches. **LR:7.4** Manage areas outside of RMAs (i.e., not within an SRMA or ERMA) in a custodial manner so as to maintain public health and safety, use and user conflicts, and resource protection. **LR:7.5** Increase awareness understanding and a sense of stewardship in recreational activity participants so their conduct safeguards cultural and natural resources as defined by Wyoming Standards for Public Land and Health or reach specific objectives. **LR:7.6** Ensure visitors are not exposed to unhealthy or unsafe human created conditions. **LR:7.7** Manage the direct indirect and cumulative impacts so as to maintain a minimal level of user conflict. **LR:7.8** Provide public education regarding appropriate use of BLM-administered land. **LR:7.9** Coordinate with other programs to provide opportunities for public visitation, interpretation, education, and appreciation of natural and cultural resources. **LR:7.10** Provide and manage events with special recreation permits that eliminate or minimize resource impacts and user conflicts. **GOAL LR:8** Develop and maintain appropriate recreational facilities, balancing public demand, protection of public land resources, and fiscal responsibility. **Objective:** **LR:8.1** Manage and maintain recreation sites and facilities to acceptable operational standards.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
6056	X	X	LR:7.1-7.3	Areas allocated as an SRMA or RMZ will continue to allow for all recreation activity types unless otherwise specified in this RMP or subsequent activity level plan (see Appendix O).					
6057	X	X	LR:7.4-7.7	Utilize on the ground monitoring to ensure Bighorn Basin wide objectives 7.4-7.7 are achieved. Utilize the minimum necessary remedial actions to achieve the stated objective(s) in areas outside of RMAs.					
6058	X	X	LR:7.4-7.7 LR:7.10	Issue SRPs to authorize commercial, competitive, and organized recreational use. Evaluate existing BLM outfitter/guide activities for needs to establish future commercial use limitations and related policies (see Appendix O).					
6059	X	X	LR:7.4-7.7	Manage recreational use to maintain or improve wetland habitat conditions along intensively used streams and reservoirs, consistent with the Wyoming Standards for Healthy Rangelands or other guidance (see Appendix N).					

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
6000 LAND RESOURCES (LR) – Recreation									
6060		X	LR:7.6 LR:7.7 LR:7.9	Continue a withdrawal from appropriation under the mining laws in the Castle Gardens Recreation Site.					
6061	X	X	LR:7.4-7.7 LR:8	Design recreational sites, recreation facility development, and recreational access to avoid riparian habitat areas or develop and manage them in a manner that minimizes effects on riparian habitats. In PHMAs, do not construct new recreation facilities (e.g., campgrounds, trails, trailheads, staging areas) unless the development would have a net conservation gain to greater sage-grouse habitat (such as concentrating recreation, diverting use away from important habitat areas, etc.), or unless the development is required for visitor health and safety or resource protection.					
6062	X	X	LR:8	Establish new fee sites on a case-by-case basis consistent with the provisions of the Recreation Enhancement Act and as necessary to support management and maintenance of developed sites and related amenities.					
6063	X	X	LR:7.4-7.7 LR:8	Mitigate surface-disturbing and disruptive activities associated with the construction, maintenance, and use of roads, campgrounds, interpretive sites, and other recreational facilities, as described in Appendix H.					
6064	X	X	LR:7.4-7.7	Apply a 16-day campsite occupancy limit throughout the Planning Area unless modified by action through the authorized officer.					
6065	X		LR:7.1-7.9	Maintain an easement across private land for the public to access Rainbow Canyon.					
6066	X	X	LR:7.1-7.9	Retain recreational access in the Bighorn River HMP/RAMP area.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
Developed Site Management									
6067	X	X	LR:7.4-7.7 LR:7.9	Apply a NSO restriction at the time of lease offering on the following: • Fishing and hunting access areas (8,025 acres) • Five Springs Falls Campground (approximately 372 acres) • The Cody Archery Range (374 acres) • R&PP lease area for the Lovell Rod and Gun Club shooting range	Same as Alternative A, plus apply a NSO restriction on areas within ¼ mile of campgrounds, trailheads, day use areas, and similar recreational sites. At the time of APD submittal, apply a CSU stipulation (site-specific relocation) if the lease does not contain a NSO restriction under other resource management on: • Developed (and future) recreation sites, • To mapped (and	Same as Alternative A, except new sites and trails will be relocated or removed in the event leasable mineral activity cannot be sufficiently mitigated.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				(139 acres).	future) national/regional trails, • Local system trails that connect communities.				
6068	X	X	LR:7.3-7.7 LR:7.9	Prohibit surface-disturbing activities such as geophysical exploration (except casual use), salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat), in the following areas: • Fishing and hunting access (8,025 acres) • Five Springs Falls Campground (approximately 372 acres) • The Cody Archery Range (374 acres) • R&PP lease area for the Lovell Rod and Gun Club shooting range (139 acres)	Same as Alternative A.	Allow surface-disturbing activities such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat), on a case-by-case basis in the following areas: • Fishing and hunting access (8,025 acres) • Five Springs Falls Campground (approximately 372 acres) • The Cody Archery Range (374 acres) • R&PP lease area for the Lovell Rod and Gun Club shooting range (139 acres)	Allow surface-disturbing activities such as geophysical exploration, salable minerals exploration and development, and construction activities in recreational sites and trails on a case-by-case basis if the effects can be avoided, minimized and/or compensated based on site-specific analysis (including those related to development of recreation facilities or wildlife habitat). Recreational sites and trails include areas such as campgrounds, trailheads, day use areas, and river access sites.	Same as Alternative B.	Same as Alternative D.
6069	X	X	LR:7.7	No similar action.	Minimize noise and light pollution in sensitive areas (e.g., special status species habitat, developed campgrounds, and river corridors) using best available technology.	Minimize noise pollution in sensitive areas (e.g., special status species habitat, developed campgrounds, and river corridors) on a case-by-case basis using best available technology.	Minimize noise and light pollution in sensitive areas (e.g., developed campgrounds, and river corridors) on a case-by-case basis using best available technology.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6070	X	X	LR:7.4-7.7 LR:7.9	Establish interpretive areas (e.g., geological, wildlife, wild horses, cultural interpretive sites, etc.) making use of scenic overlooks, signs, and walking trails.	Unless otherwise noted, do not establish interpretive areas.	Same as Alternative A, plus include facilities and amenities such as hiking trails, picnic areas, etc.	Establish interpretive areas (e.g., geological, wildlife, wild horses, cultural interpretive sites, etc.) making use of scenic overlooks, signs, facilities and amenities, and walking trails on a case-by-case basis.	Same as Alternative B.	Same as Alternative D.
6071		X	LR:7.4-7.7	Manage portions of the town of Gebo and adjacent coal mining areas on BLM-administered land for preservation and interpretation of cultural and historic values.	Do not develop additional interpretation facilities for recreational use around the town of Gebo.	Same as Alternative A, plus include development of an interpretive road loop or roadside turnout.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
6072	X	X	LR:7.4-7.7 LR:8	Avoid surface-disturbing activities, except those related to recreation facility development and maintenance, at campgrounds, trailheads, day use areas, and similar recreational sites on a case-by-case basis.	Manage areas within ¼ mile of campgrounds, trailheads, day use areas, and similar recreational sites as ROW avoidance areas, except those related to recreation facility development and maintenance.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
				Recreation and Visitor Services Overview (Additional management of SRMAs can be found in Appendix O)					
6073	X	X	LR:7.1-7.3	The 1988 Washakie Resource Area RMP (BLM 1988a), the 1998 Grass Creek Resource Area RMP (BLM 1998a), and the 1990 Cody Resource Area RMP (BLM 1990) recognized seven areas to be managed as SRMAs (Map 75): • Absaroka Foothills SRMA (72,130 acres) • Badlands SRMA	Same as Alternative A, excluding Worland Caves SRMA and Historic Trails SRMA, and with the following additions (Map 76): **Badlands SRMA** (220,687 acres) – Manage for a community recreation strategy for the protection of the recreation outcomes and setting prescriptions	Administratively recognize the following area to be managed as an SRMA (Map 77): **Rattlesnake Ridge SRMA** (7,996 acres) – Manage for a community recreation strategy for the protection of the recreation outcomes and setting prescriptions (Appendix O).	Administratively recognize the following areas to be managed as SRMAs (Map 78): **Absaroka Mountain Foothills SRMA** (42,615 acres) – Manage for an undeveloped recreation strategy for the protection of the recreation outcomes and setting prescriptions	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				(213,981 acres) • Bighorn River SRMA (15,256 acres) • West Slope SRMA (375,888 acres) • The Rivers SRMA (18,247 acres) • Historic Trails SRMA (12,065 acres) • Worland Caves SRMA	(Appendix O). The Badlands SRMA will include the following RMZs: • Tour de Badlands (122,616 acres) • Wild Badlands (51,158 acres) • Tatman Mountain (46,912 acres) **West Slope SRMA** (276,538 acres for WFO, 129,771 acres for CYFO) – Manage for a destination recreation strategy for the protection of the recreation outcomes and setting prescriptions (Appendix O). The West Slope SRMA will include the following RMZs: • Trapper Creek (83,806 acres) • Paint Rock (45,017 acres) • Brokenback/Logging Road (63,725 acres) • South Bighorns (83,991 acres) **Canyon Creek SRMA** (3,677 acres) – Manage for a community strategy for the protection of the recreation outcomes and setting prescriptions (Appendix O). **Red Canyon Creek SRMA** (8,435 acres) – Manage for a community recreation strategy for the protection		(Appendix O). **Badlands SRMA** (211,561 acres) – Manage for a community recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 78) (Appendix O). The Badlands SRMA will include the following RMZs: • Tour de Badlands (111,051 acres) • Wild Badlands (51,155 acres) • Tatman Mountain (49,354 acres) **Bighorn River SRMA** (2,496 acres) – Manage for a community recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 78) (Appendix O). **West Slope SRMA** (129,766 acres in CYFO) – Manage for a destination recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 78) (Appendix O). **Rivers SRMA** (6,047acres) – Manage for a destination recreation strategy for the protection of the recreation outcomes and setting		

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					of the recreation outcomes and setting prescriptions (Appendix O). **Horse Pasture SRMA** (144 acres) – Manage for a community recreation strategy for the protection of the recreation outcomes and setting prescriptions (Appendix O). **McCullough Peaks SRMA** (160,838 acres) – Manage for a destination recreation strategy for the protection of the recreation outcomes and setting prescriptions (Appendix O). **Basin Garden SRMA** (19,771 acres) – Manage for community recreation for the protection of the recreation outcomes and setting (Appendix O). Basin Garden SRMA will include the following RMZs: • Basin Gardens Play Area (1,821 acres) • Basin Gardens (17,949 acres) **Beck Lake SRMA** (6,483 acres for CYFO) – Manage for a community recreation strategy for the protection of the recreation outcomes and setting prescriptions (Appendix O). **Newton Lake Ridge SRMA** 1,997 acres for CYFO) – Manage for a community		prescriptions (Map 78) (Appendix O). **McCullough Peaks SRMA** (160,838 acres) – Manage for a destination recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 78) (Appendix O). **Basin Gardens Play Area SRMA** (4,421 acres) – Manage for a community recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 78) (Appendix O). **Canyon Creek SRMA** (3,675 acres) – Manage for a community strategy for the protection of the recreation outcomes and setting prescriptions (Map 78) (Appendix O). **Horse Pasture SRMA** (144 acres) – Manage for a community recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 78) (Appendix O). **Middle Fork of the Powder River SRMA** (14,644 acres) – Manage for a destination recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map		

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					recreation strategy for the protection of the recreation outcomes and setting prescriptions (Appendix O).		78) (Appendix O). **West Slope SRMA** (190,928 acres in WFO) – Manage for a destination recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 78) (Appendix O). The West Slope of the Bighorns SRMA will include the following RMZs: • Canyons RMZ (141,603 acres) • Brokenback/Logging Road RMZ (49,325 acres) **Beck Lake SRMA** (6,473 acres) – Manage for a community recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 78) (Appendix O). **Newton Lake Ridge SRMA** (1,949 acres) – Manage for a community recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 78) (Appendix O). Additional Recreation Management prescriptions for each SRMA/RMZ appear in Appendix O.		

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6074	X	X	LR:7.3-7.10	The 1988 Washakie Resource Area RMP, the 1998 Grass Creek Resource Area RMP, and the 1990 Cody Resource Area RMP identified 2,390,282 acres not to be designated as RMAs.	Identify the following area as an ERMA: **Worland Caves ERMA** – Manage cave and karst resources under a specific caves and karst ERMA. BLM lands not managed under ERMA or SRMA objectives are not designated as RMAs and are managed under other multiple-use objectives.	Identify the following areas as ERMAs: • Basin Gardens ERMA (15,349 acres) • Basin Gardens Play Area ERMA (4,421acres) BLM lands not managed under ERMA or SRMA objectives are not designated as RMAs and are managed under other multiple-use objectives.	Identify the following areas as ERMAs: • Absaroka ERMA (28,998 acres) • Bighorn River ERMA (1,522 acres) • Rattlesnake Ridge ERMA (7,982 acres) • Red Canyon Creek ERMA (8,435 acres) • Southern Bighorns ERMA (69,325 acres) BLM lands not managed under ERMA or SRMA objectives are not designated as RMAs and are managed under other multiple-use objectives.	Same as Alternative B.	Same as Alternative D.
Absaroka Foothills Area									
6075		X	LR:7.1-7.3	Manage the Absaroka foothills as an SRMA (72,130 acres). The Owl Creek WSA and the Upper Owl Creek ACEC are contained within the Absaroka Foothills SRMA. See the WSA and ACEC sections for management prescriptions.	Manage the Absaroka foothills as an SRMA (72,130 acres) with a destination recreation strategy responsive to, but not restricted to, recreationists and tourists.	Do not manage the Absaroka foothills area as an RMA.	Manage 42,615 acres of the Absaroka foothills as the Absaroka Mountain Foothills SRMA with an undeveloped recreation strategy, and manage 26,846 acres as the Absaroka ERMA.	Same as Alternative B.	Same as Alternative D.
6076		X	LR:7.1-7.7	Manage the Absaroka Foothills SRMA to maximize primitive recreational experiences.	Manage the Absaroka Foothills SRMA for nonmotorized recreationists to engage in hiking, wildlife viewing, and nature viewing so that they realize a "moderate" level of the targeted experience and benefit	Manage the Absaroka foothills to address use and user conflicts, public health and safety, and resource protection.	Manage the Absaroka Mountain Foothills SRMA the same as Alternative B. Manage the Absaroka ERMA to address resource protection, use and user conflicts, and public health and safety. Manage for desired	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					outcomes listed in Appendix O.		recreation setting character conditions, experiences, and benefits as listed in Appendix O.		
6077		X	LR:7.1-7.7	Apply a NSO restriction on portions of the Absaroka Foothills SRMA.	Apply a NSO restriction on the Absaroka Foothills SRMA.	The Absaroka foothills area is open to mineral leasing subject to standard protection measures.	Apply a CSU stipulation on the Absaroka Mountain Foothills SRMA and Absaroka ERMA.	Same as Alternative B.	Same as Alternative D.
6078		X	LR:7.1-7.7	Allow surface-disturbing activities in the Absaroka Foothills SRMA such as geophysical exploration, salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat) on a case-by-case basis.	Close Absaroka Foothills SRMA to surface-disturbing activities such as geophysical exploration (except casual use), salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the Absaroka foothills such as geophysical exploration (including casual use), salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife).	Outside of the Absaroka Front Management Area, allow surface-disturbing activities in the Absaroka Mountain Foothills SRMA and Absaroka ERMA such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat) on a case-by-case basis.	Same as Alternative B.	Same as Alternative D.
6079		X	LR:7.1-7.7	Co-locate ROW authorizations whenever possible in the Absaroka Foothills SRMA.	Manage the Absaroka Foothills SRMA as a ROW avoidance area except to provide access to private property or to accommodate a demonstrated need. Evaluate existing ROW on a case-by-case-basis at renewal.	The Absaroka foothills area is open to ROW authorizations.	Manage the Absaroka Mountain Foothills SRMA and the Absaroka ERMA as ROW avoidance areas, except to accommodate a demonstrated need if the effects can be adequately mitigated. Evaluate existing ROW on a case-by-case-basis at renewal.	Same as Alternative B.	Same as Alternative D.
6080		X	LR:7.1-7.7	The Absaroka Foothills SRMA is open to renewable energy development.	Manage the Absaroka Foothills SRMA as a renewable energy avoidance area.	The Absaroka foothills area is open to renewable energy development.	Manage the Absaroka Mountain Foothills SRMA and the Absaroka ERMA as renewable energy avoidance areas.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6081		X	LR:7.1-7.7	Manage the Absaroka Foothills SRMA as VRM Classes II, III, and IV.	Manage the Absaroka Foothills SRMA as VRM Class II.	Manage the Absaroka foothills as VRM Classes II, III, and IV.	Manage the Absaroka Foothills SRMA as VRM Class II. Manage VRM in the Absaroka ERMA consistent with other resource objectives.	Same as Alternative B.	Same as Alternative D.
6082		X	LR:7.1-7.7	Motorized vehicle use is limited to designated roads and trails in the Absaroka Foothills SRMA.	Motorized vehicle use is limited to designated roads and trails in the Absaroka Foothills SRMA. Identify lands within the SRMA as closed to motorized vehicle use.	Motorized vehicle use is limited to existing roads and trails in the Absaroka foothills.	Motorized vehicle use is limited to designated roads and trails in the Absaroka Mountain Foothills SRMA and the Absaroka ERMA.	Same as Alternative B.	Same as Alternative D.
Bighorn River Area									
6083	X	X	LR:7.1-7.9	Manage the Bighorn River area as an SRMA (15,256 acres).	Manage the Bighorn River area as an SRMA (15,113 acres) with a community recreation strategy responsive to, but not restricted to, local area residents and their guests.	Do not manage the Bighorn River area as an RMA.	Manage the Bighorn River area within the CYFO as the Bighorn River SRMA (2,496 acres), with a recreation strategy the same as Alternative B. Manage the Bighorn River area within the WFO as an ERMA.	Same as Alternative B.	Same as Alternative D.
6084	X	X	LR:7.1-7.7	Manage the Bighorn River SRMA to maximize river related recreational opportunities.	Manage the Bighorn River SRMA for river recreation use for visitors to engage in sightseeing, hunting, photography, fishing, and floating so that they report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Manage the Bighorn River area to address use and user conflicts, public health and safety, and resource protection.	Manage the Bighorn River SRMA the same as Alternative B. Manage the Bighorn River ERMA to address use and user conflicts, public health and safety, resource protection, and to achieve the desired recreation setting character conditions as listed in Appendix O.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6085	X	X	LR:7.1-7.9 LR:8.1	Manage recreational uses of lands along the Bighorn River for fishing, and float boating under the Bighorn River HMP/RAMP. Place emphasis on acquisition of access to public lands on the Bighorn and Greybull rivers to enhance recreational opportunities and wildlife management.	Same as Alternative A, plus include coordination with other land uses and resources.	Manage lands along the Bighorn River for habitat, river heath, and wildlife resources under the Bighorn River HMP/RAMP, including coordination with other land uses and resources.	Same as Alternative C, plus include the Eggert Tract and any additional river tracts acquired over the life of the plan.	Same as Alternative B.	Same as Alternative D.
6086	X	X	LR:7.1-7.9	Consider the acquisition of legal and/or physical access for hunting, fishing, boating, and camping in the Bighorn River SRMA. Areas to be considered for acquisition include: • Basin Bridge • Dry Bear Creek • Heron West • Kane East • Kane West • Lovell Draw • Manderson Bridge • Perkins Bottom-East • Rairden Bridge • Red Bluff View • Red Rim Meadows-South • Sheep Mountain West • South Flat Bridge • Stucco South	Same as Alternative A.	Consider public access for recreational uses to address use and user conflicts, public health and safety, and resource protection in the Bighorn River area.	Manage the Bighorn River SRMA and the Bighorn River ERMA the same as Alternative A.	Same as Alternative B.	Same as Alternative D.
6087	X	X	LR:7.1-7.9	Apply a NSO restriction on lands within the Bighorn River SRMA.	Same as Alternative A.	The Bighorn River area is open to mineral leasing subject to standard protection measures.	Apply a NSO restriction on lands within the Bighorn River SRMA and the Bighorn River ERMA.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6088	X	X	LR:7.1-7.9	Manage the Bighorn River SRMA as a ROW avoidance area. Co-locate ROW whenever possible.	Manage the Bighorn River SRMA as a ROW exclusion area.	The Bighorn River area is open to new ROW authorizations.	Manage the Bighorn River SRMA and the Bighorn River ERMA as ROW avoidance areas. Co-locate ROW whenever possible.	Same as Alternative B.	Same as Alternative D.
6089	X	X	LR:7.1-7.9	Close the Bighorn River SMRA to surface-disturbing activities such as geophysical exploration (except casual use), salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat) on a case-by-case basis.	Close the Bighorn River SRMA to surface-disturbing activities such as geophysical exploration (except casual use), salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the Bighorn River area such as geophysical exploration (including casual use), salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities within the Bighorn River SRMA and the Bighorn River ERMA such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat) on a case-by-case basis if the effects can be avoided, minimized and/or compensated based on site-specific analysis.	Same as Alternative B.	Same as Alternative D.
6090	X	X	LR:7.1-7.7	The Bighorn River SRMA is open to renewable energy development.	Manage the Bighorn River SRMA as a renewable energy exclusion area.	The Bighorn River area is open to renewable energy development.	Manage the Bighorn River SRMA and the Bighorn River ERMA as renewable energy avoidance areas.	Same as Alternative B.	Same as Alternative D.
6091		X	LR:7.1-7.9	Manage the Bighorn River SRMA as VRM Classes II and III.	Manage the Bighorn River SRMA as VRM Class II.	Same as Alternative A.	Manage VRM in the Bighorn River ERMA consistent with other resource objectives.	Same as Alternative B.	Same as Alternative D.
6092	X		LR:7.1-7.9	Manage the Bighorn River SRMA as VRM Classes II, III, and IV.	Manage the Bighorn River SRMA as VRM Class II.	Same as Alternative A.	Manage the Bighorn River SRMA as VRM Class II.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
6000 LAND RESOURCES (LR) – Recreation									
6093	X	X	LR:7.1-7.9	Motorized vehicle use is limited to designated and existing roads and trails in the Bighorn River SRMA.	Motorized vehicle use is limited to designated roads and trails in the Bighorn River SRMA.	Motorized vehicle use is limited to existing roads and trails in the Bighorn River area.	Manage the Bighorn River SRMA the same as Alternative B. Manage motorized vehicle use in the Bighorn River ERMA consistent with underlying resources.	Same as Alternative B.	Same as Alternative D.
Badlands – Tour de Badlands Area									
6094		X	LR:7.1-7.7	The Tour de Badlands area is contained within the Badlands SRMA.	Manage the Tour de Badlands area as an RMZ (122,616 acres) within the Badlands SRMA (220,687 acres).	Do not manage the Tour de Badlands area as an RMA.	Manage the Tour de Badlands area as an RMZ (111,051 acres) within the Badlands SRMA (221,561 acres).	Same as Alternative B.	Same as Alternative D.
6095		X	LR:7.1-7.7	Manage the Tour de Badlands area to maximize recreational opportunities such as sightseeing, hiking, and scenic driving.	Manage the Tour de Badlands RMZ for motorized recreationists to engage in motorized sightseeing, touring, wildlife viewing, and nature viewing so that affected community residents report realizing a "moderate" level of recreation experience and benefit from outcomes listed in Appendix O.	Manage the Tour de Badlands area to address use and user conflicts, public health and safety, and resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6096		X	LR:7.1-7.9	Develop one or more scenic interpretive sites and driving loops in the Tour de Badlands area within the Badlands SRMA to highlight the area's scenic values. These could involve the Fifteenmile Creek and Dorsey Creek roads and the Murphy Draw Road with overlooks at the Painted Canyon of Elk Creek and at Bobcat Draw.	Same as Alternative A, except provide for additional interpretive areas in the Tour de Badlands RMZ on a case-by-case basis.	Develop recreation facilities (i.e., trailheads, trails, etc.) in the Tour de Badlands area only to address use and user conflicts, public health and safety, or resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6097		X	LR:7.1-7.7	Review mineral leases on a case-by-case basis and apply mitigation through activity level planning.	Apply a NSO restriction on the Tour de Badlands RMZ.	The Tour de Badlands area is open to mineral leasing subject to standard protection measures.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
6098		X	LR:7.1-7.7	Allow surface-disturbing activities in the Tour de Badlands area such as geophysical exploration, salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat) on a case-by-case basis.	Prohibit surface-disturbing activities in the Tour de Badlands RMZ such as geophysical exploration (except casual use), salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the Tour de Badlands area such as geophysical exploration (including casual use), salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife).	Allow surface-disturbing activities in the Tour de Badlands RMZ such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat), on a case-by-case basis.	Same as Alternative B.	Same as Alternative D.
6099		X	LR:7.1-7.7	Co-locate ROW whenever possible in the Tour de Badlands area.	Manage the Tour de Badlands RMZ as a ROW avoidance area.	The Tour de Badlands area is open to ROW authorizations.	Manage the Tour de Badlands RMZ as a ROW avoidance area and co-locate ROWs whenever possible.	Same as Alternative B.	Same as Alternative D.
6100		X	LR:7.1-7.7	The Tour de Badlands area is open to renewable energy development.	Manage the Tour de Badlands RMZ as a renewable energy avoidance area.	The Tour de Badlands area is open to renewable energy development.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6101		X	LR:7.1-7.7	Manage the Tour de Badlands area as VRM Classes II, III, and IV.	Manage the Tour de Badlands RMZ as VRM Class II.	Same as Alternative A.	Manage VRM in the Tour de Badlands RMZ consistent with other resource objectives.	Same as Alternative B.	Same as Alternative D.
6102		X	LR:7.1-7.7	Motorized vehicle use is limited to existing roads and trails in the Tour de Badlands area.	Motorized vehicle use is limited to designated roads and trails in the Tour de Badlands RMZ.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
Badlands – Wild Badlands Area									
6103		X	LR:7.1-7.7	The Wild Badlands area is contained within the Badlands SRMA and managed under the authority of BLM Manual 6330, *Management of Wilderness Study Areas*. All lands within the Wild Badlands are Bobcat Draw Badlands, Sheep Mountain, and Red Butte WSAs. See WSA section for management prescriptions.	Manage the Wild Badlands area as an RMZ (51,158 acres) within the Badlands SRMA.	Do not manage the Wild Badlands area as an RMA. All lands within the Wild Badlands area will continue to be managed under BLM Manual 6330. See WSA section for management prescriptions.	Manage the Wild Badlands area as an RMZ (51,155 acres) within the Badlands SRMA.	Same as Alternative B.	Same as Alternative D.
6104		X	LR:7.1-7.4	Manage the Wild Badlands area for naturalness, outstanding opportunities for solitude, and primitive and unconfined recreation. See WSA section for management prescriptions.	Manage the Wild Badlands RMZ exclusively for nonmotorized recreation opportunities, such as hiking, wildlife viewing, and nature viewing so that affected community residents report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O. See WSA section for management prescriptions.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
Badlands – Tatman Mountain Area									
6105		X	LR:7.1-7.9	The Tatman Mountain area is contained within the Badlands SRMA.	Manage the Tatman Mountain area as an RMZ (46,912 acres within the Badlands SRMA).	Do not manage the Tatman area as an RMA.	Manage the Tatman Mountain area as an RMZ (49,354 acres) within the Badlands SRMA.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6106		X	LR:7.1-7.9	Manage the Tatman Mountain area to maximize recreational opportunities such as sightseeing, hiking, and driving for pleasure.	Manage the Tatman Mountain RMZ for nonmotorized recreation opportunities such as hiking, mountain biking, and nature viewing so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Manage the Tatman Mountain area to address use and user conflicts, public health and safety, and resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6107		X	LR:7.1-7.9	Emphasize opportunities for recreational access to the Tatman Mountain area.	Same as Alternative A.	Opportunities for recreational access in the Tatman Mountain area will only be to address use and user conflicts, public health and safety, or resource protection.	Emphasize opportunities for recreational access to the Tatman Mountain RMZ.	Same as Alternative A.	Same as Alternative D.
6108		X	LR:7.1-7.9	Consider the acquisition of legal and/or physical access for recreational opportunities in the Tatman Mountain area.	Acquire legal and physical access to maximize recreational opportunities in the Tatman Mountain RMZ.	Acquisition of legal and/or physical access in the Tatman Mountain area will only be to address use and user conflicts, public health and safety, or resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6109		X	LR:7.1-7.9	Review mineral leases in the Tatman Mountain area on a case-by-case basis and apply mitigation through activity level planning.	Apply a NSO restriction on the Tatman Mountain RMZ.	The Tatman Mountain area is open to mineral leasing subject to standard protection measures.	Apply a CSU stipulation on the Tatman Mountain RMZ.	Same as Alternative B.	Same as Alternative D.
6110		X	LR:7.1-7.9	Allow surface-disturbing activities in the Tatman Mountain area such as geophysical exploration, salable minerals exploration and development, and construction activities (except those related to development of recreation	Prohibit surface-disturbing activities in the Tatman Mountain RMZ such as geophysical exploration (except casual use), salable minerals exploration and development, and construction activities	Allow surface-disturbing activities in the Tatman Mountain area such as geophysical exploration (including casual use), salable minerals exploration and development, and construction activities	Allow surface-disturbing activities in the Tatman Mountain RMZ, such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				facilities or wildlife habitat) on a case-by-case basis.	(except those related to development of recreation facilities or wildlife habitat).	(including those related to development of recreation facilities or wildlife).	development of recreation facilities or wildlife habitat), on a case-by-case basis.		
6111		X	LR:7.1-7.9	Co-locate ROW whenever possible in the Tatman Mountain area.	Manage the Tatman Mountain RMZ as a ROW avoidance area.	The Tatman Mountain area is to open ROW authorizations.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6112		X	LR:7.1-7.9	The Tatman Mountain area is open to renewable energy development.	Manage the Tatman Mountain RMZ as a renewable energy avoidance area.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6113		X	LR:7.1-7.9	Manage the Tatman Mountain area as VRM Classes III and IV.	Manage the Tatman Mountain RMZ as VRM Class II.	Same as Alternative A.	Manage VRM in the Tatman Mountain RMZ consistent with other resource objectives.	Same as Alternative B.	Same as Alternative D.
6114		X	LR:7.1-7.9	Motorized vehicle use is limited to existing roads and trails in the Tatman Mountain area.	Motorized vehicle use is limited to designated roads and trails in the Tatman Mountain RMZ.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative D.
West Slope of the Bighorns Area Cody Field Office									
6115	X		LR:7.1-7.3	Manage the West Slope of the Bighorns as the West Slope SRMA (375,888 acres). Five Springs Falls and Little Mountain ACECs are contained within the West Slope SRMA. Please refer to the ACEC section for management prescriptions.	Manage the West Slope SRMA (406,309 acres) for a destination recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 76) (Appendix O).	Do not manage the West Slope of the Bighorns area as an RMA.	Manage the West Slope SRMA (320,704 acres) for a destination recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 78) (Appendix O).	Same as Alternative B.	Same as Alternative D.
6116	X		LR:7.1-7.3	Manage the West Slope SRMA for motorized and nonmotorized dispersed recreation.	Manage the West Slope SRMA for motorized and nonmotorized recreation opportunities such as hunting, hiking, horseback riding, wildlife viewing, and nature viewing so that recreationists report	Manage the West Slope of the Bighorns to address use and user conflicts, public health and safety, and resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.				
6117	X		LR:7.1-7.9	Develop a recreation site at Rainbow Canyon in the West Slope SRMA.	Do not develop a recreation site at Rainbow Canyon in the West Slope SRMA.	Same as Alternative A, plus include amenities such as an access road, parking, trail, and interpretive signs at Rainbow Canyon in the West Slope of the Bighorns area.	Same as Alternative A, plus include amenities such as an access road, parking, trail, and interpretive signs at Rainbow Canyon in the West Slope SRMA.	Same as Alternative B.	Same as Alternative D.
6118	X		LR:7.1-7.9	Install additional directional and interpretive signs to facilitate recreational use of the West Slope SRMA.	Same as Alternative A.	Do not install interpretive signs in the West Slope of the Bighorns area. Install directional signs.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
6119	X		LR:7.1-7.7	Allow surface-disturbing activities in the West Slope SRMA such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat) on a case-by-case basis.	Prohibit surface-disturbing activities in the West Slope SRMA such as geophysical exploration (except casual use), salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the West Slope of the Bighorns area such as geophysical exploration (including casual use), salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife).	Allow surface-disturbing activities in the West Slope SRMA such as geophysical exploration (including casual use), salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife).	Same as Alternative B.	Same as Alternative D.
6120	X		LR:7.1-7.7	The West Slope SRMA is open to renewable energy development.	Manage the West Slope SRMA as a renewable energy avoidance area.	The West Slope of the Bighorns area is open to renewable energy development.	The West Slope SRMA is open to renewable energy development	Same as Alternative B.	Same as Alternative D.
6121	X		LR:7.1-7.9	Manage the West Slope SRMA as VRM Classes II, III, and IV.	Manage the West Slope SRMA as VRM Class II.	Same as Alternative A.	Manage the West Slope SRMA as VRM Classes II and III.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6122	X		LR:7.1-7.9	Motorized vehicle use is limited to designated roads and trails in the West Slope SRMA.	Motorized vehicle use is limited to designated roads and trails in the West Slope SRMA.	Motorized vehicle use is limited to existing roads and trails in the West Slope of the Bighorns area.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
West Slope of the Bighorns Worland Field Office – Trapper Creek Area									
6123		X	LR:7.1-7.9	The Trapper Creek area (which includes Trapper Creek and Alkali Creek WSAs, and Spanish Point Karst ACEC) is contained within the West Slope SRMA. See the WSA and ACEC sections for management prescriptions.	Manage the Trapper Creek area as an RMZ (83,806 acres) contained within the West Slope SRMA.	Do not manage the Trapper Creek area as an RMA.	Manage the Trapper Creek area as part of the Canyons RMZ (141,603 acres) contained within the West Slope of the Bighorns SRMA (320,704 acres in WFO).	Same as Alternative B.	Same as Alternative D.
6124		X	LR:7.1-7.9	Manage the Trapper Creek area for motorized and nonmotorized dispersed recreation.	Manage the Trapper Creek RMZ for motorized and nonmotorized recreation opportunities such as hiking, wildlife viewing, nature viewing, and driving for pleasure so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Manage the Trapper Creek area to address use and user conflicts, public health and safety, and resource protection.	Manage the Trapper Creek area of the Canyons RMZ for motorized and non-motorized recreation opportunities such as hiking, wildlife viewing, nature viewing, and driving for pleasure so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Same as Alternative B.	Same as Alternative D.
6125		X	LR:7.1-7.9	Consider the acquisition of legal and/or physical access for hunting, fishing, and camping. Consider acquiring areas such as Horse Mountain, Trapper Creek, and White Creek.	Same as Alternative A, plus acquire legal public access for motorized and/or mechanized vehicle use in the Trapper Creek RMZ.	Acquisition of legal and/or physical access in the Trapper Creek area will only be to address use and user conflicts, public health and safety, or resource protection.	Same as Alternative A, plus acquire legal public access for motorized and/or mechanized vehicle use in the Trapper Creek area of the Canyons RMZ.	Same as Alternative B.	Same as Alternative D.
6126		X	LR:7.1-7.9 LR:8.1	Develop facilities necessary for site protection and visitor management at the	Same as Alternative A, plus develop the following facilities in the Trapper	Facility development to maximize recreational opportunities in the	Same as Alternative A, plus develop the following facilities in the Trapper	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				trailhead in the Trapper Creek area. Facilities may include fire rings, comfort stations, fencing, parking areas, road improvements and vehicle barriers, and trail and bridge repair, depending on the needs of the specific site.	Creek RMZ: • Trailheads for White Creek, Black Mountain areas. • Trailheads to accommodate mountain bike users. • Pull-offs along the Red Gulch/Alkali Road National Back Country Byway. • Designate motorized touring loops within the Trapper Creek RMZ, as well as connecting with the Paint Rock RMZ and the Bighorn National Forest, which may include new construction. • Other sites will be determined on a case-by-case basis.	Trapper Creek area will be a low priority. Facility development will only be to address use and user conflicts, public health and safety, or resource protection.	Creek area of the Canyons RMZ: • Trailheads for White Creek, Black Mountain areas. • Trailheads to accommodate mountain bike users. • Pull-offs along the Red Gulch/Alkali Road National Back Country Byway. • Designate motorized touring loops within the Trapper Creek area, as well as connecting with the Paint Rock area and the Bighorn National Forest, which may include new construction. • Other sites will be determined on a case-by-case basis.		
6127		X	LR:7.1-7.9	Review mineral leases on a case-by-case basis and apply mitigation through activity level planning in the Trapper Creek area.	Apply a NSO restriction on the Trapper Creek RMZ.	The Trapper Creek area is open to mineral leasing subject to standard protection measures, with the exception of Trapper Creek WSA, and Spanish Point ACEC.	Apply a CSU stipulation on the Trapper Creek area of the Canyons RMZ.	Same as Alternative B.	Same as Alternative D.
6128		X	LR:7.1-7.9	Allow surface-disturbing activities in the Trapper Creek area such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to	Prohibit surface-disturbing activities in the Trapper Creek RMZ such as geophysical exploration (except casual use), salable minerals exploration and development, and	Allow surface-disturbing activities in the Trapper Creek area such as geophysical exploration (including casual use), salable minerals exploration and development, and	Allow surface-disturbing activities in the Trapper Creek area of the Canyons RMZ such as geophysical exploration, salable minerals exploration and development, and construction activities	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				development of recreation facilities or wildlife habitat) on a case-by-case basis.	construction activities (except those related to development of recreation facilities or wildlife habitat).	construction activities (including those related to development of recreation facilities or wildlife), except in the Trapper Creek WSA.	(including those related to development of recreation facilities or wildlife habitat) if the effects can be avoided, minimized and/or compensated based on site-specific analysis.		
6129		X	LR:7.1-7.7	Manage lands within the Trapper Creek area as ROW avoidance areas. Co-locate ROW whenever possible.	Manage the Trapper Creek RMZ as a ROW avoidance area.	The Trapper Creek area is open to ROW authorizations.	Manage the Trapper Creek area of the Canyons RMZ as a ROW avoidance area.	Same as Alternative B.	Same as Alternative D.
6130		X	LR:7.1-7.7	The Trapper Creek area is open to renewable energy development.	Manage the Trapper Creek RMZ as a renewable energy avoidance area.	Same as Alternative A.	Manage the Trapper Creek area of the Canyons RMZ as a renewable energy avoidance area.	Same as Alternative B.	Same as Alternative D.
6131		X	LR:7.1-7.7	Manage the Trapper Creek area as VRM Classes II, III, and IV.	Manage the Trapper Creek RMZ as VRM Class II.	Same as Alternative A.	Manage the Trapper Creek area of the Canyons RMZ area as VRM Classes I, II, and III.	Same as Alternative B.	Same as Alternative D.
6132		X	LR:7.1-7.7	Motorized vehicle use is limited to designated roads and trails in the Trapper Creek area.	Motorized vehicle use is limited to designated roads and trails in the Trapper Creek RMZ.	Same as Alternative A.	Motorized vehicle use is limited to designated roads and trails in the Trapper Creek area of the Canyons RMZ.	Same as Alternative B.	Same as Alternative D.
West Slope of the Bighorns Worland Field Office – Paint Rock Area									
6133		X	LR:7.1-7.9	The Paint Rock area is contained within the West Slope SRMA. Medicine Lodge WSA and the Spanish Point Karst ACEC are contained within this area. See WSA and ACEC sections for management prescriptions.	Manage the Paint Rock area (45,017 acres) as an RMZ contained within the West Slope SRMA.	Do not manage the Paint Rock area as an RMA.	Manage the Paint Rock area as part of the Canyons RMZ (141,603 acres) contained within the West Slope of the Bighorns SRMA.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6134		X	LR:7.1-7.9	Manage the Paint Rock area for motorized and nonmotorized dispersed recreation.	Manage the Paint Rock RMZ for motorized and nonmotorized recreation opportunities to engage in hiking, wildlife viewing, nature viewing, and driving for pleasure so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Manage the Paint Rock area to address use and user conflicts, public health and safety, and resource protection.	Manage the Paint Rock area of the Canyons RMZ for motorized and nonmotorized recreation opportunities to engage in hiking, wildlife viewing, nature viewing, and driving for pleasure so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Same as Alternative B.	Same as Alternative D.
6135		X	LR:7.1-7.9	Emphasize opportunities for recreational access, especially in the Laddie Creek and Paint Rock Creek areas.	Same as Alternative A, plus pursue yearlong access to the Paint Rock canyon via the Paint Rock Trail in the Paint Rock RMZ.	Opportunities for recreational access in the Paint Rock area will only be to address use and user conflicts, public health and safety, or resource protection.	Emphasize opportunities for recreational access, especially in the Laddie Creek and Paint Rock Creek areas and pursue yearlong access to the Paint Rock canyon via the Paint Rock Trail in the Paint Rock area of the Canyons RMZ.	Same as Alternative B.	Same as Alternative D.
6136		X	LR:7.1-7.9 LR:8.1	Develop facilities necessary for site protection and visitor management at the trailheads on Paint Rock Creek and Medicine Lodge Creek in the Paint Rock area. Facilities may include fire rings, comfort stations, fencing, parking areas, road improvements and vehicle barriers, and trail and bridge repair, depending on the needs of the specific site.	Develop facilities to enhance recreation and visitor services for the following areas in the Paint Rock RMZ: • Trailheads/pull-offs along the Red Gulch/Alkali Road National Back Country Byway. • Upgrade Access route and Trailhead at the Lone Tree Trail. • Trailhead at the Wapati Ridge.	Facility development to maximize recreational opportunities in the Paint Rock area will be a low priority. Facility development will only be to address use and user conflicts, public health and safety, or resource protection.	Develop facilities to enhance recreation and visitor services for the following areas in the Paint Rock area of the Canyons RMZ: • Trailheads/pull-offs along the Red Gulch/Alkali Road National Back Country Byway. • Upgrade Access route and Trailhead at the Lone Tree Trail. • Designate motorized touring loops	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					• Hiking trails in Wet and Dry Medicine Lodge Canyons. • Designate motorized touring loops connecting with the Bighorn National Forest, the Trapper Creek RMZ, and the Brokenback/Logging Road RMZ, which may include new construction. • Other sites will be determined on a case-by-case basis.		connecting with the Bighorn National Forest, the Trapper Creek area, and the Brokenback/Logging Road RMZ, which may include new construction. • Other sites, trailheads, and trails will be determined on a case-by-case basis.		
6137		X	LR:7.1-7.9	Review mineral leases on a case-by-case basis and apply mitigation through activity level planning in the Paint Rock area.	Apply a NSO restriction on the Paint Rock RMZ.	The Paint Rock area will be open to mineral leasing subject to standard protection measures.	Apply a CSU stipulation on the Paint Rock area of the Canyons RMZ.	Same as Alternative B.	Same as Alternative D.
6138		X	LR:7.1-7.9	Allow surface-disturbing activities in the Paint Rock area such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat) on a case-by-case basis.	Prohibit surface-disturbing activities in the Paint Rock RMZ such as geophysical exploration (except casual use), salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the Paint Rock area such as geophysical exploration (including casual use), salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife).	Allow surface-disturbing activities in the Paint Rock area of the Canyons RMZ such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat) if the effects can be avoided, minimized and/or compensated based on site-specific analysis.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6139		X	LR:7.1-7.7	Manage the Paint Rock area as a ROW avoidance area. Co-locate ROW authorizations whenever possible.	Manage the Paint Rock RMZ as a ROW avoidance area.	The Paint Rock area is open to ROW authorizations, with the exception of the Medicine Lodge WSA.	Manage the Paint Rock area of the Canyons RMZ as a ROW avoidance area.	Same as Alternative B.	Same as Alternative D.
6140		X	LR:7.1-7.7	The Paint Rock area is open to renewable energy development.	Manage the Paint Rock RMZ as a renewable energy avoidance area.	The Paint Rock area, with the exception of the Medicine Lodge WSA and the Spanish Point ACEC, is open to renewable energy development.	Manage the Paint Rock area of the Canyons RMZ as a renewable energy avoidance area.	Same as Alternative B.	Same as Alternative D.
6141		X	LR:7.1-7.7	Manage the Paint Rock area as VRM Classes II, III, and IV.	Manage the Paint Rock RMZ as VRM Class II.	Same as Alternative A.	Manage the Paint Rock area of the Canyons RMZ as VRM Class I and II.	Same as Alternative B.	Same as Alternative D.
6142		X	LR:7.1-7.7	Motorized vehicle use is limited to designated roads and trails in the Paint Rock area. Continue to implement travel management plans in the Paint Rock area.	Motorized vehicle use is limited to designated roads and trails in the Paint Rock RMZ.	Motorized vehicle use is limited to existing roads and trails in the Paint Rock area. Maintain implemented travel management plans.	Motorized vehicle use is limited to designated roads and trails in the Paint Rock area of the Canyons RMZ.	Same as Alternative B.	Same as Alternative D.
West Slope of the Bighorns Worland Field Office – Brokenback/Logging Road Area									
6143		X	LR:7.1-7.9	The Brokenback/Logging Road area is contained within the West Slope SRMA.	Manage Brokenback/ Logging Road as an RMZ (63,725 acres) contained within the West Slope SRMA.	Do not manage the Brokenback/Logging Road area as an RMA.	Manage Brokenback/ Logging Road as an RMZ (49,325 acres) contained within the West Slope of the Bighorns SRMA.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6144		X	LR:7.1-7.9	Manage the Brokenback/ Logging Road area for motorized and nonmotorized dispersed recreation.	Manage the Brokenback/ Logging Road RMZ for motorized and nonmotorized recreation opportunities such as hiking, wildlife viewing, nature viewing, and driving for pleasure so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Manage the Brokenback/ Logging Road area to address use and user conflicts, public health and safety, and resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6145		X	LR:7.1-7.9	Emphasize opportunities for recreational access, especially in the Laddie Creek areas of the Brokenback/Logging Road area.	Same as Alternative A, also including additional areas within the Brokenback/Logging Road RMZ to be determined on a case-by-case basis.	Opportunities for recreational access in the Brokenback/Logging Road area will only be to address use and user conflicts, public health and safety, or resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6146		X	LR:7.1-7.9	Consider the acquisition of legal and/or physical access for hunting, fishing, boating, and camping in the Brokenback/Logging Road area. Consider areas for acquisition including North and South Brokenback Creek.	Same as Alternative A, with the following additions in the Brokenback/Logging Road RMZ: • Luman Creek Road. • Military Creek Road. • Dorn Draw Road. • Other sites will be determined on a case-by-case basis.	Acquisition of legal and/or physical access in the Brokenback/Logging Road area will only be to address use and user conflicts, public health and safety, or resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6147		X	LR:7.1-7.9 LR:8.1	Develop facilities necessary for site protection and visitor management in the Brokenback/Logging Road area.	Develop facilities to enhance recreation and visitor services for the following areas in the Brokenback/Logging Road RMZ: • Trailheads for North and South Brokenback areas, Laddie Creek, and the Hyattville Logging Road Back Country Byway. • Pull-outs along the Hyattville Logging Road Back Country Byway. • Improve Salt Lick Trail and trailhead. • Construct additional trailheads and trails. • Designate motorized touring loops within the Brokenback/Logging road RMZ as well as connecting with the Paint Rock RMZ and the Bighorn National Forest, which may include new construction. • Other sites will be determined on a case-by-case basis.	Facility development to maximize recreational opportunities in the Brokenback/Logging Road area will be a low priority. Facility development will only be to address use and user conflicts, public health and safety, or resource protection.	Develop facilities to enhance recreation and visitor services for the following areas in the Brokenback/Logging Road RMZ: • Trailheads for North and South Brokenback areas, Laddie Creek, and the Hyattville Logging Road. • Pull-outs along the Hyattville Logging Road. • Improve Salt Lick Trail and trailhead. • Designate motorized touring loops within the Brokenback/Logging road RMZ as well as connecting with the Paint Rock area and the Bighorn National Forest, which may include new construction. • Other sites, trailheads and trails will be determined on a case-by-case basis.	Same as Alternative B.	Same as Alternative D.
6148		X	LR:7.1-7.9	Review mineral leases on a case-by-case basis and apply mitigation through activity level planning in the Brokenback/Logging Road area.	Apply a NSO restriction on the Brokenback/Logging Road RMZ.	The Brokenback/Logging Road area is open to mineral leasing subject to standard protection measures.	Apply a CSU stipulation on the Brokenback/Logging Road RMZ.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6149		X	LR:7.1-7.7	Allow surface-disturbing activities in the Brokenback/Logging Road area such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat) on a case-by-case basis.	Prohibit surface-disturbing activities in the Brokenback/Logging Road RMZ such as geophysical exploration (except casual use), salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the Brokenback/Logging Road area such as geophysical exploration (including casual use), salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife).	Allow surface-disturbing activities in the Brokenback/Logging Road RMZ such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat) if the effects can be avoided, minimized and/or compensated based on site-specific analysis.	Same as Alternative B.	Same as Alternative D.
6150		X	LR:7.1-7.7	Manage the Brokenback/Logging Road area as a ROW avoidance area. Co-locate ROW authorizations whenever possible.	Manage the Brokenback/Logging Road RMZ as a ROW avoidance area.	The Brokenback/Logging Road area is open to ROW authorizations.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6151		X	LR:7.1-7.7	The Brokenback/Logging Road area is open to renewable energy development.	The Brokenback/Logging Road RMZ is closed to renewable energy development.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6152		X	LR:7.1-7.7	Manage the Brokenback/Logging Road area as VRM Classes II, III, and IV.	Manage the Brokenback/Logging Road RMZ as VRM Class II.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6153		X	LR:7.1-7.7	Motorized vehicle use is limited to designated roads and trails in the Brokenback/Logging Road area. Implement travel management plans in the Brokenback/Logging Road.	Motorized vehicle use is limited to designated roads and trails in the Brokenback/Logging Road RMZ.	Motorized vehicle use is limited to existing roads and trails in the Brokenback/Logging Road area. Maintain implemented travel management plans.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
West Slope of the Bighorns Worland Field Office – South Bighorns Area									
6154		X	LR:7.1-7.9	The South Bighorns area is contained within the West Slope SRMA.	Manage the South Bighorns area as an RMZ (83,991 acres) contained within the West Slope SRMA.	Do not manage the South Bighorns area as an RMA.	Manage a portion of the South Bighorns area as the Middle Fork of the Powder River SRMA (14,644 acres) and a portion as the Southern Bighorns ERMA (69,325 acres).	Same as Alternative B.	Same as Alternative D.
6155		X	LR:7.1-7.9	Manage the South Bighorns area for motorized and nonmotorized dispersed recreation.	Manage the South Bighorns RMZ for motorized and nonmotorized recreation opportunities such as hiking, wildlife viewing, nature viewing, hunting, fishing and driving for pleasure so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Manage the South Bighorns area to address use and user conflicts, public health and safety, and resource protection.	Manage the Middle Fork of the Powder River SRMA for motorized and nonmotorized recreation opportunities such as hiking, wildlife viewing, nature viewing, hunting, fishing and driving for pleasure so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O. Manage the Southern Bighorns ERMA to address use and user conflicts, public health and safety, resource protection, and for desired recreation setting character conditions as listed in Appendix O.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6156		X	LR:7.1-7.9	Emphasize opportunities for recreational access, especially in the Upper Nowood River areas in the South Bighorns area.	Emphasize recreational access to maximize recreational opportunities in the South Bighorns RMZ.	Opportunities for recreational access in the South Bighorns area will only be in response to use and user conflicts, public health and safety, or to address resource protection.	Emphasize recreational access to maximize recreational opportunities in the Middle Fork of the Powder River SRMA and the Southern Bighorns ERMA.	Same as Alternative B.	Same as Alternative D.
6157		X	LR:7.1-7.9	Consider the acquisition of legal and/or physical access for hunting, fishing, boating, and camping in the South Bighorns area. Areas considered for acquisition include Otter Creek, Deep Creek, Little Canyon Creek, and public land tracts along the Nowood River area.	Same as Alternative A, with the following additions in the South Bighorns RMZ: • Cherry Creek Road to Hazelton Road. • Access to land parcels within Spring Creek. • Spring Creek Road to Rome Hill Road. • Lysite Mountain. • Other sites will be determined on a case-by-case basis.	Acquisition of legal and/or physical access in the South Bighorns area will only be to address use and user conflicts, public health and safety, or resource protection.	Manage the Middle Fork of the Powder River SRMA and the Southern Bighorns ERMA the same as Alternative A. Other sites will be determined on a case-by-case basis.	Same as Alternative B.	Same as Alternative D.
6158		X	LR:7.1-7.9 LR:8.1	In the South Bighorns area, develop facilities necessary for site protection and visitor management at the Middle Fork camping area and the Cherry Creek stock driveway crossing of Deep Creek, and in Otter Creek. Facilities may include fire rings, comfort stations, fencing, parking areas, road improvements and vehicle barriers, and trail and bridge repair, depending on the needs of the specific site.	In the South Bighorns RMZ, develop facilities necessary to maximize recreational opportunities in the areas the same as Alternative A, with the following additions: • Trailheads for Middle Fork Campground, Mahogany Butte, Deep Creek, Upper Nowood areas, and in other areas determined on a case-by-case basis.	Facility development to maximize recreational opportunities in the South Bighorns area will be a low priority. Facility development will only be to address use and user conflicts, public health and safety, or resource protection.	In the Middle Fork of the Powder River SRMA and the Southern Bighorns ERMA, develop facilities necessary to maximize recreational opportunities in the areas the same as Alternative A, with the following additions: • Trailheads for Middle Fork Campground, Mahogany Butte, Deep Creek, Upper Nowood areas, and in other areas determined on a case-by-case basis.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6159		X	LR:7.1-7.9	Review mineral leases on a case-by-case basis and apply mitigation through activity level planning in the South Bighorns area.	Apply a NSO restriction on the South Bighorns RMZ.	The South Bighorns area will be open to mineral leasing subject to standard protection measures.	Apply a CSU stipulation on the Middle Fork of the Powder River SRMA. Review mineral leases on a case-by-case basis and apply mitigation through activity level planning in the Southern Bighorns ERMA.	Same as Alternative B.	Same as Alternative D.
6160		X	LR:7.1-7.7	Allow surface-disturbing activities in the South Bighorns area such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat) on a case-by-case basis.	Prohibit surface-disturbing activities in the South Bighorns RMZ such as geophysical exploration (except casual use), salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the South Bighorns area such as geophysical exploration (including casual use), salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife).	Allow surface-disturbing activities in the Middle Fork of the Powder River SRMA such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat) if the effects can be avoided, minimized and/or compensated based on site-specific analysis. Allow surface-disturbing activities in the Southern Bighorns ERMA.	Same as Alternative B.	Same as Alternative D.
6161		X	LR:7.1-7.7	Manage the South Bighorns area as a ROW avoidance area. Co-locate ROW authorizations whenever possible.	Manage the South Bighorns RMZ as a ROW avoidance area.	The South Bighorns area is open to ROW authorizations.	Manage the Middle Fork of the Powder River SRMA and the Southern Bighorns ERMA as ROW avoidance areas.	Same as Alternative B.	Same as Alternative D.
6162		X	LR:7.1-7.7	The South Bighorns area is open to renewable energy development.	Manage the South Bighorns RMZ as a renewable energy avoidance area.	The South Bighorns area is open to renewable energy development.	The South Bighorns ERMA is open to renewable energy development.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6163		X	LR:7.1-7.7	Manage the South Bighorns area as VRM Classes II, III, and IV.	Manage the South Bighorns RMZ as VRM Class II.	Same as Alternative A.	Manage VRM in the Southern Bighorns ERMA consistent with other resource objectives. Manage the Middle Fork of the Powder River SRMA as VRM Class II.	Same as Alternative B.	Same as Alternative D.
6164		X	LR:7.1-7.7	Motorized vehicle use is limited to designated roads and trails in the South Bighorns area. Implement Travel management plans in areas within this area.	Motorized vehicle use is limited to designated roads and trails in the South Bighorns RMZ.	Motorized vehicle use is limited to existing roads and trails in the South Bighorns area. Maintain implemented travel management plans.	Motorized vehicle use is limited to designated roads and trails in the Middle Fork of the Powder River SRMA and the Southern Bighorns ERMA.	Same as Alternative B.	Same as Alternative D.
Canyon Creek Area									
6165		X	LR:7.1-7.9	The Canyon Creek area is contained within the West Slope SRMA.	Manage Canyon Creek area as an SRMA (3,675 acres) with a community recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 76) (Appendix O).	Do not manage the Canyon Creek area as an RMA.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6166		X	LR:7.1-7.9	Manage the Canyon Creek area for motorized and nonmotorized dispersed recreation.	Manage the Canyon Creek SRMA for nonmotorized recreation opportunities such as hiking, fishing, nature viewing, and wildlife viewing so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Manage the Canyon Creek area to address use and user conflicts, public health and safety, and resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6167		X	LR:7.1-7.9	Emphasize opportunities for recreational access to the Canyon Creek area.	Emphasize opportunities for recreational access to the Canyon Creek SRMA.	Opportunities for recreational access in the Canyon Creek area will only be to address use and user conflicts, public health and safety, or resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6168		X	LR:7.1-7.9	Consider the acquisition of legal and/or physical access for hunting, fishing, and camping in the Canyon Creek area.	Acquire legal and physical access to maximize recreational opportunities in the Canyon Creek SRMA.	Acquisition of legal and/or physical access in the Canyon Creek area will only be to address use and user conflicts, public health and safety, or resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6169		X	LR:7.1-7.9 LR:8.1	Develop facilities necessary for site protection and visitor management in the Canyon Creek area. Facilities may include fire rings, comfort stations, fencing, parking areas, road improvements and vehicle barriers, and trail and bridge repair, depending on the needs of the specific site.	Develop facilities to enhance recreation and visitor services for the following areas in the Canyon Creek SRMA: • Looping hiking trails in Canyon Creek and off of Smilo Road. • Trailhead at Canyon Creek and Smilo Road. • Other sites will be determined on a case-by-case basis.	Facility development to maximize recreational opportunities in the Canyon Creek area will be a low priority. Facility development will only be in response to use and user conflicts, public health and safety, or to address resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6170		X	LR:7.1-7.9	Apply a NSO restriction on the Canyon Creek area. Review mineral leases on a case-by-case basis and apply mitigation through activity level planning.	Apply a NSO restriction on the Canyon Creek SRMA.	The Canyon Creek area is open to mineral leasing subject to standard protection measures.	Apply a CSU stipulation on the Canyon Creek SRMA.	Same as Alternative B.	Same as Alternative D.
6171		X	LR:7.1-7.7	Allow surface-disturbing activities in the Canyon Creek area such as geophysical exploration, salable minerals exploration and development, and	Prohibit surface-disturbing activities in the Canyon Creek SRMA such as geophysical exploration (except casual use), salable minerals	Allow surface-disturbing activities in the Canyon Creek area such as geophysical exploration (including casual use), salable minerals	Allow surface-disturbing activities in the Canyon Creek SRMA such as geophysical exploration, salable minerals exploration and	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				construction activities (including those related to development of recreation facilities or wildlife habitat) on a case-by-case basis.	exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat).	exploration and development, and construction activities (including those related to development of recreation facilities or wildlife).	development, and construction activities (including those related to development of recreation facilities or wildlife habitat) if the effects can be avoided, minimized and/or compensated based on site-specific analysis.		
6172		X	LR:7.1-7.7	Manage the Canyon Creek area as a ROW avoidance area. Co-locate ROW whenever possible.	Manage the Canyon Creek SRMA as a ROW avoidance area.	The Canyon Creek area is open to ROW authorizations.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6173		X	LR:7.1-7.7	The Canyon Creek area is open to renewable energy development.	Manage the Canyon Creek SRMA as a renewable energy avoidance area.	The Canyon Creek area is open to renewable energy development.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6174		X	LR:7.1-7.7	Manage the Canyon Creek area as VRM Classes II, III, and IV.	Manage the Canyon Creek SRMA as VRM Class II.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6175		X	LR:7.1-7.7	Motorized vehicle use is limited to designated roads and trails in the Canyon Creek area.	Motorized vehicle use is limited to designated roads and trails in the Canyon Creek SRMA.	Motorized vehicle use is limited to existing roads and trails in the Canyon Creek area.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
				Red Canyon Creek Area					
6176		X	LR:7.1-7.7	The Red Canyon Creek area is contained within the Worland ERMA.	Manage Red Canyon Creek as an SRMA (8,435 acres) with a community recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 76) (Appendix O).	Do not manage the Red Canyon Creek area as an RMA.	Manage the Red Canyon Creek as an ERMA (8,435 acres).	Same as Alternative B.	Same as Alternative D.
6177		X	LR:7.1-7.7	Manage the Red Canyon Creek area to address use and user conflicts, public health and safety, and resource protection.	Manage the Red Canyon Creek SRMA for motorized and nonmotorized recreation opportunities such as hiking, wildlife	Manage the Red Canyon Creek area to address use and user conflicts, public health and safety, and resource protection.	Manage the Red Canyon Creek ERMA to maximize back country recreational opportunities and to address use and user	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					viewing, and nature viewing so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.		conflicts, public health and safety, resource protection, and for desired recreation setting character conditions as listed in Appendix O.		
6178		X	LR:7.1-7.7 LR:8.1	Consider establishing trailheads in the Red Canyon Creek area consistent with an overall objective to emphasize primitive recreation.	Same as Alternative A.	Consider establishing trailheads in Red Canyon Creek area only to address use and user conflict, public health and safety, or resource protection.	Consider establishing trailheads in the Red Canyon Creek ERMA consistent with an overall objective to emphasize primitive recreation.	Same as Alternative A.	Same as Alternative D.
6179		X	LR:7.4-7.7	Review mineral leases on a case-by-case basis. The Red Canyon Creek area is available for locatable mineral entry. Authorize mineral materials disposal and/or free use permits. Apply mitigation through activity level planning.	Apply a NSO restriction on the Red Canyon Creek SRMA.	The Red Canyon Creek area is open to mineral leasing subject to standard protection measures.	Review mineral leases on a case-by-case basis. The Red Canyon Creek ERMA is available for locatable mineral entry. Authorize mineral materials disposal and/or free use permits. Apply mitigation through activity level planning.	Same as Alternative B.	Same as Alternative D.
6180		X	LR:7.4-7.7	Allow surface-disturbing activities in the Red Canyon Creek area such as geophysical exploration and construction activities (including those related to development of recreation facilities or wildlife habitat) on a case-by-case basis.	Prohibit surface-disturbing activities in the Red Canyon Creek SRMA such as geophysical exploration (except casual use) and construction activities (except those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the Red Canyon Creek area such as geophysical exploration (including casual use) and construction activities (including those related to development of recreation facilities or wildlife).	Allow surface-disturbing activities in the Red Canyon Creek ERMA.	Same as Alternative B.	Same as Alternative D.
6181		X	LR:7.4-7.7	Co-locate ROW whenever possible in the Red Canyon Creek area.	Manage the Red Canyon Creek SRMA as a ROW avoidance area.	The Red Canyon Creek area is open to new ROW authorizations.	Manage the Red Canyon Creek ERMA as a ROW avoidance area.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6182		X	LR:7.4-7.7	The Red Canyon Creek area is open to renewable energy development.	Manage the Red Canyon Creek SRMA as a renewable energy avoidance area.	The Red Canyon Creek area is open to renewable energy development.	Manage the Red Canyon Creek ERMA as a renewable energy avoidance area.	Same as Alternative B.	Same as Alternative D.
6183		X	LR:7.4-7.7	Manage the Red Canyon Creek area as VRM Class II.	Same as Alternative A.	Manage the Red Canyon Creek area as VRM Class IV.	Manage the Red Canyon Creek ERMA as VRM Classes II and III.	Same as Alternative A.	Same as Alternative D.
6184		X	LR:7.4-7.7	Motorized vehicle use is limited to designated roads and trails in the Red Canyon Creek area.	Same as Alternative A.	Motorized vehicle use is limited to existing roads and trails in the Red Canyon Creek area.	Motorized vehicle use is limited to designated roads and trails in the Red Canyon Creek ERMA.	Same as Alternative A.	Same as Alternative D.
The Rivers Area									
6185	X		LR:7.1-7.7	Manage the North and South Forks of the Shoshone, the Shoshone, and the Clarks Fork of the Yellowstone Rivers as The Rivers SRMA (18,247 acres).	Manage the North and South Forks of the Shoshone, the Shoshone, and the Clarks Fork of the Yellowstone Rivers, including a ¼ mile buffer on either side, as The Rivers SRMA (18,247 acres) with a destination recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 76) (Appendix O).	Do not manage the North and South Forks of the Shoshone, the Shoshone, and the Clarks Fork of the Yellowstone Rivers areas as an RMA.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6186	X		LR:7.1-7.7	Manage The Rivers SRMA for recreational benefit.	Manage The Rivers SRMA for motorized and nonmotorized recreation opportunities such as fishing, floating, hunting, hiking, and nature viewing so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Manage the Rivers area to address use and user conflicts, public health and safety, and resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6187	X		LR:7.1-7.7	Manage lands within 1 mile of the Shoshone, Greybull, and Clarks Fork of the Yellowstone Rivers as avoidance areas for construction of above ground powerlines.	Manage lands within 1 mile of the Shoshone, Greybull, and Clarks Fork of the Yellowstone Rivers as avoidance areas for construction of above ground powerlines.	Allow construction of above ground powerlines within 1 mile of the Shoshone, Greybull, and Clarks Fork of the Yellowstone Rivers.	Manage lands within 1 mile of the Shoshone and Clarks Fork of the Yellowstone Rivers as avoidance areas for construction of above ground powerlines, except in designated corridors.	Same as Alternative B.	Same as Alternative D.
6188	X		LR:7.1-7.7	Retain recreational access to the North and South Forks of the Shoshone, the Shoshone, and the Clarks Fork of the Yellowstone Rivers.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A, plus increase emphasis on float access and facilities where appropriate.	Same as Alternative A.	Same as Alternative D.
6189	X		LR:7.1-7.7	Apply a NSO restriction in The Rivers SRMA on some lands within The Rivers SRMA (WGFD/BLM access areas on the Clarks Fork of the Yellowstone and the North and South Forks of the Shoshone River).	Same as Alternative A.	WGFD/BLM access areas on the Clarks Fork of the Yellowstone and the North and South Forks of the Shoshone Rivers are open to oil and gas leasing subject to standard protection measures.	Apply a NSO restriction on areas within ¼ mile of campgrounds, trailheads, day use areas, river access sites, and similar recreational sites (Map 78) within The Rivers SRMA.	Same as Alternative A.	Same as Alternative D.
6190	X		LR:7.1-7.7	Prohibit surface-disturbing activities in The Rivers SRMA such as geophysical exploration (except casual use), salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat).	Same as Alternative A.	Allow surface-disturbing activities in the Rivers area such as geophysical exploration (including casual use), salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife).	Allow surface-disturbing activities such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat) within campgrounds, trailheads, day use areas, river access sites, and similar recreational sites and trails within The Rivers SRMA if the effects can be avoided, minimized	Same as Alternative A.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							and/or compensated based on site-specific analysis.		
6191	X		LR:7.1-7.7	The Rivers SRMA is open to renewable energy development.	Manage The Rivers SRMA as a renewable energy avoidance area.	The Rivers area is open to renewable energy development.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6192	X		LR:7.1-7.7	Within The Rivers SRMA, manage the North and South Forks of the Shoshone and the Clarks Fork of the Yellowstone Rivers as VRM Class II and manage the Shoshone River as VRM Class III.	Manage The Rivers SRMA as VRM Class II.	Manage the North and South Forks of the Shoshone and the Clarks Fork of the Yellowstone Rivers as VRM Class II and manage the Shoshone River as VRM Class III.	Manage the Rivers SRMA as VRM Class II.	Same as Alternative B.	Same as Alternative D.
6193	X		LR:7.1-7.7	Motorized vehicle use in The Rivers SRMA is limited to designated roads and trails for the North and South Forks of the Shoshone and the Clarks Fork of the Yellowstone Rivers area; and is limited to existing roads and trails for the Shoshone River area.	Same as Alternative A.	Motorized vehicle use is limited to existing roads and trails in the Rivers area.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
Historic Trails Area									
6194	X	X	LR:7.1-7.7	Manage significant segments of the Historic Trails area as an SRMA (12,065 acres) (not including NHTs) to retain their resource values.	Do not manage the Historic Trails area as an RMA**.** Management of historic trails resources will be under custodial recreation management addressing public health and safety, use and user conflicts, and resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6195	X		LR:7.1-7.7	See Cultural Resources and NHT alternatives for management associated with the Historic Trails area.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
				Worland Caves (Caves in Cody FO)					
6196	X		LR:7.1-7.7	Manage cave and karst resources as the Worland Caves SRMA.	Manage cave and karst resources as the Caves and Karst ERMA. Site-specific management actions will address issues specific to each cave(s) addressing use and user conflict, public health and safety, and resource protection.	Do not manage the cave and karst resources as an RMA. Management of cave and karst resources will address public health and safety, use and user conflicts, and resource protection.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
6197	X		LR:7	See Cave and Karst Resources alternatives for management of these resources.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
				McCullough Peaks Area					
6198	X		LR:7.1-7.7	Manage the McCullough Peaks under the Cody ERMA. The McCullough Peaks WSA is contained within the McCullough Peaks area. See WSA section for management prescriptions.	Manage the McCullough Peaks area as an SRMA (160,868 acres) with a destination recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 76) (Appendix O).	Do not manage the McCullough Peaks area as an RMA. Management of resources within the McCullough Peaks area will be under custodial recreation management addressing public health and safety, use and user conflicts, and resource protection.	Manage the McCullough Peaks area as an SRMA (160,838 acres) with a destination recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 78) (Appendix O).	Same as Alternative B.	Same as Alternative D.
6199	X		LR:7.1-7.7	Manage the McCullough Peaks SRMA for motorized and nonmotorized dispersed recreation.	Manage the McCullough Peaks SRMA for motorized and nonmotorized recreation opportunities such as wildlife and wild horse viewing, nature viewing, horseback riding,	Manage the McCullough Peaks area to address use and user conflicts, public health and safety, and resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					hunting, and hiking so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.				
6200	X		LR:7.1-7.7	The McCullough Peaks area is open for oil and gas leasing.	Apply a NSO restriction on the McCullough Peaks SRMA.	The McCullough Peaks area is open to oil and gas leasing subject to standard protection measures.	Apply a NSO restriction on 41,653 acres within the McCullough Peaks SRMA.	Same as Alternative B.	Same as Alternative D.
6201	X		LR:7.1-7.7	The McCullough Peaks area is open to ROW authorizations.	Manage the McCullough Peaks SRMA as a ROW avoidance area.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative D.
6202	X		LR:7.1-7.7	Allow surface-disturbing activities in the McCullough Peaks area such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat) on a case-by-case basis.	Prohibit surface-disturbing activities in the McCullough Peaks SRMA such as geophysical exploration (except casual use), salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the McCullough Peaks area such as geophysical exploration (including casual use), salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife) on a case-by-case basis.	Same as Alternative B.	Same as Alternative B.	Same as Alternative D.
6203	X		LR:7.1-7.7	The McCullough Peaks area is open to renewable energy development.	Manage the McCullough Peaks SRMA as a renewable energy avoidance area.	The McCullough Peaks area is open to renewable energy development.	Same as Alternative B.	Same as Alternative B.	Same as Alternative D.
6204	X		LR:7.1-7.7	Manage the McCullough Peaks area as VRM Classes II, III, and IV.	Manage the McCullough Peaks SRMA as VRM Class II.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6205	X		LR:7.1-7.7	Motorized vehicle use is limited to designated roads and trails in a portion the McCullough Peaks area and is limited to existing roads and trails in the remainder of the area.	Motorized vehicle use is limited to designated roads and trails in the entire area McCullough Peaks SRMA.	Motorized vehicle use is limited to existing roads and trails in the McCullough Peaks area.	Same as Alternative B.	Same as Alternative B.	Same as Alternative D.
Basin Gardens – Basin Gardens Play Area									
6206		X	LR:7.1-7.7	The Basin Gardens Play Area is contained within the Worland ERMA where off-road motorized vehicle use is tolerated.	Manage the Basin Gardens Play Area as a RMZ (1,821 acres) within the Basin Gardens SRMA.	Manage the Basin Gardens Play Area as an ERMA (4,421 acres).	Manage the Basin Gardens Play Area as a SRMA (4,421 acres) with a community recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 78) (Appendix O).	Same as Alternative B.	Same as Alternative D.
6207		X	LR:7.1-7.7	Manage the Basin Gardens Play area to address use and user conflicts, public health and safety, and resource protection.	Manage the Basin Gardens Play Area RMZ for motorized recreation opportunities such as all-terrain vehicle, motorbike, mountain bike, and other motorized and mechanized hill climbing activities so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Manage the Basin Gardens Play Area ERMA to maximize recreational opportunities, as well as to address use and user conflicts, public health and safety, and resource protection.	Manage the Basin Gardens Play Area SRMA for motorized recreation opportunities such as all-terrain vehicle, motorbike, mountain bike, and other motorized and mechanized hill climbing activities so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Same as Alternative B.	Same as Alternative D.
6208		X	LR:7.1-7.7	Review mineral leases on a case-by-case basis and apply mitigation through activity level planning.	Apply a NSO restriction on the Basin Gardens Play Area RMZ.	Open the Basin Gardens Play Area ERMA to mineral leasing subject to standard protection measures.	Apply a CSU stipulation on the Basin Gardens Play Area SRMA.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6209		X	LR:7.1-7.7	Authorize mineral materials disposal in the Basin Gardens Play Area.	Prohibit mineral materials disposal in the Basin Gardens Play Area.	Same as Alternative A.	Authorize mineral materials disposal in the Basin Gardens Play Area SRMA if the effects can be avoided, minimized and/or compensated based on site-specific analysis.	Same as Alternative B.	Same as Alternative D.
6210		X	LR:7.1-7.7	Allow surface-disturbing activities in the Basin Gardens Play area such as geophysical exploration and construction activities (including those related to development of recreation facilities or wildlife habitat) on a case-by-case basis.	Prohibit surface-disturbing activities in the Basin Gardens Play Area RMZ such as geophysical exploration (except casual use) and construction activities (except those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the Basin Gardens Play Area ERMA such as geophysical exploration (including casual use) and construction activities (including those related to development of recreation facilities or wildlife).	Allow surface-disturbing activities in the Basin Gardens Play Area SRMA such as geophysical exploration, and construction activities (including those related to development of recreation facilities or wildlife habitat) if the effects can be avoided, minimized and/or compensated based on site-specific analysis.	Same as Alternative B.	Same as Alternative D.
6211		X	LR:7.4-7.7	Manage the Basin Gardens Play area as a ROW avoidance area. Co-locate ROW whenever possible.	Manage the Basin Gardens Play Area RMZ as a ROW avoidance area.	The Basin Gardens Play Area ERMA is open to ROW authorizations.	Manage the Basin Gardens Play Area SRMA as a ROW avoidance area.	Same as Alternative B.	Same as Alternative D.
6212		X	LR:7.4-7.7	The Basin Gardens Play area is open to renewable energy development.	Manage the Basin Gardens Play Area RMZ as a renewable energy avoidance area.	The Basin Gardens Play Area ERMA is open to renewable energy development.	Manage the Basin Gardens Play Area SRMA as a renewable energy avoidance area.	Same as Alternative B.	Same as Alternative D.
6213		X	LR:7.4-7.7	Manage the Basin Gardens Play area as VRM Classes III and IV.	Manage the Basin Gardens Play Area RMZ as VRM Class III.	Same as Alternative A.	Manage VRM in the Basin Gardens Play Area SRMA consistent with other resource objectives.	Same as Alternative B.	Same as Alternative D.
6214		X	LR:7.4-7.7	Motorized vehicle use is limited to existing roads and trails in the Basin Gardens Play area.	Same as Alternative A, except 1,821 acres within the Basin Gardens Play Area RMZ are open to motorized vehicle use.	4,421 acres within the Basin Gardens Play Area ERMA are open to motorized vehicle use.	4,421 acres within the Basin Gardens Play Area SRMA are open to motorized vehicle use.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
Basin Gardens – Basin Gardens Area									
6215		X	LR:7.1-7.7	The Basin Gardens area is contained within the Worland ERMA.	Manage the Basin Gardens area as a RMZ (17,949 acres) to be included within the Basin Gardens SRMA.	Manage the Basin Gardens as an ERMA (15,349 acres).	Do not manage the Basin Gardens area as an RMA.	Same as Alternative B.	Same as Alternative D.
6216		X	LR:7.1-7.7	Manage the Basin Gardens area to address use and user conflicts, public health and safety, and resource protection.	Manage the Basin Gardens RMZ for motorized and nonmotorized recreation opportunities such as hiking, nature viewing, and wildlife viewing so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Manage the Basin Gardens ERMA to maximize recreational opportunities and to address use and user conflicts, public health and safety, and resource protection.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
6217		X	LR:7.1-7.7	Review mineral leases on a case-by-case basis and apply mitigation through activity level planning in the Basin Gardens area.	Apply a NSO restriction on the Basin Gardens RMZ.	The Basin Gardens ERMA is open to mineral leasing subject to standard protection measures.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
6218		X	LR:7.1-7.7	Authorize mineral materials disposal in the Basin Gardens area.	Prohibit mineral materials disposal in the Basin Gardens RMZ.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
6219		X	LR:7.1-7.7	Allow surface-disturbing activities in the Basin Gardens area such as geophysical exploration and construction activities (including those related to development of recreation facilities or wildlife habitat) on a case-by-case basis.	Prohibit surface-disturbing activities in the Basin Gardens RMZ such as geophysical exploration (except casual use) and construction activities (except those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the Basin Gardens ERMA such as geophysical exploration (including casual use) and construction activities (including those related to development of recreation facilities or wildlife).	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6220		X	LR:7.4-7.7	Manage the Basin Gardens area as a ROW avoidance area. Co-locate ROW authorizations whenever possible.	Manage the Basin Gardens RMZ as a ROW avoidance area.	The Basin Gardens ERMA is open to ROW authorizations.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
6221		X	LR:7.4-7.7	The Basin Gardens area is open to renewable energy development.	Manage the Basin Gardens RMZ as a renewable energy avoidance area.	The Basin Gardens ERMA is open to renewable energy development.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
6222		X	LR:7.4-7.7	Manage the Basin Gardens area as VRM Classes III and IV.	Manage the Basin Gardens RMZ as VRM Class III.	Same as Alternative A.	Manage VRM in the Basin Gardens area consistent with other resource objectives.	Same as Alternative B.	Same as Alternative D.
6223		X	LR:7.4-7.7	Motorized vehicle use is limited to existing roads and trails in the Basin Gardens area.	Motorized vehicle use is limited to designated roads and trails in the Basin Gardens RMZ.	Motorized vehicle use is limited to existing roads and trails in the Basin Gardens ERMA.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
Horse Pasture Area									
6224		X	LR:7.1-7.9	The Horse Pasture area is contained within the Worland ERMA.	Manage the Horse Pasture area as an SRMA (144 acres) with a community recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 76) (Appendix O).	Do not manage the Horse Pasture area as an RMA.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6225		X	LR:7.1-7.9	Manage the Horse Pasture area for motorized and nonmotorized dispersed recreation.	Manage the Horse Pasture SRMA for nonmotorized recreation opportunities such as hiking, photography, hunting, and sightseeing so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Manage the Horse Pasture area to address use and user conflicts, public health and safety, and resource protection.	Same as Alternative B, plus manage for habitat and wildlife resources under the Bighorn River HMP/RAMP.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6226		X	LR:7.1-7.9 LR:8.1	Consider facilities to enhance recreation and visitor services in the Horse Pasture area on a case-by-case basis.	Develop facilities to enhance recreation and visitor services in the Horse Pasture SRMA. Such facilities could include hiking trails, comfort stations, fencing, parking areas, road improvements and vehicle barriers, and trail and bridge repair.	Facility development to maximize recreational opportunities in the Horse Pasture area will be a low priority. Facility development will only be to address use and user conflicts, public health and safety, or resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6227		X	LR:7.1-7.9	Review mineral leases on a case-by-case basis and apply mitigation through activity level planning in the Horse Pasture area.	Apply a NSO restriction on the Horse Pasture SRMA.	The Horse Pasture area will be open to mineral entry and other mineral leasing subject to standard protection measures.	Apply a CSU stipulation on the Horse Pasture SRMA.	Same as Alternative B.	Same as Alternative D.
6228		X	LR:7.1-7.7	Allow surface-disturbing activities in the Horse Pasture area such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat) on a case-by-case basis.	Prohibit surface-disturbing activities in the Horse Pasture SRMA such as geophysical exploration (except casual use), salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the Horse Pasture area such as geophysical exploration (including casual use), salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife).	Allow surface-disturbing activities in the Horse Pasture SRMA such as geophysical exploration, salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat) if the effects can be avoided, minimized and/or compensated based on site-specific analysis.	Same as Alternative B.	Same as Alternative D.
6229		X	LR:7.1-7.7	Co-locate ROW whenever possible in the Horse Pasture area.	Manage the Horse Pasture SRMA as a ROW avoidance area.	The Horse Pasture area is open to ROW authorizations.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6230		X	LR:7.1-7.7	The Horse Pasture area is open to renewable energy development.	Manage the Horse Pasture SRMA as a renewable energy avoidance area.	The Horse Pasture area is open to renewable energy development.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6231		X	LR:7.1-7.7	Manage the Horse Pasture area as VRM Class III.	Manage the Horse Pasture SRMA as VRM Class II.	Same as Alternative A.	Manage VRM in the Horse Pasture SRMA consistent with other resource objectives.	Same as Alternative B.	Same as Alternative D.
6232		X	LR:7.1-7.7	Motorized vehicle use is limited to existing roads and trails in the Horse Pasture area.	The Horse Pasture SRMA is closed to motorized vehicle use.	Same as Alternative A.	Motorized vehicle use in the Horse Pasture SRMA is limited to designated roads and trails.	Same as Alternative B.	Same as Alternative D.
				Rattlesnake Ridge Area					
6233		X	LR:7.1-7.7	Manage the Rattlesnake Ridge area under the Worland ERMA.	Do not manage the Rattlesnake Ridge area as an RMA.	Manage the Rattlesnake Ridge SRMA (7,982 acres) with a community recreation strategy for motorized recreation opportunities such as all-terrain vehicle, motorbike, and other motorized and mechanized hill climbing activities so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Manage the Rattlesnake Ridge area as an ERMA (7,996 acres) to maximize recreational opportunities, and to address use and user conflicts, public health and safety, and resource protection.	Same as Alternative B.	Same as Alternative D.
6234		X	LR:7.1-7.7	Motorized vehicle use is limited to existing roads and trails in the Rattlesnake Ridge area.	Same as Alternative A.	The Rattlesnake Ridge SRMA is open to motorized vehicle use.	Motorized vehicle use is limited to existing roads and trails in the Rattlesnake Ridge ERMA.	Same as Alternative A.	Same as Alternative D.
				Beck Lake Area					
6235	X		LR:7.1-7.7	Manage the Beck Lake area under the Cody ERMA.	Manage the Beck Lake area as an SRMA (6,483 acres) with a community recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map	Do not manage the Beck Lake area as an RMA. Management of resources within the Beck Lake area will be under custodial recreation management addressing public health	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					76) (Appendix O).	and safety, use and user conflicts, and resource protection, except for lands provided to the city of Cody under the R&PP.			
6236	X		LR:7.1-7.7	Manage the Beck Lake area for motorized and nonmotorized dispersed recreation.	Manage the Beck Lake SRMA for nonmotorized recreation opportunities to engage in mountain biking, hiking, wildlife viewing, and other activities so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Manage the Beck Lake area to address use and user conflicts, public health and safety, and resource protection.	Manage the Beck Lake SRMA for nonmotorized and motorized recreation opportunities such as mountain biking, hiking, wildlife viewing, and other activities so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Same as Alternative B.	Same as Alternative D.
6237	X		LR:7.1-7.7	The Beck Lake area is open to oil and gas leasing.	Apply a NSO restriction on the Beck Lake SRMA.	Same as Alternative A.	Apply a CSU stipulation on the Beck Lake SRMA.	Same as Alternative B.	Same as Alternative D.
6238	X		LR:7.1-7.7	The Beck Lake area is open to ROW authorizations.	Manage the Beck Lake SRMA as a ROW avoidance area.	Same as Alternative A.	The Beck Lake SRMA is open to ROW authorizations.	Same as Alternative B.	Same as Alternative D.
6239	X		LR:7.1-7.7	The Beck Lake area is open to renewable energy development.	Manage the Beck Lake SRMA as a renewable energy avoidance area.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6240	X		LR:7.1-7.7	Allow surface-disturbing activities in the Beck Lake area such as geophysical exploration, salable minerals exploration and development, and construction activities on a case-by-case basis.	Prohibit surface-disturbing activities in the Beck Lake area such as geophysical exploration salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the Beck Lake area such as geophysical exploration salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the Beck Lake SRMA such as geophysical exploration, salable minerals exploration and development, and construction activities on a case-by-case basis.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6241	X		LR:7.1-7.7	Manage the Beck Lake area as VRM Class III.	Manage the Beck Lake SRMA as VRM Class II.	Same as Alternative A.	Manage VRM in the Beck Lake SRMA consistent with other resource objectives.	Same as Alternative B.	Same as Alternative D.
6242	X		LR:7.1-7.7	Motorized vehicle use is limited to existing roads and trails in the Beck Lake area.	The Beck Lake SRMA is closed to motorized vehicle use.	Same as Alternative A.	Motorized vehicle use in the Beck Lake SRMA is limited to designated roads and trails.	Same as Alternative B.	Same as Alternative D.
Newton Lake Ridge Area									
6243	X		LR:7.1-7.7	Manage the Newton Lake Ridge area under the Cody ERMA.	Manage the Newton Lake Ridge area as an SRMA (1,997 acres) with a community recreation strategy for the protection of the recreation outcomes and setting prescriptions (Map 76) (Appendix O).	Do not manage the Newton Lake Ridge area as an RMA. Management of resources within the Newton Lake Ridge area will be under custodial recreation management addressing public health and safety, use and user conflicts, and resource protection.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6244	X		LR:7.1-7.7	Manage the Newton Lake Ridge area for motorized and nonmotorized dispersed recreation.	Manage the Newton Lake Ridge SRMA for nonmotorized recreationists to engage in mountain biking, hiking, wildlife viewing, and other activities so that affected users report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Manage the Newton Lake Ridge area to address use and user conflicts, public health and safety, and resource protection.	Manage the Newton Lake Ridge SRMA for nonmotorized and motorized recreation opportunities such as mountain biking, hiking, wildlife viewing, and other activities so that recreationists report realizing a "moderate" level of recreation experience and benefit outcomes listed in Appendix O.	Same as Alternative B.	Same as Alternative D.
6245	X		LR:7.1-7.7	The Newton Lake Ridge area is open to oil and gas leasing.	Apply a NSO restriction on the Newton Lake Ridge SRMA.	The Newton Lake Ridge area is open to oil and gas leasing subject to standard protection measures.	The Newton Lake Ridge SRMA is open to oil and gas leasing with a CSU restriction.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Recreation									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6246	X		LR:7.1-7.7	The Newton Lake Ridge area is open to ROW authorizations.	Manage the Newton Lake Ridge SRMA as a ROW avoidance area.	Same as Alternative A.	The Newton Lake Ridge SRMA is open to ROW authorizations.	Same as Alternative B.	Same as Alternative D.
6247	X		LR:7.1-7.7	The Newton Lake Ridge area is open to renewable energy development.	Manage the Newton Lake Ridge SRMA as a renewable energy avoidance area.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative D.
6248	X		LR:7.1-7.7	Allow surface-disturbing activities in the Newton Lake Ridge area such as geophysical exploration, salable minerals exploration and development, and construction activities on a case-by-case basis.	Prohibit surface-disturbing activities in the Newton Lake Ridge SRMA such as geophysical exploration salable minerals exploration and development, and construction activities (except those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the Newton Lake Ridge area such as geophysical exploration salable minerals exploration and development, and construction activities (including those related to development of recreation facilities or wildlife habitat).	Allow surface-disturbing activities in the Newton Lake Ridge SRMA such as geophysical exploration, salable minerals exploration and development, and construction activities on a case-by-case basis.	Same as Alternative B.	Same as Alternative D.
6249	X		LR:7.1-7.7	Manage the Newton Lake Ridge area as VRM Class III.	Manage the Newton Lake Ridge SRMA as VRM Class II.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
6250	X		LR:7.1-7.7	Motorized vehicle use area is limited to existing roads and trails in the Newton Lake Ridge area.	The Newton Lake Ridge SRMA is closed to motorized vehicle use.	Same as Alternative A.	Motorized vehicle use in the Newton Lake Ridge SRMA is limited to designated roads and trails.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
6000 LAND RESOURCES (LR) –Lands with Wilderness Characteristics									
				GOAL LR:9 Manage lands with wilderness characteristics as appropriate, considering manageability and the context of competing resource demands. **Objective:** **LR:9.1** In areas managed to maintain their wilderness characteristics, wilderness characteristics will be protected.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
6251	X	X	LR:9.1	Response to wildland fires may vary from full suppression in areas where fire is undesirable, to monitoring fire behavior in areas where fire can be used as a management tool.					
6252	X	X	LR:9.1	Allow permitted livestock grazing use consistent with other resource objectives and in agreement with the *Wyoming Standards for Healthy Rangelands*.					
6253	X	X	LR:9.1	Manage invasive species using Invasive Pest Management strategy.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
6254	X	X	LR:9.1	No lands with wilderness characteristics are managed to maintain their wilderness characteristics.	Manage all inventoried lands with wilderness characteristics shown on Map 79 (476,349 acres) for naturalness, outstanding opportunities for solitude, and primitive and unconfined recreation.	No lands with wilderness characteristics are managed to maintain their wilderness characteristics. Manage lands with wilderness characteristics consistent with other resource objectives. Do not manage the lands with wilderness characteristics for naturalness, outstanding opportunities for solitude, and primitive and unconfined recreation.	Same as Alternative C.	Same as Alternative B.	Manage certain lands with wilderness characteristics shown on Map 79 (49,397 acres) to protect their naturalness, outstanding opportunities for solitude, and primitive and unconfined recreation.
6255	X	X	LR:9.1	No special management prescriptions for lands with wilderness characteristics.[5]	Manage lands with wilderness characteristics as VRM Class II, unless areas are managed as VRM Class I under another resource.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B, except manage 47 acres in Painted Hills as VRM Class III.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) –Lands with Wilderness Characteristics									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6256	X	X	LR:9.1	No special management prescriptions for lands with wilderness characteristics.[5]	Evaluate existing roads and trails in lands with wilderness characteristics and close on a case-by-case basis as necessary to protect wilderness characteristics. Motorized vehicle use is limited to designated roads and trails in lands with wilderness characteristics. Within lands with wilderness characteristics, allow vehicle access up to 30 feet from the centerline of the road or trail for parking and necessary tasks.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Evaluate existing roads and trails in lands with wilderness characteristics and close on a case-by-case basis as necessary to protect wilderness characteristics. Motorized vehicle use is limited to existing roads and trails in lands with wilderness characteristics, unless further constrained by other resources.
6257	X	X	LR:9.1	No special management prescriptions for lands with wilderness characteristics.[5]	Lands with wilderness characteristics are closed to oil and gas leasing.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B, except manage Painted Hills (7,892 acres) as available for leasing with a NSO restriction.
6258	X	X	LR:9.1	No special management prescriptions for lands with wilderness characteristics.[5]	Lands with wilderness characteristics are closed to solid mineral leasing.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
6259	X	X	LR:9.1	No special management prescriptions for lands with wilderness characteristics.[5]	Lands with wilderness characteristics are closed to mineral materials disposal.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
6260	X	X	LR:9.1	No special management prescriptions for lands with wilderness characteristics.[5]	Manage lands with wilderness characteristics as ROW avoidance areas.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B, except manage Painted Hills (7,892 acres) as a ROW Exclusion Area.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) –Lands with Wilderness Characteristics									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6261	X	X	LR:9.1	No special management prescriptions for lands with wilderness characteristics.[5]	Lands with wilderness characteristics are closed to permitted commercial and personal-use wood cutting and seed collection. Small amounts of fuelwood or seeds for personal use may be gathered, unless specifically prohibited for any defined area.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.
6262	X	X	LR:9.1	No special management prescriptions for lands with wilderness characteristics.[5]	Lands with wilderness characteristics are closed to road construction unless specified on a case-by-case basis.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.
6263	X	X	LR:9.1	No special management prescriptions for lands with wilderness characteristics.[5]	Prohibit mechanical vegetative treatments in lands with wilderness characteristics, except for the minimum necessary to restore natural resource systems, and to provide for public and firefighter safety in areas with hazardous fuels. Permit the use of prescribed fire for vegetation treatments when compatible with resource management objectives of the areas. Rehabilitate fire lines and other surface disturbances associated with prescribed fire operations.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.
6264	X	X	LR:9.1	No special management prescriptions for lands with wilderness characteristics.[5]	Allow maintenance of existing facilities in lands with wilderness characteristics.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) –Lands with Wilderness Characteristics									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6265	X	X	LR:9.1	No special management prescriptions for lands with wilderness characteristics.[5]	Allow construction of rangeland improvements, wildlife water development, and recreation facilities in lands with wilderness characteristics when short-term effects can be mitigated.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.
6266	X	X	LR:9.1	No special management prescriptions for lands with wilderness characteristics.[5]	Allow excavation of cultural resource sites and of paleontological sites in lands with wilderness characteristics where scientific information would be collected under permit, with minimum site disturbance. Mitigate short-term effects to wilderness characteristics by collection of long-term important scientific information, controls to modes and routes of site access, and site restoration when the project is completed.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
6000 LAND RESOURCES (LR) – Livestock Grazing Management									
				GOAL LR:10 Continue ecosystem benefits of herbivory by providing opportunities for livestock grazing to support and sustain local communities consistent with goals and objectives of other resources and overall land health. **Objectives:** **LR:10.1** Manage livestock grazing consistent with multiple-use needs, sustained yield, and the *Wyoming Standards for Healthy Rangelands*. Adjust management based on assessments and evaluations. **LR:10.2** Provide for the establishment of voluntary reserve common allotments as opportunities arise within the Planning Area to facilitate rangeland restoration, recovery, and management objectives (in accordance with existing policy, WO IM 2013-184). **LR:10.3** Manage levels of livestock use in a manner that strives to maintain or restore permitted use based on forage availability consistent with multiple use.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
6267	X	X	LR:10.1 LR:10.3	In cooperation, consultation, and coordination with permittees/lessees, cooperators, and interested public, develop and implement appropriate livestock grazing management actions to enhance land health, improve forage for livestock, and meet other multiple use objectives by using the *Wyoming Guidelines for Livestock Grazing Management*, other appropriate BMPs (see Appendices L and W), and development of appropriate range improvements. 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 PHMAs. In setting workload priorities, precedence will be given to existing permits/leases in areas not meeting Land Health Standards, with focus on allotments containing riparian areas or wet meadows. The BLM may use other criteria for prioritization to respond to urgent natural resource concerns (e.g., wildfire) and legal obligations.					
6268	X	X	LR:10.1 LR:10.3	AMPs remain in effect or are revised as necessary.					
6269	X	X	LR:10.1	Retain designated stock driveway withdrawals (92,932 acres) and easements, except where no longer needed or provide comparable alternate access and routes. Other land uses within stock driveways will be considered on a case-by-case basis, so long as the proposed use will not interfere with the purpose for the withdrawal. Permit other livestock trailing on a case-by-case basis.					
6270	X	X	LR:10.1	Maintain current allotment categories shown on Map 80 (M, I, and C; see Glossary). Throughout the life of the plan, re-categorized allotments based on assessments and evaluations.					
6271	X	X	LR:10.1	Utilize a rangeland health assessment, resource monitoring, or analysis to determine if livestock grazing adjustments in amounts, kinds, or season are necessary. The NEPA analysis for renewals and modifications of livestock grazing permits/leases that include lands within PHMAs will include specific management thresholds based on Greater Sage-Grouse Habitat Objectives Table and Land Health Standards (43 CFR 4180.2) and one or more defined responses that will allow the authorizing officer to make adjustments to livestock grazing that have already been subjected to NEPA analysis. GRSG Habitat Objectives Table, Land Health Standards (43 CFR 4180.2) and ecological site potential, and one or more defined responses that will allow the authorizing officer to make adjustments to livestock grazing that have already been subjected to NEPA analysis.					
6272	X	X	LR:10.1 LR:10.3	Forage supplements will be certified weed free and safe/compatible for domestic sheep, wildlife and wild horses based on allotment specific situations.					
6273	X	X	LR:10.1	Approximately 4,074 acres along the Bighorn River remain closed to livestock grazing, unless grazing is used for specific vegetation management objectives such as habitat improvement or the eradication of invasive weeds (tracts listed in Big Horn River HMP/RAMP and the Eggert Tract).					

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Livestock Grazing Management									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
6274	X	X	LR:10.1	Monitor all "I" category allotments and AMPs. Treat monitoring of "M" and "C" category allotments as a low priority. Continue monitoring following any adjustments in grazing use to assure allotment management objectives are being met.	Monitor livestock grazing only on those allotments not meeting land health standards due to currently permitted livestock grazing.	Vary the intensity of livestock grazing monitoring, with higher priority given to "I" category allotments and those allotments not meeting land health standards due to current livestock grazing.	Vary the intensity of livestock grazing monitoring, with higher priority given to "I" category allotments and those allotments not meeting land health standards due to livestock grazing.	Same as Alternative B.	Same as Alternative D.
6275	X	X	LR:10.1 -10.3	The Planning Area is open to livestock grazing except in areas specifically closed to grazing, such as: • Bighorn River tracts (4,074 acres) • Campgrounds (645 acres) • Exclosures (452 acres) Manage livestock grazing to provide for protection or enhancement of other resource values.	The Planning Area is open to livestock grazing on areas where livestock grazing is not in conflict with other resource uses. In addition to areas closed to livestock grazing under Alternative A, close the following: • Crucial winter range for elk and bighorn sheep (270,834 acres) • Greater sage-grouse Key Habitat Areas (1,232,583 acres)	Same as Alternative A, except do not manage livestock grazing to provide for the enhancement of other resource values.	The Planning Area is open to livestock grazing except in areas specifically closed to grazing, such as: • Bighorn River tracts (4,074 acres) • Campgrounds (645 acres) • Exclosures (452 acres) Manage livestock grazing to support other resource objectives and allow livestock grazing in areas closed to grazing as a tool to maintain or improve resource conditions. Mitigate new resource uses to minimize or avoid conflicts with livestock grazing where appropriate.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Livestock Grazing Management									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6276	X	X	LR:10.1 LR:10.3	Apportion additional sustained yield forage to meet multiple-use objectives and to satisfy suspended permitted use of permittees/lessees in the allotment where the forage is available (43 CFR 4110.1-3b).	Apportion additional sustained yield forage primarily to wild horses and wildlife.	Apportion additional sustained yield forage primarily to satisfy suspended permitted use of permittees/lessees in the allotment where the forage is available.	Apportion additional sustained yield forage, based on monitoring, to satisfy suspended permitted use of permittees/lessees in the allotment and to meet multiple-use objectives where the forage is available.	Same as Alternative B.	Same as Alternative D.
6277	X	X	LR:10.1 -10.3	On a case-by-case basis, allow issuance of permits/leases for livestock grazing for parcels that are not included in a grazing allotment.	Do not allow issuance of permits/leases on parcels that are not included in a grazing allotment. Allocate forage on such parcels to watershed protection, habitat, or other resource uses.	Same as Alternative A.	Same as Alternative A, and where such permits/leases are not issued, allocate forage on such parcels to meet other multiple-use objectives.	Same as Alternative B.	Same as Alternative D.
6278	X	X	LR:10.5	Management of reserve common allotments is not considered.	Establish and manage future reserve common allotments as opportunities arise within the Planning Area on a voluntary basis.	Do not establish reserve common allotments within the Planning Area.	Same as Alternative B, plus establish and manage reserve common allotments on abandoned allotments on a case-by-case basis and attempt to utilize each allotment at least every five years. At the time a permittee or lessee voluntarily relinquishes or abandons 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.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Livestock Grazing Management									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6279	X	X	LR:10.1 LR:10.3	Prohibit the placement of salt, mineral, or forage supplements within ¼ mile of water, wetlands, riparian areas, reclaimed or reforested areas, or as determined by the authorized officer.	Same as Alternative A, but prohibit within a ½ mile buffer.	Allow placement of salt, mineral, or forage supplements to maximize livestock use.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
6280	X	X	LR:10.1 -10.3	In cooperation with permittees and the interested public, develop and implement AMPs or grazing management agreements as necessary to meet multiple use objectives.	In cooperation with permittees and the interested public, develop or revise AMPs or grazing management agreements for all category "I" allotments and allotments not meeting *Wyoming Standards for Healthy Rangelands*, emphasizing meeting multiple use objectives over livestock forage availability.	In cooperation with permittees and the interested public, develop or revise AMPs and grazing management agreements emphasizing livestock forage availability while meeting multiple-use objectives.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
6281	X	X	LR:10.1 -10.3	Design range improvement projects, including vegetation treatments, to meet multiple-use objectives, mitigate impacts to other resource values, and meet allotment management objectives.	In cooperation with interested public, design range improvement projects, including vegetation treatments, to maximize multiple use benefits. Strive to maximize funding by utilizing, leveraging, and partnering with outside funding sources.	In cooperation with permittees and interested public, design range improvement projects, including vegetation treatments, to maximize livestock forage use while meeting multiple-use objectives. Strive to maximize funding by utilizing, leveraging, and partnering with outside funding sources.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
6282	X	X	LR:10.1 LR:10.3	Allow livestock use of produced water, meeting applicable standards on a case-by-case basis.	Do not develop livestock watering facilities with new surface discharge of produced water.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

6000 LAND RESOURCES (LR) – Livestock Grazing Management									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
6283	X	X	LR:10.1	No similar action.	Same as Alternative A.	Same as Alternative A.	Allotments within PHMAs, focusing on those containing riparian areas, including wet meadows, will 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.	Same as Alternative A.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Areas of Critical Environmental Concern (ACECs)									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				GOAL SD:1 Protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or process, or to protect life and safety from natural hazards. **Objectives:** **SD:1.1** Utilize special designations to meet resource protection needs within appropriate geographical areas. **SD:1.2** Provide for appropriate interpretation of sites of high public interest.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
7001	X	X	SD:1.1 SD:1.2	A plan of operations for all locatable mineral exploration (except casual use) and development on mining claims is required in ACECs.					
7002	X	X	SD:1.1 SD:1.2	Allow permitted livestock grazing use, unless otherwise prohibited, in agreement with the *Wyoming Standards for Healthy Rangelands*.					

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS – ACECs – Big Cedar Ridge ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7003		X	SD:1.1 SD:1.2	Manage the Big Cedar Ridge ACEC as the existing ACEC boundary (Map 84 and Appendix F; 264 acres).	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7004		X	SD:1.1 SD:1.2	Allow the use of hand tools in the Big Cedar Ridge ACEC to collect plant fossils for research and casual use in the fossil concentration areas. Mechanized collection may be approved on a case-by-case basis.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7005		X	SD:1.1 SD:1.2	Do not require site-specific surveys for cultural and historic resources for casual use collection of plant fossils in the fossil concentration areas of the Big Cedar Ridge ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7006		X	SD:1.1 SD:1.2	The Big Cedar Ridge ACEC is open to mineral leasing.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7007		X	SD:1.1 SD:1.2	Apply a NSO restriction on the 264-acre fossil concentration area in the Big Cedar Ridge ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7008		X	SD:1.1 SD:1.2	The 264-acre fossil concentration area is closed to geophysical exploration.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7009		X	SD:1.1 SD:1.2	Manage the 264-acre fossil concentration area of the Big Cedar Ridge ACEC as a ROW exclusion area. The fossil	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS – ACECs – Big Cedar Ridge ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				concentration area is closed to ROW authorizations and the use of heavy equipment; the use and maintenance of existing ROW and existing range improvement projects is allowed.					
7010		X	SD:1.1 SD:1.2	Motorized vehicle use is limited to existing roads and trails in the Big Cedar Ridge ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7011		X	SD:1.1 SD:1.2	The Big Cedar Ridge ACEC is open to consideration for leasing of geothermal resources; prohibit surface-disturbing activities associated with geothermal exploration and development in the 264-acre fossil concentration area.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7012		X	SD:1.1 SD:1.2	Pursue a withdrawal from appropriation under the mining laws for the Big Cedar Ridge ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7013		X	SD:1.1 SD:1.2	The 264-acre fossil concentration area is closed to mineral materials disposal and related exploration and development activities.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS – ACECs – Big Cedar Ridge ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7014		X	SD:1.1 SD:1.2	Encourage and expand public education opportunities in the Big Cedar Ridge area. Work with museums in highlighting paleontological resources from the area.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Red Gulch Dinosaur Tracksite ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7015		X	SD:1.1 SD:1.2	Manage the Red Gulch Dinosaur Tracksite ACEC as the existing ACEC boundary (Map 84 and Appendix F; 1,798 acres).	Same as Alternative A.	No ACEC would be designated.[3]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7016		X	SD:1.1 SD:1.2	Motorized vehicle use is limited to designated roads and trails in the Red Gulch Dinosaur Tracksite ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7017		X	SD:1.1 SD:1.2	Prohibit surface-disturbing activities within the Red Gulch Dinosaur Tracksite ACEC, except the construction of roads, trails, interpretive signs, and other facilities to enhance public education and recreation, and activities allowed under a paleontological resources use permit.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7018		X	SD:1.1 SD:1.2	Require all scientific and educational researchers studying the dinosaur tracks or working in that geologic horizon in the Red Gulch Dinosaur Tracksite ACEC to obtain a paleontological resources use permit.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7019		X	SD:1.1 SD:1.2	Prohibit the use of heavy equipment to construct fire lines and the use of chemical and dye retardants in the Red Gulch Dinosaur Tracksite ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Red Gulch Dinosaur Tracksite ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7020		X	SD:1.1 SD:1.2	Close the interpretive area of the Red Gulch Dinosaur Tracksite ACEC to livestock grazing.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7021		X	SD:1.1 SD:1.2	Apply a NSO restriction for mineral leasing, exploration, and development on BLM-administered lands in the Sundance Formation of the Red Gulch Dinosaur Tracksite ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7022		X	SD:1.1 SD:1.2	Pursue a withdrawal from appropriation under the mining laws for the Red Gulch Dinosaur Tracksite ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Sheep Mountain Anticline ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7023	X		SD:1.1 SD:1.2	Manage the Sheep Mountain Anticline ACEC as the existing ACEC boundary (Map 84 and Appendix F; 11,520 acres).	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A, plus manage the Sheep Mountain Anticline ACEC as VRM Class II.	Same as Alternative A.	Same as Alternative D.
7024	X		SD:1.1 SD:1.2	Motorized vehicle use is limited to designated roads and trails in the Sheep Mountain Anticline ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7025	X		SD:1.1 SD:1.2	Prohibit surface-disturbing activities such as geophysical exploration (except casual use), mineral materials disposal, and construction activities (except those related to development of recreation or wildlife habitat) above caves and cave passages on BLM-administered lands in the Sheep Mountain Anticline ACEC. Allow surface-disturbing activities elsewhere in the ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Prohibit surface-disturbing activities such as geophysical exploration (except casual use), mineral materials disposal, and construction activities (except those related to development of recreation or wildlife habitat) above caves and cave passages on BLM-administered lands in the Sheep Mountain Anticline ACEC. Consider approving surface-disturbing activities elsewhere in the ACEC if the action can be mitigated.	Same as Alternative B.	Same as Alternative D.
7026	X		SD:1.1 SD:1.2	Pursue a withdrawal from appropriation under the mining laws for the Sheep Mountain Anticline ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7027	X		SD:1.1 SD:1.2	Maintain existing semi-primitive motorized and primitive recreational settings. Protect the Sheep Mountain Anticline ACEC's outstanding scenic	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Sheep Mountain Anticline ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				values while continuing to provide limited developed recreational facilities and motorized access.					
7028	X		SD:1.1 SD:1.2	Manage the Sheep Mountain Anticline ACEC for recreational and interpretive use.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7029	X		SD:1.1 SD:1.2	The Sheep Mountain Anticline ACEC is open to oil and gas leasing.	The Sheep Mountain Anticline ACEC is closed to oil and gas leasing.	Same as Alternative A.	Apply a NSO restriction on the center of the Sheep Mountain Anticline and a CSU on the northern portion and the southern portion.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Spanish Point Karst ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
7030		X	SD:1.1 SD:1.2	Manage the Spanish Point Karst ACEC as the existing ACEC boundary (Map 84 and Appendix F; 6,298 acres).					
7031		X	SD:1.1 SD:1.2	Manage basal vegetative cover in the Spanish Point Karst ACEC to maximize (or maintain) ground cover in good or better ecological condition, commensurate with the potential of the ecological site.					
7032		X	SD:1.1 SD:1.2	Pursue a withdrawal from appropriation under the mining laws for the Spanish Point Karst ACEC. The withdrawal will involve the federal mineral estate under private surface and under federal surface administered by the USFS and the BLM.					
7033		X	SD:1.1 SD:1.2	Pursue ACEC Agreements for the cooperative management of surface activities in watersheds on USFS-administered and private lands within and adjacent to the Spanish Point Karst ACEC. To the extent possible, maintain compatible management prescriptions for these lands and those administered by the BLM.					
7034		X	SD:1.1 SD:1.2	The Spanish Point Karst ACEC is closed to oil and gas leasing.					
7035		X	SD:1.1 SD:1.2	The Spanish Point Karst ACEC is closed to geophysical exploration.					
7036		X	SD:1.1 SD:1.2	Manage the Spanish Point Karst ACEC as a ROW avoidance area.					

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Brown/Howe Dinosaur Area ACEC and Proposed Expansion									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
7037	X		SD:1.1 SD:1.2	Fence and sign quarry sites on BLM-administered lands in the Brown/Howe Dinosaur Area ACEC.					
7038	X		SD:1.1 SD:1.2	Motorized vehicle use is limited to designated roads and trails in the Brown/Howe Dinosaur Area ACEC.					
7039	X		SD:1.1 SD:1.2	Mitigate surface-disturbing activities in the Brown/Howe Dinosaur Area ACEC.					
7040	X		SD:1.1 SD:1.2	Allow collection, excavation, or removal in the Brown/Howe Dinosaur Area ACEC of scientifically significant paleontological resources only under a Paleontological Resource Use Permit. Only issue permits to individuals engaged in research, museum, or educational projects that are approved by the BLM and that provide for detailed recordation, reporting, care of specimens, and availability of specimens to other scientists and museums.					
7041	X		SD:1.1 SD:1.2	Do not sell or exchange public lands within the Brown/Howe Dinosaur Area ACEC unless such disposal would be consistent with the management objectives and would improve management capability and resource protection in the area.					
7042	X		SD:1.1	Coordinate with local stakeholders in landscape management in the Brown/Howe Dinosaur Area ACEC.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
7043	X		SD:1.1 SD:1.2	Manage the Brown/Howe Dinosaur Area ACEC as the existing ACEC boundary (Map 84 and Appendix F; 5,501 acres).	Expand the Brown/Howe Dinosaur Area ACEC to 20,734 acres (Map 85 and Appendix F). Apply management prescriptions for the existing ACEC to the expansion areas.	Same as Alternative A (Map 86).	Same as Alternative A (Map 87), plus manage the Brown/Howe Dinosaur Area ACEC as VRM Class III.	Same as Alternative B.	Same as Alternative D.
7044	X		SD:1.1 SD:1.2	The Brown/Howe Dinosaur Area ACEC is open to leasable and mineral materials disposal. Operations on oil and gas leases and mineral materials disposal are subject to the applicable provisions of the regulations (43 CFR 3100), including those set forth in 3162.5-1, and such other terms, stipulations, and conditions as the authorized officer deems	The Brown/Howe Dinosaur Area ACEC is closed to mineral leasing and mineral materials disposal.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Brown/Howe Dinosaur Area ACEC and Proposed Expansion									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				necessary to avoid significant disturbance of the land surface or impairment of the area's natural, educational, and scientific research values, including paleontological study, excavation, and interpretation.					
7045	X		SD:1.1 SD:1.2	Allow minor ROW authorizations and other minor surface-disturbing activities in the Brown/Howe Dinosaur Area ACEC if they are preceded by a paleontological sensitivity survey and, if necessary, are monitored during construction. Management of surface-disturbing activities emphasizes avoiding impairment of the management objectives and existing values, while protecting the integrity of fossil-bearing material in the area.	Manage the Brown/Howe Dinosaur Area ACEC as a ROW avoidance area.	Same as Alternative A.	Allow minor ROW authorizations and other minor surface-disturbing activities in the Brown/Howe Dinosaur Area ACEC. Require an on-the-ground survey prior to approval of surface-disturbing activities or land-disposal actions and monitor surface-disturbing activities for PFYC 3 through 5 formations in accordance with policy. Management of surface-disturbing activities emphasizes avoiding impairment of the management objectives and existing values, while protecting the integrity of fossil-bearing material in the area.	Same as Alternative B.	Same as Alternative D.
7046	X		SD:1.1 SD:1.2	On a case-by-case basis, pursue a withdrawal from appropriation under the mining laws for ACECs and special status species habitat.	Pursue a withdrawal from appropriation under the mining laws for the Brown/Howe Dinosaur Area ACEC.	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Carter Mountain ACEC and Proposed Expansion									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7047	X		SD:1.1 SD:1.2	Manage the Carter Mountain ACEC as the existing ACEC boundary (Map 84 and Appendix F; 10,867 acres).	Expand the Carter Mountain ACEC to 16,573 acres (Map 85 and Appendix F).	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
7048	X		SD:1.1 SD:1.2	Restrict the use of heavy equipment in the Carter Mountain ACEC during fire suppression operations to protect fragile soils and alpine tundra. Prescribed fire may be used as appropriate to accomplish identified multiple use management objectives.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7049	X		SD:1.1 SD:1.2	Maintain existing public access opportunities in the Carter Mountain ACEC. Pursue additional access on a case-by-case basis.	Same as Alternative A.	No ACEC would be designated.[5]	Maintain public access in the Carter Mountain ACEC consistent with the travel management plan.	Same as Alternative A.	Same as Alternative D.
7050	X		SD:1.1 SD:1.2	Approximately 840 acres in the Carter Mountain ACEC are identified for possible acquisition to improve management through consolidation of land ownership.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A, plus consider other parcels inside the ACEC for acquisition from willing sellers.	Same as Alternative A.	Same as Alternative D.
7051	X		SD:1.1 SD:1.2	Manage the Carter Mountain ACEC as a ROW avoidance area. If additional ROW authorizations are required, the effects will be intensively mitigated.	Same as Alternative A.	No ACEC would be designated.[5]	Manage the Carter Mountain ACEC as a ROW avoidance area.	Same as Alternative A.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Carter Mountain ACEC and Proposed Expansion									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7052	X		SD:1.1 SD:1.2	Motorized vehicle use is limited to designated roads and trails in the Carter Mountain ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7053	X		SD:1.1 SD:1.2	Manage visual resources in the Carter Mountain ACEC as VRM Class II (Map 84 and Appendix F).	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7054	X		SD:1.1 SD:1.2	Prohibit surface-disturbing activities such as exploration and development of leasable minerals, geophysical exploration, and ROW construction on slopes of more than 7 percent in the Carter Mountain ACEC for the protection of fragile soils and alpine tundra.	Same as Alternative A.	No ACEC would be designated.[5]	Allow surface-disturbing activities other than mineral leasing or ROWs if the effects can be avoided, minimized and/or compensated based on site-specific analysis for the protection of alpine tundra.	Same as Alternative A.	Same as Alternative D.
7055	X		SD:1.1 SD:1.2	Require approval before snow can be removed from BLM-administered roads in big game crucial winter range in the Carter Mountain ACEC. The purpose is to minimize disturbance of the animals during periods when wildlife are under high stress.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Carter Mountain ACEC and Proposed Expansion									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7056	X		SD:1.1 SD:1.2	Motorized vehicle use is limited to designated roads and trails in the Carter Mountain ACEC with a seasonal closure from November 15 – June 15 or later if unfavorable weather or road conditions exist that could create resource damage.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A, except seasonal closures are subject to the travel management plan.	Same as Alternative A.	Same as Alternative D.
7057	X		SD:1.1 SD:1.2	Coordinate with local stakeholders in landscape management in the Carter Mountain ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7058	X		SD:1.1 SD:1.2	The Carter Mountain ACEC is open to mineral leasing and mineral materials disposal, subject to standard mitigation guidelines (Appendix F).	The Carter Mountain ACEC is closed to mineral leasing and mineral materials disposal.	No ACEC would be designated.[5]	The Carter Mountain ACEC is closed to mineral leasing and open to mineral materials disposal.	Same as Alternative B.	Same as Alternative D.
7059	X		SD:1.1 SD:1.2	The Carter Mountain ACEC is available for locatable mineral entry. Require a plan of operations for all locatable mineral exploration (except casual use) and development.	Pursue a withdrawal from appropriation under the mining laws for the Carter Mountain ACEC.	No ACEC would be designated.[5]	Pursue a withdrawal from appropriation under the mining laws for 4,998 acres of the Carter Mountain ACEC.	Same as Alternative B.	Same as Alternative D.
7060	X		SD:1.1 SD:1.2	Prohibit the construction of recreational sites in the Carter Mountain ACEC.	Consider construction of recreational facilities in the Carter Mountains ACEC to address visitor health and safety, use and user conflicts, and resource protection.	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Five Springs Falls ACEC and Proposed Expansion									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7061	X		SD:1.1 SD:1.2	Manage the Five Springs Falls ACEC as the existing ACEC boundary (Map 84 and Appendix F; 163 acres).	Expand the Five Springs Falls ACEC to 1,809 acres (Map 85 and Appendix F). Any management prescriptions for the existing ACEC apply to the expansion area unless otherwise noted.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
7062	X		SD:1.1 SD:1.2	During fire suppression operations, restrict the use of heavy equipment within the Five Springs Falls ACEC. Use prescribed fire as appropriate to accomplish identified multiple use management objectives.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7063	X		SD:1.1 SD:1.2	Manage the Five Springs Falls ACEC as a ROW avoidance area. If additional ROW are required, mitigate the effects.	Same as Alternative A.	No ACEC would be designated.[5]	Manage the Five Springs Falls ACEC as a ROW avoidance area.	Same as Alternative A.	Same as Alternative D.
7064	X		SD:1.1 SD:1.2	Pursue a withdrawal from appropriation under the mining laws for the Five Springs Falls ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7065	X		SD:1.1 SD:1.2	Do not allow climbing, except for the purposes of approved monitoring and research, on the cliff that forms Five Springs Falls.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7066	X		SD:1.1 SD:1.2	Prohibit surface-disturbing activities in the Five Springs Falls ACEC such as geophysical exploration (except casual	Same as Alternative A.	No ACEC would be designated.[3]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Five Springs Falls ACEC and Proposed Expansion									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				use) and construction activities (except those related to development of recreation or interpretation of rare plants).					
7067	X		SD:1.1 SD:1.2	The Five Springs Falls ACEC is open to exploration and development of saleable and leasable minerals with a NSO restriction.	The Five Springs Falls ACEC is closed to mineral materials disposal and mineral leasing.	No ACEC would be designated.[5]	The Five Springs Falls ACEC is closed to mineral materials disposal and mineral leasing.	Same as Alternative B.	Same as Alternative D.
7068	X		SD:1.1 SD:1.2	Motorized vehicle use is limited to designated roads and trails in the Five Springs Falls ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs –Little Mountain ACEC and Proposed Expansion									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7069	X		SD:1.1 SD:1.2	Manage the Little Mountain ACEC within the existing ACEC boundary (Map 84 and Appendix F; 21,476 acres). Additionally, a portion of the Little Mountain area is within the Craig Thomas Little Mountain SMA, which is managed in accordance with multiple use principles consistent with other resource objectives.	Expand the Little Mountain ACEC to 72,051 acres (Map 85 and Appendix F). Management prescriptions for the existing ACEC apply to the expansion area. The Little Mountain ACEC boundary is same as that of the Craig Thomas Little Mountain SMA.	No ACEC would be designated.[5] Same as Alternative A for the Craig Thomas Little Mountain SMA.	Same as Alternative A, plus apply specific management to 21,476 additional acres in the Craig Thomas Little Mountain SMA.	Same as Alternative B.	Same as Alternative D.
7070	X		SD:1.1 SD:1.2	During fire suppression operations, restrict the use of heavy equipment over important caves and cave passages within the Little Mountain ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A for the Little Mountain ACEC and the Craig Thomas Little Mountain SMA.	Same as Alternative A.	Same as Alternative D.
7071	X		SD:1.1 SD:1.2	Provide warnings as appropriate and establish precautions regarding safety hazards in the Little Mountain ACEC. For example, erect safety fencing and signs at abandoned mines in the ACEC warning the public of health and safety hazards posed by radioactivity at uncovered mine entrances and adits.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A for the Little Mountain ACEC and the Craig Thomas Little Mountain SMA.	Same as Alternative A.	Same as Alternative D.
7072	X		SD:1.1 SD:1.2	Motorized vehicle use is limited to designated roads and trails in the Little Mountain ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A for the Little Mountain ACEC and the Craig Thomas Little Mountain SMA.	Same as Alternative A.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs –Little Mountain ACEC and Proposed Expansion									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7073	X		SD:1.1 SD:1.2	Manage the Little Mountain ACEC as a ROW avoidance area. If additional ROW are required, mitigate the effects.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A for the Little Mountain ACEC and the Craig Thomas Little Mountain SMA. Manage the Craig Thomas Little Mountain SMA as a renewable energy exclusion area.	Same as Alternative A.	Same as Alternative D.
7074	X		SD:1.1 SD:1.2	The Little Mountain ACEC is open to oil and gas leasing (21,477 acres).	The Little Mountain ACEC is closed to oil and gas leasing (89,146 acres of federal mineral estate).	No ACEC would be designated.[5]	Same as Alternative B for the Little Mountain ACEC (21,477 acres of federal mineral estate). Apply a CSU stipulation to portions of the Craig Thomas Little Mountain SMA (19,327 acres of federal mineral estate) and manage the remainder as closed to oil and gas leasing (58,970 acres of federal mineral estate). Allow geophysical exploration in the SMA.	Same as Alternative B.	Same as Alternative D.
7075	X		SD:1.1 SD:1.2	On a case-by-case basis, pursue a withdrawal from appropriation under the mining laws for ACECs and special status species habitat.	Pursue a withdrawal from appropriation under the mining laws for a portion (24,083 acres) of the Little Mountain ACEC.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs –Upper Owl Creek ACEC and Proposed Expansion									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7076		X	SD:1.1 SD:1.2	Manage the Upper Owl Creek ACEC as the existing ACEC boundary (Map 84 and Appendix F; 13,758 acres).	Expand the Upper Owl Creek ACEC to 32,733 acres (Map 85 and Appendix F). Apply any management prescriptions for the existing ACEC to the expansion area.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
7077		X	SD:1.1 SD:1.2	Motorized vehicle use is limited to designated roads and trails in the Upper Owl Creek ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7078		X	SD:1.1 SD:1.2	Limit or prohibit surface-disturbing activities in the Upper Owl Creek ACEC to protect fragile soils, alpine tundra, important wildlife habitat, and scenic values (also see Appendix F).	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7079		X	SD:1.1 SD:1.2	Pursue a withdrawal from appropriation under the mining laws for the Upper Owl Creek ACEC.	Pursue a withdrawal from appropriation under the mining laws for the existing Upper Owl Creek ACEC and a portion of the proposed expansion area (13,016 acres).	No ACEC would be designated.[5]	Pursue withdrawals from appropriation under the mining laws for portions of the ACEC on a case-by-case basis.	Same as Alternative B.	Same as Alternative D.
7080		X	SD:1.1 SD:1.2	Require a detailed activity plan before approval of any proposal for major surface-disturbing activity in the Upper Owl Creek ACEC.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7081		X	SD:1.1 SD:1.2	The Upper Owl Creek ACEC is open for future ROW authorizations.	Manage the Upper Owl Creek ACEC as a ROW avoidance area.	No ACEC would be designated.[5]	Manage the Upper Owl Creek ACEC as a ROW avoidance area.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs –Upper Owl Creek ACEC and Proposed Expansion									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7082		X	SD:1.1 SD:1.2	Coordinate with local stakeholders in landscape management.	Same as Alternative A.	No ACEC would be designated.[5]	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
7083		X	SD:1.1 SD:1.2	The Upper Owl Creek ACEC is open to oil and gas leasing with a NSO restriction.	The Upper Owl Creek ACEC is closed to oil and gas leasing.	No ACEC would be designated.[5]	The Upper Owl Creek ACEC is closed to oil and gas leasing.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Chapman Bench ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7084	X		SD:1.1	No ACEC currently exists.[5]	Designate Chapman Bench as an ACEC (Map 85; 23,326 acres).	No ACEC would be designated.[5]	Same as Alternative C, except manage a portion of the Chapman Bench area as the Chapman Bench Management Area (3,425 acres of BLM-administered surface ownership).	Same as Alternative B.	Same as Alternative D.
7085	X		SD:1.1	No ACEC currently exists.[5]	Manage the Chapman Bench ACEC for the retention, enhancement, and success of the greater sage-grouse, mountain plover, and long-billed curlew**.**	No ACEC would be designated.[5]	Manage the Chapman Bench Management Area for the retention and success of the mountain plover, long-billed curlew, and other sensitive species habitat.	Same as Alternative B.	Same as Alternative D.
7086	X		SD:1.1	No ACEC currently exists.[5]	Motorized and mechanized vehicle use is limited to existing roads and trails in the Chapman Bench ACEC.	No ACEC would be designated.[5]	Manage motorized vehicle use in the Chapman Bench Management Area consistent with other resource objectives.	Same as Alternative B.	Same as Alternative D.
7087	X		SD:1.1	No ACEC currently exists.[5]	The Chapman Bench ACEC is closed to mineral materials disposal and mineral leasing.	No ACEC would be designated.[5]	The Chapman Bench Management Area is closed to mineral materials disposal and open to mineral leasing with a NSO restriction.	Same as Alternative B.	Same as Alternative D.
7088	X		SD:1.1	No ACEC currently exists.[5]	Pursue a withdrawal from appropriation under the mining laws for the Chapman Bench ACEC.	No ACEC would be designated.[5]	Pursue a withdrawal from appropriation under the mining laws for the Chapman Bench Management Area.	Same as Alternative B.	Same as Alternative D.
7089	X		SD:1.1	No ACEC currently exists.[5]	Prohibit surface-disturbing activities in the Chapman Bench ACEC.	No ACEC would be designated.[5]	Allow surface-disturbing activities in the Chapman Bench Management Area consistent with other resource objectives.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Chapman Bench ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7090	X		SD:1.1	No ACEC currently exists.[5]	Manage the Chapman Bench ACEC as a renewable energy avoidance area.	No ACEC would be designated.[5]	Manage the Chapman Bench Management Area as a renewable energy avoidance area.	Same as Alternative B.	Same as Alternative D.
7091	X		SD:1.1	No ACEC currently exists.[5]	Close the Chapman Bench ACEC to geophysical exploration.	No ACEC would be designated.[5]	Open the Chapman Bench Management Area to geophysical exploration.	Same as Alternative B.	Same as Alternative D.
7092	X		SD:1.1	No ACEC currently exists.[5]	Manage the Chapman Bench ACEC as a ROW avoidance area.	No ACEC would be designated.[5]	Manage the Chapman Bench Management Area as a ROW avoidance area.	Same as Alternative B.	Same as Alternative D.
7093	X		SD:1.1	No ACEC currently exists.[5]	Seasonally stipulate, where feasible, vegetative treatments, invasive, nonnative pest species control, fuels management, and maintenance of existing facilities in the Chapman Bench ACEC.	No ACEC would be designated.[5]	Stipulate, where feasible, vegetative treatments, invasive species control, fuels management, and maintenance of existing facilities in the Chapman Bench Management Area.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Clarks Fork Basin/Polecat Bench West Paleontological Area ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7094	X		SD:1.1 SD:1.2	Do not designate the Clarks Fork Basin/Polecat Bench area as an ACEC.	Designate the Clarks Fork Basin/Polecat Bench area as an ACEC (Map 85 and Appendix F; 23,895 acres).	Same as Alternative A.	Same as Alternative A. Part of the Clarks Fork Basin/Polecat Bench area (4,973 acres) is within the proposed PETM ACEC. See the PETM ACEC section for management prescriptions in this area.	Same as Alternative B.	Same as Alternative D.
7095	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Fence excavation sites on BLM-administered lands within the ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7096	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Manage the Clarks Fork Basin/Polecat Bench ACEC as a renewable energy exclusion area.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7097	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Motorized vehicle use is limited to designated roads and trails in the Clarks Fork Basin/Polecat Bench ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7098	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Avoid or prohibit surface-disturbing activities in the Clarks Fork Basin/Polecat Bench ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7099	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Prohibit the use, occupation, construction, or maintenance of facilities within the Clarks Fork Basin/Polecat Bench ACEC that are inconsistent with the management direction and objectives for the area.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Clarks Fork Basin/Polecat Bench West Paleontological Area ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7100	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	The Clarks Fork Basin/Polecat Bench ACEC is closed to mineral materials disposal and mineral leasing.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7101	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Pursue a withdrawal from appropriation under the mining laws for the Clarks Fork Basin/Polecat Bench ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7102	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	The Clarks Fork Basin/Polecat Bench ACEC is closed to geophysical exploration.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7103	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Allow collection, excavation, or removal of scientifically important paleontological resources in the Clarks Fork Basin/Polecat Bench ACEC only under a Paleontological Resource Use Permit. Only issue permits to individuals engaged in research, museum, or educational projects that are approved by the BLM and that provide for detailed recordation, reporting, care of specimens, and availability of specimens to other scientists and museums.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7104	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Allow minor ROW authorizations and other minor surface-disturbing activities in the Clarks Fork Basin/Polecat Bench ACEC if they are preceded by a	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Clarks Fork Basin/Polecat Bench West Paleontological Area ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					paleontological sensitivity survey and, if necessary, are monitored during construction. Management of surface-disturbing activities emphasizes avoiding impairment of the management objectives and existing values, while protecting the integrity of fossil-bearing material in the area.				

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Clarks Fork Canyon ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7105	X		SD:1.1 SD:1.2	Do not designate the Clarks Fork Canyon area as an ACEC.	Designate the Clarks Fork Canyon area as an ACEC (Map 85 and Appendix F; 12,249 acres).	Same as Alternative A.	Designate the Clarks Fork Canyon area as an ACEC (Map 87 and Appendix F; 4,746 acres).	Same as Alternative B.	Same as Alternative D.
7106	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	A portion (1,211 acres) of the Clarks Fork Canyon ACEC is closed to motorized and mechanized vehicle use and the remainder is limited to designated roads and trails. Continue to implement the seasonal closure within the Bald Ridge Area.	No ACEC would be designated.[5]	Motorized vehicle use is limited to designated roads and trails in the Clarks Fork Canyon ACEC. Continue to implement the seasonal closure within the Bald Ridge Area.	Same as Alternative B.	Same as Alternative D.
7107	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Prohibit surface-disturbing activities in the Clarks Fork Canyon ACEC.	No ACEC would be designated.[5]	Allow surface-disturbing activities consistent with the goals of the ACEC.	Same as Alternative B.	Same as Alternative D.
7108	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	The Clarks Fork Canyon ACEC is closed to mineral materials disposal and mineral leasing.	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
7109	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Pursue a withdrawal from appropriation under the mining laws for the Clarks Fork Canyon ACEC.	No ACEC would be designated.[5]	On a case-by-case basis, pursue a withdrawal from appropriation under the mining laws for ACECs and special status species habitat.	Same as Alternative B.	Same as Alternative D.
7110	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Manage the Clarks Fork Canyon ACEC as a renewable energy exclusion area.	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
7111	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	The Clarks Fork Canyon ACEC is closed to geophysical exploration.	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Clarks Fork Canyon ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7112	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Manage the Clarks Fork Canyon ACEC as a ROW avoidance area.	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
7113	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Allow and seasonally stipulate, where feasible, vegetative/silviculture treatments, invasive, nonnative pest species control, fuels management, and maintenance of existing facilities.	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Foster Gulch Paleontological Area ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7114	X		SD:1.1 SD:1.2	Do not designate the Foster Gulch Paleontological Area as an ACEC.	Designate the Foster Gulch Paleontological Area as an ACEC (Map 85 and Appendix F; 27,302 acres).	Same as Alternative A.	Same as Alternative A. Part of the Foster Gulch Paleontological area (4,975 acres) is within the proposed PETM ACEC. See the PETM ACEC section for management prescriptions in this area.	Same as Alternative B.	Same as Alternative D.
7115	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Fence excavation sites on BLM-administered lands within the Foster Gulch Paleontological Area ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7116	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Manage the Foster Gulch Paleontological Area ACEC as a renewable energy avoidance area.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7117	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Motorized vehicle use is limited to designated roads and trails in the Foster Gulch Paleontological Area ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7118	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Avoid or prohibit surface-disturbing activities in the Foster Gulch Paleontological Area ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7119	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Prohibit the use, occupation, construction, or maintenance of facilities within the Foster Gulch Paleontological Area ACEC that are inconsistent with the management direction and objectives for the area.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Foster Gulch Paleontological Area ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7120	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	The Foster Gulch Paleontological Area ACEC is closed to mineral materials disposal mineral leasing.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7121	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Pursue a withdrawal from appropriation under the mining laws for the Foster Gulch Paleontological Area ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7122	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	The Foster Gulch Paleontological Area ACEC is closed to geophysical exploration.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7123	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Allow collection, excavation, or removal of scientifically important paleontological resources in the Foster Gulch Paleontological Area ACEC only under a Paleontological Resource Use Permit. Only issue permits to individuals engaged in research, museum, or educational projects that are approved by the BLM and that provide for detailed recordation, reporting, care of specimens, and availability of specimens to other scientists and museums.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7124	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Allow minor surface-disturbing activities in the Foster Gulch Paleontological Area ACEC if they are preceded by a paleontological sensitivity	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Foster Gulch Paleontological Area ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					survey and, if necessary, are monitored during construction. Management of surface-disturbing activities emphasizes avoiding impairment of the management objectives and existing values, while protecting the integrity of fossil-bearing material in the area.				

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed McCullough Peaks South Paleontological Area ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7125	X		SD:1.1 SD:1.2	Do not designate the McCullough Peaks South Paleontological Area as an ACEC.	Designate the McCullough Peaks South Paleontological Area as an ACEC (Map 85 and Appendix F; 6,994 acres).	Same as Alternative A.	Same as Alternative A. Part of the McCullough Peaks South Paleontological Area (4,959 acres) is within the proposed PETM ACEC. See the PETM ACEC section for management prescriptions in this area.	Same as Alternative B.	Same as Alternative D.
7126	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	The McCullough Peaks South Paleontological Area ACEC is closed to mineral leasing.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7127	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Pursue a withdrawal from appropriation under the mining laws for the McCullough Peaks South Paleontological Area ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7128	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	The McCullough Peaks South Paleontological Area ACEC is closed to mineral materials disposal.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7129	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Fence excavation sites on BLM-administered lands in the McCullough Peaks South Paleontological Area ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7130	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Manage the McCullough Peaks South Paleontological Area ACEC as a renewable energy avoidance area.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7131	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Motorized vehicle use is limited to designated roads and trails in the McCullough Peaks South Paleontological Area ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed McCullough Peaks South Paleontological Area ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7132	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Avoid or prohibit surface-disturbing activities in the McCullough Peaks South Paleontological Area ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7133	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Prohibit the use, occupation, construction, or maintenance of facilities within the McCullough Peaks South Paleontological Area ACEC that are inconsistent with the management direction and objectives for the area.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7134	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	The McCullough Peaks South Paleontological Area ACEC is closed to geophysical exploration.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7135	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Allow collection, excavation, or removal of scientifically important paleontological resources in the McCullough Peaks South Paleontological Area ACEC only under a Paleontological Resource Use Permit. Only issue permits to individuals engaged in research, museum, or educational projects that are approved by the BLM and that provide for detailed recordation, reporting, care of specimens, and availability of specimens to other scientists and museums.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed McCullough Peaks South Paleontological Area ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7136	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Manage the McCullough Peaks South Paleontological Area ACEC as a ROW avoidance area. Allow minor ROW authorizations and other minor surface-disturbing activities if they are preceded by a paleontological sensitivity survey and, if necessary, are monitored during construction. Management of surface-disturbing activities emphasizes avoiding impairment of the management objectives and existing values, while protecting the integrity of fossil-bearing material in the area.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 Special Designations (SD) – ACECs – Proposed Rainbow Canyon ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7137	X		SD:1.1 SD:1.2	Do not designate the Rainbow Canyon area as an ACEC.	Designate the Rainbow Canyon area as an ACEC (Map 85 and Appendix F; 1,433 acres).	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
7138	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Fence excavation sites on BLM-administered lands within the Rainbow Canyon ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7139	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Manage the Rainbow Canyon ACEC as a renewable energy avoidance area.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7140	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Motorized vehicle use is limited to designated roads and trails in the Rainbow Canyon ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7141	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Avoid or prohibit surface-disturbing activities in the Rainbow Canyon ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7142	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Prohibit the use, occupation, construction, or maintenance of facilities within the Rainbow Canyon ACEC that are inconsistent with the management direction and objectives for the area.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7143	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	The Rainbow Canyon ACEC is closed to mineral materials disposal and mineral leasing.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7144	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Pursue a withdrawal from appropriation under the mining laws for the Rainbow Canyon ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 Special Designations (SD) – ACECs – Proposed Rainbow Canyon ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7145	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	The Rainbow Canyon ACEC is closed to geophysical exploration.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7146	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Allow fossil collection, excavation, or removal in the Rainbow Canyon ACEC only under a permit issued by the Wyoming BLM State Director. Only issue permits to individuals engaged in research, museum, or educational projects that are approved by the BLM and that provide for detailed recordation, reporting, care of specimens, and availability of specimens to other scientists and museums.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7147	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Manage the Rainbow Canyon ACEC as a ROW avoidance area. Allow other minor surface-disturbing activities if they are preceded by a paleontological sensitivity survey and, if necessary, are monitored during construction. Management of surface-disturbing activities emphasizes avoiding impairment of the management objectives and existing values, while protecting the integrity of fossil-bearing material in the area.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 Special Designations (SD) – ACECs – Proposed Rainbow Canyon ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7148	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Continue to allow livestock grazing under existing regulations provided it does not disturb the natural, educational, and scientific research values of the Rainbow Canyon ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Paleocene, Eocene Thermal Maximum (PETM) ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7149	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated. Portions of ACEC proposed under Alternative D are managed as the Clarks Fork Basin/Polecat Bench, McCullough Peaks South Paleontological Area, and Foster Gulch ACECs under Alternative B. See these ACECs for management prescriptions in this area.	No ACEC would be designated.[5]	Designate portions of the Clarks Fork Basin/Polecat Bench, Foster Gulch, and McCullough Peaks South areas as the PETM ACEC (Map 87 and Appendix F; 14,906 acres).	Same as Alternative B.	Same as Alternative D.
7150	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Allow renewable energy development consistent with the protection of paleontological resources and other resource goals.	Same as Alternative B.	Same as Alternative D.
7151	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Motorized vehicle use is limited to existing roads and trails in the PETM ACEC. In the McCullough Peaks Travel Management area, travel is limited to designated roads and trails.	Same as Alternative B.	Same as Alternative D.
7152	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Allow surface-disturbing activities consistent with the goals of the ACEC.	Same as Alternative B.	Same as Alternative D.
7153	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Allow the use, occupation, construction, or maintenance of facilities within the ACEC that are consistent with management direction and objectives for the area.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Paleocene, Eocene Thermal Maximum (PETM) ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7154	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Apply a NSO restriction on the PETM ACEC. Grant exceptions on a case-by-case basis. The PETM ACEC is closed to mineral materials disposal.	Same as Alternative B.	Same as Alternative D.
7155	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Allow geophysical exploration consistent with paleontological and other resource goals.	Same as Alternative B.	Same as Alternative D.
7156	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Except for casual use collection of common paleontological resources, allow fossil collection, excavation, or removal in the PETM ACEC only under a Paleontological Resource Use Permit. Only issue permits to individuals engaged in research, museum, or educational projects that are approved by the BLM and that provide for detailed recordation, reporting, care and availability of specimens to other scientists and museums.	Same as Alternative B.	Same as Alternative D.
7157	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Allow new ROW authorizations consistent with the protection of paleontological resources and other resource goals. Existing ROW or corridors are not subject to this management.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Rattlesnake Mountain ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7158	X		SD:1.1 SD:1.2	Do not designate the Rattlesnake Mountain area as an ACEC.	Designate the Rattlesnake Mountain area as an ACEC (Map 85 and Appendix F, 19,137 acres).	Same as Alternative A.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
7159	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Rattlesnake Mountain ACEC is limited to designated roads and trails and portions are seasonally closed to motorized and mechanized vehicle use.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7160	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	The Rattlesnake Mountain ACEC is closed to mineral materials disposal and mineral leasing.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7161	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Pursue a withdrawal from appropriation under the mining laws for the Rattlesnake Mountain ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7162	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Prohibit surface-disturbing activities in the Rattlesnake Mountain ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7163	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Manage the Rattlesnake Mountain ACEC as a renewable energy exclusion area.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7164	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	The Rattlesnake Mountain ACEC is closed to geophysical exploration.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7165	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Manage the Rattlesnake Mountain ACEC as a ROW exclusion area.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Rattlesnake Mountain ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7166	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Allow and seasonally stipulate, where feasible, vegetative/silviculture treatments, invasive, nonnative pest species control, fuels management, and maintenance of existing facilities in the Rattlesnake Mountain ACEC.	No ACEC would be designated.[5]	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Sheep Mountain ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
7167	X		SD:1.1 SD:1.2	Coordinate with local stakeholders in landscape management.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
7168	X		SD:1.1 SD:1.2	Do not designate the Sheep Mountain area as an ACEC.	Designate the Sheep Mountain area as an ACEC (Map 85 and Appendix F; 73,298 acres including 25,151 acres of BLM-administered surface).	Same as Alternative A.	Designate the Sheep Mountain area as an ACEC (Map 87 and Appendix F; 25,960 acres including 14,200 acres of BLM-administered surface).	Same as Alternative B.	Same as Alternative D.
7169	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Manage Sheep Mountain ACEC as VRM Class II.	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
7170	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Motorized and mechanized vehicle use is limited to designated roads and trails.	No ACEC would be designated.[5]	Motorized vehicle use is limited to designated roads and trails in the Sheep Mountain ACEC.	Same as Alternative B.	Same as Alternative D.
7171	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	The Sheep Mountain ACEC is closed to mineral materials disposal and mineral leasing.	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
7172	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Pursue a withdrawal from appropriation under the mining laws for the Sheep Mountain ACEC.	No ACEC would be designated.[5]	On a case-by-case basis, pursue a withdrawal from appropriation under the mining laws for ACECs and special status species habitat.	Same as Alternative B.	Same as Alternative D.
7173	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Prohibit surface-disturbing activities in the Sheep Mountain ACEC.	No ACEC would be designated.[5]	Allow surface-disturbing activities consistent with the goals of the ACEC. Limit surface-disturbing activities to slopes of 15 percent or less, except where needed to improve watershed function, wildlife habitat, or land health (e.g., including forestland management).	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Sheep Mountain ACEC									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7174	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Manage the Sheep Mountain ACEC as a renewable energy avoidance area.	No ACEC would be designated.[5]	Manage the Sheep Mountain ACEC as a renewable energy avoidance area.	Same as Alternative B.	Same as Alternative D.
7175	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	The Sheep Mountain ACEC is closed to geophysical exploration.	No ACEC would be designated.[5]	Areas available for leasing are open to geophysical exploration with specific resource protection.	Same as Alternative B.	Same as Alternative D.
7176	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Manage the Sheep Mountain ACEC as a ROW avoidance area.	No ACEC would be designated.[5]	Manage the Sheep Mountain ACEC as a ROW avoidance area.	Same as Alternative B.	Same as Alternative D.
7177	X		SD:1.1 SD:1.2	No ACEC currently exists.[5]	Allow and seasonally stipulate, where feasible, vegetative/silviculture treatments, invasive, nonnative pest species control, fuels management, and maintenance of existing facilities in the Sheep Mountain ACEC.	No ACEC would be designated.[5]	Allow and stipulate, where feasible, vegetative/silviculture treatments, invasive species control, fuels management, and maintenance of existing facilities.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
7178	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Designate greater sage-grouse priority habitat within Key Habitat Areas as the Greater Sage-Grouse Key Habitat Areas ACEC (Map 88 and Appendix F; 1,232,583 acres).	Designate greater sage-grouse priority habitat within PHMAs as the Greater Sage-Grouse PHMAs ACEC (Map 89 and Appendix F; 1,116,698 acres).
7179	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B, except implement mitigation and minimization guidelines and required design features, including specific measures for greater sage-grouse (refer to Appendix L). Incorporate greater sage-grouse specific measures into project proposals as required design features or mitigation for any authorized federal action, regardless of surface ownership.	Implement mitigation and minimization guidelines and required design features, including specific measures for greater sage-grouse (refer to Appendix L). Incorporate greater sage-grouse specific measures into project proposals as required design features.	Same as Alternative E.
7180	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B, except incorporate greater sage-grouse specific measures into project proposals as required design features or mitigation for any authorized federal action, regardless of surface ownership. Require the development of a wildlife resource monitoring and mitigation plan to address potential impacts	Incorporate BLM required design features or mitigation for any authorized mineral activity for federal mineral estate, regardless of surface ownership. Require the development of a wildlife resource monitoring and mitigation plan to address potential impacts from mineral development on wildlife	Same as Alternative E.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							from mineral development on wildlife populations and/or habitat on a case-by-case basis.[7]	populations and/or habitat on a case-by-case basis.	
7181	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Examine the applicability of categorical exclusions in priority habitat[6]. Conduct extraordinary circumstances review if applicable.	Same as Alternative E.
7182	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Where suitable conservation actions cannot be achieved in priority habitat, 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 sage-grouse habitat.	Same as Alternative E.
7183	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Identify areas where acquisitions (including subsurface mineral rights) or conservation easements would benefit sage-grouse habitat.	Same as Alternative E.
				Density and Disturbance					
7184	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Manage the Greater Sage-Grouse Key Habitat Areas ACEC so that anthropogenic disturbances do not exceed one disturbance per 640 acres and cover less than 3 percent of total sage-grouse habitat	In the Greater Sage-Grouse PHMAs ACEC, the density goal includes either: • Maintain or reduce the existing level of density of energy production and/or transmission

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
								regardless of ownership. Anthropogenic features include but are not limited to paved highways, graded gravel roads, transmission lines, substations, wind turbines, oil and gas wells, geothermal wells and associated facilities, pipelines, landfills, homes, and mines. Prohibit further disturbance in the Greater Sage-Grouse Key Habitat Areas ACEC where the 3 percent disturbance threshold is already exceeded until enough habitat has been restored to maintain the area under this threshold (subject to valid existing rights). 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 less demonstrably harmful to sage-grouse.	structures on the landscape in sagebrush communities, or • Manage the existing level of density of disturbance on the landscape so that anthropogenic disturbances do not exceed one disturbance per 640 acres within the Density and Disturbance Calculation Tool (DDCT) analysis (or best available tool) and cover less than 3 percent of sagebrush habitat. Consolidate anthropogenic features from development and transmission on the landscape, regardless of land ownership patterns or whether proposed actions occur in the Greater Sage-Grouse PHMAs ACEC. Allow high profile structures (higher than 12 feet) within greater sage-grouse nesting habitat on a case-by-case basis.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
Lands & Realty									
7185	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Evaluate and remove, bury, or modify existing powerlines within priority sage-grouse habitat areas on a case-by-case basis.	Same as Alternative E.
7186	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Allow only below ground ROWs within designated ROW corridors. Co-locate new ROWs 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.	Allow only below ground ROWs within designated ROW corridors. Construct new transmission lines between July 1 and March 14 (or between July 1 and November 30 in mapped winter concentration areas) and within 0.5 miles on either side of existing 115 kV or larger transmission lines.
7187	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Manage the ACEC as a ROW exclusion area. Co-locate new ROWs within existing ROWs or where it best minimizes sage-grouse impacts where new ROWs associated with valid existing rights are required. 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, build any new road to the absolute	Manage the ACEC as a ROW avoidance/ mitigation area. Allow ROWs where it best minimizes sage-grouse impacts, build new roads to the minimum standard necessary, and add the surface disturbance to the total disturbance in the Greater Sage-Grouse PHMAs ACEC if valid existing rights cannot be accessed via existing roads. If disturbance exceeds 3 percent for that area, implement additional effective mitigation on a case-by-case basis to offset the

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
								minimum standard necessary, and add the surface disturbance to the total disturbance in the Greater Sage-Grouse Key Habitat Areas ACEC. If that disturbance exceeds 3 percent for that area, implement additional effective mitigation on a case-by-case basis to offset the resulting loss of sage-grouse habitat.	resulting loss of sage-grouse habitat. Use existing roads to access valid existing rights that are not yet developed to the extent practicable. Allow new ROWs to access valid, existing rights and private and state inholdings where needed.
7188	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Where existing leases or ROWs have had some level of development (road, fence, well, etc.) and are no longer in use, reclaim the site by removing these features and restoring the habitat.	Same as Alternative E.
7189	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Relocate existing designated ROW corridors crossing priority sage-grouse habitat void of any authorized ROWs, outside of the priority habitat area. If relocation is not possible, undesignate that entire corridor during the planning process.	Same as Alternative E.
7190	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Retain lands in the ACEC. Consider exceptions where there is mixed ownership, and land exchanges would allow for additional or more contiguous federal	No similar action.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
								ownership patterns within the ACEC. Under portions of the Greater Sage-Grouse Key Habitat Areas ACEC 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.	
7191	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Pursue a withdrawal from appropriation under the mining laws for the Greater Sage-Grouse Key Habitat Areas ACEC.	No similar action.
7192	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Do not recommend withdrawals not associated with mineral activity in the Greater Sage-Grouse Key Habitat Areas ACEC unless the land management is consistent with sage-grouse conservation measures.	No similar action.
7193	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	ROWs will be amended to require features that enhance sage-grouse habitat security. Allow access to existing designated corridors for maintenance.	Maintenance of existing structures would be allowed, and upgrades would be considered where need is demonstrated through the appropriate regulatory process, and would include

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
									anti-perching devices and retrofitting existing towers to discourage use by raptors.
7194	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Any existing towers must undergo review for adverse effects. Review will include minimizing wires and other collision hazards for sage-grouse and migratory birds, as well as adverse impacts of night lights.	Same as Alternative E.
Renewable Energy—Wind-Energy Development									
7195	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Manage the Greater Sage-Grouse Key Habitat Areas ACEC as a renewable energy exclusion area.	Manage the Greater Sage-Grouse PHMAs ACEC as a renewable energy avoidance area. Do not authorize new applications and proposals for wind power development inside greater sage-grouse PHMAs unless it can be sufficiently demonstrated that the development activity would not result in declines of sage-grouse populations. Sufficient demonstration of "no declines" should be coordinated with the WGFD and U.S. Fish and Wildlife Service.
7196	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Prohibit the location of new meteorological towers.	No similar action.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
Habitat Restoration/Vegetation Management									
7197	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Prioritize implementation of restoration projects based on environmental variables that improve chances for project success in areas most likely to benefit sage-grouse. Prioritize restoration in seasonal habitats that are thought to be limiting sage-grouse distribution and/or abundance.	Same as Alternative E.
7198	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Include sage-grouse habitat parameters as defined by Connelly et al. (2000), Hagen et al. (2007), or if available, State Sage-Grouse Conservation Plans and appropriate local information in habitat restoration objectives. Make meeting these objectives within priority sage-grouse habitat areas the highest restoration priority.	Same as Alternative E.
7199	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Composition, function, and structure of native desired plant communities will be consistent with the reference state of the appropriate ESD, and maximize these properties to provide for healthy, resilient, and recovering sage-grouse	Manage areas for a higher plant community state or phase (based on state and transition models in ESDs) on a case-by-case basis where site-specific management objectives determine that a higher plant community state or phase is desirable. In

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
								habitat components.	these areas the desired plant community states or phases will be determined on a site-specific basis at the implementation level.
7200	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Require use of native seeds for restoration based on availability, adaptation (ecological site potential), and probability of success. Where probability of success or adapted seed availability is low, nonnative seeds may be used as long as they support sage-grouse habitat objectives.	Same as Alternative E.
7201	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Design post-restoration management to ensure long-term persistence. This could include changes in livestock grazing management, wild horse and burro management, travel management, or other activities to achieve and maintain the desired condition of the restoration effort that benefits sage-grouse.	Same as Alternative E.
7202	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Consider potential changes in climate when proposing restoration seedings using native plants. Consider collection from the warmer component of	Same as Alternative E.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
								the species' current range when selecting native species.	
7203	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Restore native (or desirable) plants and create landscape patterns which most benefit sage-grouse.	Same as Alternative E.
7204	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Make re-establishment of sagebrush cover and desirable understory plants (relative to ecological site potential) the highest priority for restoration efforts.	Same as Alternative E.
7205	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	In fire prone areas where sagebrush seed is required for sage-grouse habitat restoration, consider establishing seed harvest areas that are managed for seed production and are a priority for protection from outside disturbances.	Same as Alternative E.
7206	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	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.	Same as Alternative E.
7207	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	For vegetation treatments, fuels management, and habitat restoration, base sage-grouse habitat	Same as Alternative E.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
								objectives on, in priority order, potential natural community within the applicable ESD, (Connelly et al. [2000]: 977, Table 3), or other objectives that have been demonstrated to be associated with increasing sage-grouse populations.	
7208	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	If there ever is any legitimate need to reduce "thatch" in meadows, grass mowers will be used. Thus, livestock manure, trampling damage to soils, weed spread will be minimized.	No similar action.
Integrated Invasive Species Management									
7209	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Restrict activities in sage-grouse habitat that facilitate the spread of invasive plants.	No similar action.
7210	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	In sage-grouse habitat, ensure that soil cover and native herbaceous plants are at their ESD potential to help protect against invasive plants. In areas without ESDs, reference sites would be utilized to identify appropriate desired plant communities and soil cover.	Manage areas for a higher plant community state or phase (based on state and transition models in ESDs) on a case-by-case basis where site-specific management objectives determine that a higher plant community state or phase is desirable. In these areas the desired plant community states or phases will be determined on a site-

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
									specific basis at the implementation level.
7211	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Develop and implement methods for prioritizing and restoring sagebrush steppe invaded by nonnative plants.	Same as Alternative E.
7212	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Use of herbicides will be minimized, and used only as a last resort to achieve clearly defined goals and objectives. Flash burners, mowing of weeds and selected hand cutting will be prioritized. Only if no other alternative exists will selected ground-based application of a limited range of herbicides be used.	Same as Alternative E.
7213	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Any project vehicles will be washed, and will not drive through infestations during access to site.	Same as Alternative E.
Fire and Fuels Management									
7214	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Design and implement fuels treatments in the Greater Sage-Grouse Key Habitat Areas ACEC with an emphasis on protecting existing sagebrush ecosystems. Do not reduce sagebrush canopy cover to less than 15 percent unless a fuels management objective requires additional reduction in sagebrush cover to meet strategic	Design and implement fuels treatments in the Greater Sage-Grouse PHMAs ACEC with an emphasis on protecting existing sagebrush ecosystems. Sagebrush Treatment: Sagebrush eradication is considered disturbance and will contribute to the 3 percent disturbance factor. In stands with less than

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
								protection of sage-grouse habitat and conserve habitat quality for the species. Closely evaluate the benefits of the fuel break against the additional loss of sagebrush cover in future NEPA documents. Apply appropriate seasonal restrictions for implementing fuels management treatments according to the type of seasonal habitats present. 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. Do not use fire to treat sagebrush in less than 12-inch precipitation zones (e.g., Wyoming big sagebrush or other xeric sagebrush species. 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	15percent cover, treatment should be designed to maintain or improve sagebrush habitat percent. Sagebrush treatments that maintain sagebrush canopy cover at or above 15 percent total canopy cover within the treated acres will not be considered disturbance. Treatments that reduce sagebrush canopy cover below 15 percent will be allowed if all such treated areas make up less than 20 percent of the suitable sagebrush habitat within the DDCT analysis, and any point within the treated area is within 60 meters of sagebrush habitat with 10 percent or greater canopy cover. Treatments to enhance sagebrush/grassland will be evaluated based upon the existing habitat quality and the functional level post-treatment. Although seasonal restrictions on activities may apply, vegetation treatments that do not make the habitat unsuitable for greater sage-grouse (e.g., fence lines, two-tracks, water pipelines, or stock tanks)

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
								considered in stands where cheatgrass is a very minor component in the understory. Monitor and control invasive vegetation post-treatment. Require use of native seeds for fuels management treatment based on availability, adaptation (site potential), and probability of success. Where probability of success or native seed availability is low, nonnative seeds may be used as long as they meet sage-grouse habitat objectives. Design post-fuels management projects to ensure long-term persistence of seeded or pre-treatment native plants. This may require temporary or long-term changes in livestock grazing management, wild horse and burro management, travel management, or other activities to achieve and maintain the desired condition of the fuels management project to ensure long-term persistence of seeded or pre-treatment native plants.	are not considered in the density calculation. In the Greater Sage-Grouse PHMAs ACEC, design and implement fuels treatments with an emphasis on protecting existing sagebrush ecosystems. Do not reduce sagebrush canopy cover to less than 15 percent unless a fuels management objective requires additional reduction in sagebrush cover to meet strategic protection of priority sage-grouse habitat and conserve habitat quality for the species. Closely evaluate the benefits of the fuel break against the additional loss of sagebrush cover in future NEPA documents. Apply appropriate seasonal restrictions for implementing fuels management treatments according to the type of seasonal habitats present in the Greater Sage-Grouse PHMAs ACEC. 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

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
									habitat quality. Limit the use of fire to treat sagebrush in areas receiving less than 12 inches of annual precipitation. Prescribed fire to reduce hazardous fuels or enhance land health in areas receiving less than 12 inches of annual precipitation could be considered after exploring other potential treatment methods and where cheatgrass is a very minor component of the understory. Monitor and control invasive vegetation post-treatment. Rest treated areas from grazing for three full growing seasons unless vegetation recovery dictates otherwise. Require use of native seeds for fuels management treatment based on availability, adaptation (site potential), and probability of success. Where probability of success or native seed availability is low, nonnative seeds may be used as long as they meet sage-grouse habitat objectives. Design post-fuels management projects to

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
									ensure long-term persistence of seeded or pre-treatment native plants. This may require temporary or long-term changes in livestock grazing management, wild horse and burro management, travel management, or other activities to achieve and maintain the desired condition of the fuels management projects to ensure long-term persistence of seeded or pre-treatment native plants.
7215	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Lands will be managed for the potential natural community ecological condition to help minimize adverse impacts of fire.	Same as Alternative E.
7216	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Any fuels treatments will focus on interfaces with human habitation or significant existing disturbances.	No similar action.
7217	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Design fuels management projects in priority sage-grouse habitat to strategically and effectively reduce wildfire threats in the greatest area. This may require fuels treatments implemented in a more linear versus block design.	Same as Alternative E.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7218	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	During fuels management project design, consider the utility of using livestock to strategically reduce fine fuels, and implement grazing management that will accomplish this objective. Consult with ecologists to minimize impacts to native perennial grasses.	Same as Alternative E.
7219	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Prioritize native seed allocation for use in sage-grouse habitat in years when preferred native seed is in short supply. This may require reallocation of native seed from emergency stabilization and rehabilitation projects outside the Greater Sage-Grouse Key Habitat Areas ACEC to those inside it. Use of native plant seeds for emergency stabilization and rehabilitation seedings is required based on availability, adaptation (site potential), and probability of success. Where probability of success or native seed availability is low, nonnative seeds may be used as long as they meet sage-grouse habitat conservation objectives. Re-establishment of	In disturbed areas, reestablish healthy native or desired plant communities based on pre-disturbance/desired plant species composition.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
								appropriate sagebrush species/subspecies and important understory plants, relative to site potential, will be the highest priority for rehabilitation efforts.	
7220	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Design post emergency stabilization and 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 and burro management, travel management or other activities to achieve and maintain the desired condition of emergency stabilization and rehabilitation projects to benefit sage-grouse.	No similar action.
7221	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Consider potential changes in climate when proposing post-fire seedings using native plants. Consider seed collections from the warmer component of a species' current range for selection of native seed.	Same as Alternative E.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7222	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Establish and strengthen networks with seed growers to ensure availability of native seed for emergency stabilization and rehabilitation projects.	Same as Alternative E.
7223	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Close the Greater Sage-Grouse Key Habitat Areas ACEC to livestock grazing.	Post fire recovery must include establishing adequately sized exclosures (free of livestock grazing) that can be used to assess recovery.
7224	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Close the Greater Sage-Grouse Key Habitat Areas ACEC to livestock grazing.	Livestock grazing should be excluded from burned areas until woody and herbaceous plants achieve sage-grouse habitat objectives.
7225	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Close the Greater Sage-Grouse Key Habitat Areas ACEC this to livestock grazing.	Where burned sage-grouse habitat cannot be fenced from other unburned habitat, the entire area (e.g., allotment/pasture) should be closed to grazing until recovered.
7226	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Mowing of grass will be used in any fuelbreak fuels reduction project (roadsides or other areas).	No similar action.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
Comprehensive Travel and Transportation Management									
7227	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5] Limit motorized vehicle use to designated roads and trails, with a seasonal closure from March 15 to June 30.[7] In greater sage-grouse Key Habitat Areas travel management should evaluate the need for permanent or seasonal road or area closures.	No ACEC would be designated.[5]	Same as Alternative C.	Limit motorized vehicle use to designated roads and trails, with a seasonal closure from March 15 to June 30. In greater sage-grouse Key Habitat Areas travel management should evaluate the need for permanent or seasonal road or area closures.	Limit motorized vehicle use to designated roads and trails.
7228	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Limit motorized travel to existing roads, primitive roads, and trails for the interim until travel management planning is complete and routes are either designated or closed.	Same as Alternative E.
7229	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Prohibit new road construction within 4 miles of active sage-grouse leks, and avoid new road construction in occupied sage-grouse habitat.	Locate new primary and secondary roads greater than 1.9 miles from the perimeter of occupied sage-grouse leks inside core areas. Additionally, for new proposals, consider and evaluate an alternative that would locate new tertiary roads greater than 0.6 mile from the perimeter of occupied leks.
7230	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B, except using the following travel management criteria:	Complete activity level travel plans within 5 years of the record of decision. During activity	Same as Alternative E, except applies to the Greater Sage-Grouse PHMAs ACEC.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							• During subsequent travel management planning, all routes within PHMAs would undergo a route evaluation to determine its purpose and need and the potential resource and/or user conflicts from motorized travel. Where resource and/or user conflicts outweigh the purpose and need for the route, the route would be considered for closure or considered for relocation outside of sensitive greater sage-grouse habitat. • During implementation-level travel planning, threats to greater sage-grouse and their habitat would be considered when evaluating route designations and/or closures. • During subsequent travel management planning, routes within PHMAs that do not have a purpose or need would be considered for closure. • During subsequent	level planning, where appropriate, designate routes in the Greater Sage-Grouse Key Habitat Areas ACEC with current administrative/agency purpose or need to administrative access only. Route by route analysis (referred also as minimization or designation criteria as stated in 43 CFR 8342.1) in sage-grouse Key Habitat Areas will recognize sage-grouse habitat as a predominant management objective, as well as the priority resource to manage. The route by route analysis will determine future travel management plans within sage-grouse Key Habitat Areas, which would be designed to minimize impacts to sage-grouse habitat. Travel management planning will evaluate the need for closures of routes not desired for public purposes, including seasonal closures, and designate routes with current administrative/agency purpose or need to administrative access only as well as seasonal closures.	

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							travel management planning, routes within PHMAs that are duplicative parallel, or redundant would be considered for closure. • During subsequent travel management planning, OHV timing limitations would be considered in important seasonal habitats where OHV use is a threat. • During subsequent travel management planning, consider limiting snow machine travel to designated routes or consider seasonal closures in greater sage-grouse wintering areas from November 1 through March 31. • During subsequent travel management planning, routes in PHMAs not required for public access or recreation with a current administrative/agency purpose or need would be evaluated for administrative access only. • During subsequent travel management planning, prioritize	Routes designated as closed will be restored when necessary using appropriate seed mixtures for sage-grouse ecological conditions.	

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							restoration of routes not designated in a Travel Management Plan within PHMAs. • During subsequent travel management planning, consider using seed mixes or transplant techniques that will maintain or enhance greater sage-grouse habitat when rehabilitating linear disturbances. • During subsequent travel management planning, consider scheduling road maintenance to avoid disturbance during sensitive periods and times to the extent practicable. Use time of day limits (after 10:00 AM to 7:00 PM) to reduce impacts on greater sage-grouse during breeding and nesting periods.[7]		
7231	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Limit route construction to realignments of existing designated routes in priority habitat if that realignment has a minimal impact on sage-grouse habitat, eliminates the need to construct a new road, or is necessary for motorist safety.	Same as Alternative E.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7232	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Use existing roads or realignments in greater sage-grouse priority habitat 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 the priority area. If that disturbance exceeds 3 percent for that area, then evaluate and implement additional, effective mitigation necessary to offset the resulting loss of sage-grouse habitat.	Same as Alternative E.
7233	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Allow no upgrading of existing routes that would change route category (road, primitive road, or trail) or capacity unless upgrading would have minimal impact on sage-grouse habitat, is necessary for motorist safety, or eliminates the need to construct a new road.	Construct new roads to a minimum design standard needed for proposed activity.
7234	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Conduct restoration of roads, primitive roads, and trails not designated in travel management	Same as Alternative E.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
								plans in priority habitat. This also includes primitive routes/roads that were not designated in Wilderness Study Areas and within lands with wilderness characteristics that have been selected for protection in previous RMPs.	
7235	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	When reseeding roads, primitive roads and trails in priority habitat, use appropriate seed mixes and consider the use of transplanted sagebrush.	Same as Alternative E.
7236	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Consider closing designated roads in sage-grouse priority habitat.	Same as Alternative E.
Recreation and Visitor Services									
7237	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Only allow BLM SRPs in priority habitat that have neutral or beneficial effects to priority habitat areas (e.g., big game outfitting, which occurs during a non-critical time for sage-grouse).	Same as Alternative E.
Non-Energy Leasables									
7238	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	The Greater Sage-Grouse Key Habitat Areas ACEC is closed to non-energy mineral leasing. This includes not permitting any new leases to expand an existing mine.	No similar action.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7239	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	For existing non-energy leasable mineral leases in priority habitat, in addition to the solid minerals required design features, follow the same required design features applied to Fluid Minerals, when wells are used for solution mining.	No similar action.
Locatable Minerals									
7240	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Pursue a withdrawal from appropriation under the mining laws for the Greater Sage-Grouse Key Habitat Areas ACEC.	No similar action.
7241	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	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. 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, WO IM 2013-142 [BLM 2013b]). Example: purchase private land and mineral rights or severed subsurface	Consider seasonal restrictions if deemed necessary to prevent unnecessary or undue degradation as defined in 43 CFR 3809.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
								mineral rights within the ACEC area and deed to US Government. Consider seasonal restrictions if deemed effective.	
Salable Minerals									
7242	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	In the Greater Sage-Grouse Key Habitat Areas ACEC, restore salable mineral pits no longer in use to meet sage-grouse habitat conservation objectives.	Same as Alternative E.
7243	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Close the Greater Sage-Grouse Key Habitat Areas ACEC to mineral materials disposals.	No similar action.
Unleased Federal Fluid Mineral Estate									
7244	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	The Greater Sage-Grouse Key Habitat Areas ACEC is closed to mineral leasing.	Apply a NSO stipulation within 0.6 mile of occupied sage-grouse leks (Map 89). Apply a minimum lease size of 640 contiguous acres of federal mineral estate within sage-grouse PHMAs. Lease smaller parcels only when 640 contiguous acres of federal mineral estate is not available and leasing is necessary to remain in compliance with laws, regulations, and policy; for example, to protect the federal mineral

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
									estate from drainage or to commit the federal mineral estate to unit or communitization agreements. Preliminary parcels reviewed for possible offering in a lease sale should comply with this minimum lease size. Expressions of interest that are less than this minimum lease size would be evaluated and modified by the BLM to meet the minimum lease size, where possible, prior to review for possible offering in a lease sale. Apply a TLS to restrict disruptive activity within 0.6 mile of occupied sage-grouse leks from March 1 to June 30.
Leased Federal Fluid Mineral Estate									
7245	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Require unitization when deemed necessary for proper development and operation of an area or to facilitate more orderly (e.g., phased and/or clustered) development as a means of minimizing adverse impacts to resources, including greater sage-grouse, so long as the unitization plan adequately protects the rights of all parties	Same as Alternative E.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
								including the United States, according to the Federal Lease Form, 3100-11, Sections 4 and 6.	
7246	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	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 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 or USFS will perform the work.	Same as Alternative E.
7247	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Upon expiration or termination of existing leases, do not accept nominations or expressions of interest for parcels within the Greater Sage-Grouse Key Habitat Areas ACEC.	No similar action.
7248	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Implement management actions regarding unitization and requirements for full reclamation bonds through implementation decisions (e.g., approval of an APD, Sundry Notice, etc.) and upon completion of the	Same as Alternative E.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
								environmental record of review (43 CFR 3162.5), including appropriate documentation of compliance with NEPA. Evaluate, among other things: • Whether the conservation measure is "reasonable" (43 CFR 3101.1-2) with the valid existing rights; and • Whether the action is in conformance with the approved RMP.	
7249	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Apply a NSO condition of approval in the Greater Sage-Grouse Key Habitat Areas ACEC. In the ACEC, provide the following conservation measure as terms and conditions of the approved RMP: Do not allow new surface occupancy on federal leases within the Greater Sage-Grouse Key Habitat Areas ACEC during any time of the year. Consider an exception: • If the lease is entirely within the ACEC; apply a 4 mile NSO around the lek, and limit permitted disturbances to one per section with no more than 3 percent	Apply a NSO condition of approval within 0.6 mile of occupied sage-grouse leks. Apply TLS condition of approval to restrict disruptive activity within 0.6 mile of occupied sage-grouse leks from March 1 to June 30.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
								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 less demonstrably harmful to sage-grouse.	
7250	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Apply a TLS condition of approval to prohibit surface-disturbing exploratory drilling activities during the nesting and early brood-rearing season in priority sage-grouse habitat.	Same as Alternative E.
7251	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Complete Master Development Plans in lieu of APD-by-APD processing for all but wildcat wells.	Same as Alternative E.
7252	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Limit proposed surface disturbance to 3 percent for an area when permitting APDs on existing leases that are not yet developed.	Same as Alternative E.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
								Consider an exception if additional mitigation is demonstrated to offset the resulting loss of sage-grouse habitat. Implement additional mitigation when necessary in priority sage-grouse habitat. Implement additional mitigation first within the same population area where the impact is realized, and if not possible, then conduct mitigation within the same Management Zone as the impact, per 2006 WAFWA Strategy (page 2-17).	
7253	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Explore options to amend, cancel, or buy out leases.	Consider offers to amend, cancel, or buy out leases.
7254	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Include conditions that require relinquishment of leases/authorizations if doing so will mitigate the impact of a proposed development or mitigate the unanticipated impacts of an approved development.	Same as Alternative E.
7255	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Consider exceptions, modifications, and waivers as outlined in Appendix G.	Same as Alternative E.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7256	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Any oil, gas, geothermal activity will be conducted to maximize avoidance of impacts, based on evolving scientific knowledge of impacts.	Any oil, gas, geothermal activity will be reviewed based on evolving scientific knowledge of impacts.
Mineral Split Estate									
7257	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Where the federal government owns the mineral estate and the surface is in non-federal ownership, apply the conservation measures applied on public lands.	Same as Alternative E.
7258	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Where the federal government owns the surface, and the mineral estate is in non-federal ownership in priority habitat, apply appropriate Fluid Mineral BMPs to surface development.	Same as Alternative E.
Geophysical Exploration									
7259	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Close the Greater Sage-Grouse Key Habitat Areas ACEC to geophysical exploration.	Allow geophysical exploration in the Greater Sage-Grouse PHMAs ACEC to obtain exploratory information for areas outside of and adjacent to priority sage-grouse habitat areas. Allow geophysical operations only by helicopter-portable drilling methods and in accordance with seasonal timing

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
									restrictions and/or other restrictions that may apply.
Livestock Grazing									
7260	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Close the Greater Sage-Grouse Key Habitat Areas ACEC to livestock grazing.	Allow livestock grazing in the Greater Sage-Grouse PHMAs ACEC.
7261	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Incorporate sage-grouse habitat objectives and management considerations into all BLM grazing allotments through AMPs or permit renewals.
7262	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Work cooperatively on integrated ranch planning so operations with deeded/State/BLM and/or USFS allotments can be planned as single units.
7263	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Prioritize completion of rangeland health assessments and processing grazing permits in the Greater Sage-Grouse PHMAs ACEC. Focus this process on allotments that have the best opportunities for conserving, enhancing, or restoring habitat for sage-grouse. Utilize ESDs to conduct rangeland health assessments to determine if standards of range-land health are being met.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7264	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Conduct rangeland health assessments that include (at a minimum) indicators and measurements of structure/condition/composition of vegetation specific to achieving sage-grouse habitat objectives. If local/state seasonal habitat objectives are not available, use sage-grouse habitat recommendations from Connelly et al. (2000) and Hagen et al. (2007).
7265	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Develop specific objectives to conserve, enhance, or restore greater sage-grouse PHMAs based on BLM ESDs and assessments (including within wetlands and riparian areas). If an effective grazing system that meets sage-grouse habitat requirements is not already in place, analyze at least one alternative that conserves, restores, or enhances sage-grouse habitat in the NEPA document prepared for the permit renewal.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7266	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Manage the Greater Sage-Grouse PHMAs ACEC for vegetation composition and structure consistent with ecological site potential and within the reference state to achieve sage-grouse seasonal habitat objectives.
7267	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	During drought periods, prioritize evaluating effects of the drought in greater sage-grouse PHMAs relative to their needs for food and cover. Since there is a lag in vegetation recovery following drought, ensure that post-drought management allows for vegetation recovery that meets sage-grouse needs.
7268	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Manage riparian areas and wet meadows for proper functioning condition.
7269	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Manage wet meadows to maintain a component of perennial forbs with diverse species richness relative to site potential (e.g., 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

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
									edge to minimize elevated mortality during the late brood rearing period.
7270	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Where riparian areas and wet meadows meet proper functioning condition strive to attain reference state vegetation relative to the ecological site description.
7271	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Reduce hot season grazing on riparian and meadow complexes to promote recovery or maintenance of appropriate vegetation and water quality. Use fencing/herding techniques or seasonal use or livestock distribution changes to reduce pressure on riparian or wet meadow vegetation used by sage-grouse in the summer.
7272	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Avoid grazing and trailing within lekking, nesting, brood-rearing, and winter habitats during periods of the year when these habitats are used by sage-grouse.
7273	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Analyze springs, seeps, and associated water pipelines to determine if modifications are necessary to maintain the continuity of the

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
									predevelopment riparian area. Make modifications where necessary, considering impacts to other water uses when such considerations are neutral or beneficial to sage-grouse.
7274	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Only allow treatments that conserve, enhance, or restore sage-grouse habitat in the Greater Sage-Grouse Key Habitat Areas ACEC (this includes treatments that benefit livestock as part of an AMP/Conservation Plan to improve sage-grouse habitat).	Sagebrush Treatment: Sagebrush eradication is considered disturbance and will contribute to the 3 percent disturbance factor. In stands with less than 15 percent cover, treatment should be designed to maintain or improve sagebrush habitat percent. Sagebrush treatments that maintain sagebrush canopy cover at or above 15 percent total canopy cover within the treated acres will not be considered disturbance. Treatments that reduce sagebrush canopy cover below 15 percent will be allowed if all such treated areas make up less than 20 percent of the suitable sagebrush habitat within the DDCT analysis, and any point within the treated area is within 60 meters of sagebrush habitat with 10 percent or greater

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
									canopy cover. Treatments to enhance sagebrush/grassland will be evaluated based upon the existing habitat quality and the functional level post-treatment. Although seasonal restrictions on activities may apply, vegetation treatments that do not make the habitat unsuitable for greater sage-grouse (e.g., fence lines, two-tracks, water pipelines, or stock tanks) are not considered in the density calculation. Only allow treatments that conserve, enhance, or restore sage-grouse habitat in the Greater Sage-Grouse PHMAs ACEC (this includes treatments that benefit livestock as part of an AMP/Conservation Plan to improve sage-grouse habitat).
7275	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Evaluate the role of existing seedings to determine if the area should be restored to sagebrush or habitat of higher quality for sage-grouse. If these seedings are part of an AMP/Conservation Plan or if they provide value in conserving or enhancing the rest of the greater

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
									sage-grouse PHMAs, then no restoration would be necessary. Assess the compatibility of these seedings for sage-grouse habitat or as a component of a grazing system during the rangeland health assessments (or other analyses [USFS only]).
7276	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Design any new structural range improvements and supplements (salt or protein blocks) locations to conserve, enhance, or restore sage-grouse habitat through an improved grazing management system relative to sage-grouse 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, and storage tanks (including moveable tanks used in livestock water hauling); windmills; ponds/reservoirs; solar panels; and spring developments. Potential for invasive species establishment or increase following

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
									construction must be considered in the project planning process and monitored and treated post-construction.
7277	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	When developing or modifying water developments, use applicable required design features (see Appendix L) to mitigate potential impacts from West Nile virus.
7278	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Evaluate existing structural range improvements and supplements (salt or protein blocks) locations to make sure they conserve, enhance, or restore priority sage-grouse habitat.	Same as Alternative E.
7279	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Remove, modify, or mark fences to reduce outright sage-grouse strikes and mortality in high risk areas within priority sage-grouse habitat based on proximity to lek, lek size, and topography.	Same as Alternative E.
7280	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Monitor for and treat invasive species associated with existing range improvements in the Greater Sage-Grouse Key Habitat Areas ACEC.	Same as Alternative E.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7281	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Maintain retirement of grazing privileges as an option in priority sage-grouse areas when the current permittee is willing to retire grazing on all or part of an allotment. Analyze the adverse impacts of no livestock use on wildfire and invasive species threats in evaluating retirement proposals.	Same as Alternative E.
7282	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Identify the specific allotment(s) where retirement of grazing privileges is potentially beneficial. (See Appendix P for a list of all grazing allotments in PHMAs; this list indicates the universe of allotments where retirement could be considered, not those currently identified for retirement.)
7283	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Encourage partners to monitor effects of retiring grazing permits in sage-grouse habitat.
7284	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	No similar action.	Any vegetation treatment plan must include pre-treatment data on wildlife and habitat condition, establish non-grazing exclosures, and include long-term monitoring where treated areas are

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
									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.
				Wild Horses and Burros					
7285	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	For all HMAs within priority sage-grouse habitat, prioritize the evaluation of all AMLs based on indicators that address structure, condition, and composition of vegetation and measurements specific to achieving sage-grouse habitat objectives.	Same as Alternative E.
7286	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B.	Conduct rangeland health assessments to determine existing structure, condition, and composition of vegetation within all HMAs.	Same as Alternative E.
				Adaptive Management					
7287	X	X	SD:1.1 SD:1.2	No ACEC currently exists.[5]	No ACEC would be designated.[5]	Same as Alternative B.	Same as Alternative B. The greater sage-grouse adaptive management plan provides regulatory assurance that unintended negative impacts to greater sage-grouse habitat will be addressed before	This RMP includes the requirements for the development of EIS/project level adaptive management strategies in support of the population management objectives for greater sage-grouse set by the	Same as Alternative E.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							consequences become severe or irreversible. Adaptive management triggers are essential for identifying when potential management changes are needed in order to continue meeting greater sage-grouse conservation objectives. With respect to sage-grouse, all regulatory entities in Wyoming, including the BLM and USFS, use soft and hard triggers. Soft and hard triggers are focused on three metrics: 1) number of active leks, 2) acres of available habitat, and 3) population trends based on annual lek counts. See Appendix Y for more information on soft and hard triggers. **Soft Triggers Response:** Soft triggers require immediate monitoring and surveillance to determine causal factors and may require curtailment of activities in the short or long term, as allowed by law. The project level adaptive management strategies will identify appropriate responses where the project's activities are identified as the causal	State of Wyoming (State of Wyoming Office of the Governor, EO 2011-5 [Wyoming Office of the Governor 2011]). These adaptive management strategies will be developed in partnership with the WGFD, project proponents, partners, and stakeholders, incorporating the best available science. The purpose of these strategies will be to ensure amelioration of greater sage-grouse population declines by providing the framework in which management will be changed if negative impacts are detected through a rigorous monitoring program. Wyoming BLM typically manages the public lands to meet objectives of the State of Wyoming. At this time the population objective is to maintain at least 67 percent of the 2005-2008 Greater Sage-Grouse Core Area Population within the State of Wyoming. Wyoming BLM and USFS will coordinate with the State of Wyoming in implementation planning to develop a statewide	

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – ACECs – Proposed Greater Sage-Grouse Priority Habitat Area ACECs									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
							factor. The management agency (BLM and/or USFS) and the Adaptive Management Work Group will implement an appropriate response strategy to address causal factors not attributable to a specific project or to make adjustments at a larger regional or statewide level. **Hard Trigger Response:** Upon determination that a hard trigger has been tripped, the BLM and/or USFS will immediately defer issuance of discretionary authorizations for new actions within the Biologically Significant Unit for a period of 90 days. In addition, within 14 days of a determination that a hard trigger has been tripped, the Adaptive Management Work Group will convene to develop an interim response strategy and initiate an assessment to determine the causal factor or factors (hereafter called the causal factor assessment).[7]	adaptive management plan, including mitigation where appropriate, and a framework to evaluate causal factors. The adaptive management plan will identify adaptive management triggers; indicators to be measured; and appropriate mitigation, restoration, and reclamation actions, including targets and benchmarks for responses. The plan will include both short-term and long-term monitoring. The adaptive management plan will guide the development of project level adaptive management strategies.	

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – National Back Country Byways									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				GOAL SD:2 Manage National Back Country Byways to enhance opportunities for the public to see and enjoy public lands. **Objectives:** **SD:2.1** Promote the increased awareness of the historical and cultural values and facilitate a sense of stewardship within the Red Gulch/Alkali Road National Back Country Byway. **SD:2.2** Where appropriate, identify scenic or back country byways and where necessary develop management prescriptions to maintain resource values. **SD:2.3** Through cooperative relationships with volunteer groups, landowners, other agencies, and other interested stakeholders, showcase landscapes, their scenic qualities, multiple uses, and unique character through interpretation.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
7288		X	SD:2	Continue the existing Red Gulch/Alkali Road National Back Country Byway designation (Map 90). Manage cultural and environmental interpretation and education along the Byway under the *Red Gulch/Alkali National Back Country Byway Interpretive Master Plan* (BLM 1994a).					
7289		X	SD:2.1 SD:2.3	Develop educational materials and facilities to enhance the knowledge of resources and the unique character of National Back Country Byways.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
7290		X	SD:2.2	No similar action.	Designate the Hyattville Logging Road as a primitive Back Country Byway (Map 90). The designated area includes the roadway up to the National Bighorn Forest Service connecting with FS Rd 408, which leads back to U.S. Highway 16, consisting of 25 miles of Type II and III gravel road (10 miles BLM, 8 miles USFS, 3 miles private, 4 miles State of Wyoming). Manage the area in cooperation with Big Horn County, the Bighorn National Forest Service, the State of Wyoming, and affected private landowners with the objective of encouraging responsible motorized	Do not designate the Hyattville Logging Road as a Back Country Byway.	Consider the designation of new Back Country Byways on a case-by-case basis in cooperation with stakeholders.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – National Back Country Byways									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					recreational use of the proposed Byway, while protecting and displaying the scenic, cultural, geologic, multiple uses, and crucial wildlife habitat values that occur in the area.				
7291		X	SD:2.2 SD:2.3	No similar action.	Develop interpretive facilities (including interpretive pull-outs, parking areas, trailheads, etc.) and publish interpretive and educational brochures displaying the multiple uses on BLM-administered public lands; the geologic, scenic, and cultural values; and the unique character of the Hyattville Logging Road Back Country Byway.	Do not develop interpretive facilities.	Consider the development of interpretive facilities (including interpretive pull-outs, parking areas, trailheads, etc.) and public interpretive and educational brochures displaying the multiple users on BLM-administered public lands; the geologic, scenic, and cultural values, and the unique character of newly designated Back Country Byways.	Same as Alternative B.	Same as Alternative D.
7292		X	SD:2.2	No similar action.	Designate the Hazelton (33 Mile) road as a Back Country Byway (Map 90). The designated area includes the roadway from the Washakie Country boundary south to the Natrona County Boundary connecting with the South Bighorn/Red Wall Back Country Byway, consisting of 21.7 miles of Type II gravel road (13 miles BLM, 0.7 miles State of Wyoming, and 8 miles traversing through private land).	Do not designate the Hazelton Road as a Back Country Byway.	Consider the designation of new Back Country Byways on a case-by-case basis in cooperation with stakeholders.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – National Back Country Byways									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
					Manage the area through the BLM WFO in cooperation with Washakie County, the State of Wyoming Land Board, the BLM Casper and Buffalo Field Offices, and affected private landowners with the objective of encouraging responsible motorized recreational use of the proposed byway, while protecting and displaying the scenic, cultural, geologic, multiple use, and crucial wildlife habitat values that occur in the area.				
7293		X	SD:2.2	No similar action.	Develop interpretive facilities (including interpretive pull-outs, parking areas, trailheads, etc.) and publish interpretive and educational brochures displaying the multiple uses on BLM-administered public lands; the geologic, scenic, and cultural values; and the unique character of the Hazelton Road Back Country Byway.	Do not develop interpretive facilities.	Consider the development of interpretive facilities (including interpretive pull-outs, parking areas, trailheads, etc.) and publish interpretive and educational brochures displaying the multiple uses on BLM-administered public lands; the geologic, scenic, and cultural values; and the unique character of newly designated Back Country Byways.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Heart Mountain Relocation Center National Historic Landmark									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				GOAL SD:1 Maintain and protect the integrity of unique resource values, preserve historic significance, and provide opportunity for other compatible uses where appropriate. **Objectives:** **SD:1.1** Utilize special designations to meet resource protection needs within appropriate geographical areas. **SD:1.2** Provide for appropriate interpretation of sites of high public interest.					
				MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES					
7294	X		SD:1.1 SD:2.1	Pursue a withdrawal from appropriation under the mining laws for 72 acres of federal minerals underlying federal surface within the Heart Mountain Relocation Camp National Historic Landmark.					
				MANAGEMENT ACTIONS BY ALTERNATIVE					
7295	X		SD:1.1 SD:2.1	No similar action.	Avoid surface-disturbing activities in view within 5 miles of Heart Mountain National Historic Landmark, except within existing utility corridors (Map 64 and Map 93).	Same as Alternative A.	Do not authorize undertakings of Moderate or Strong Contrast, except ROWs within the utility corridors (Map 66 and Map 93), within the viewshed from the Heart Mountain Relocation Camp National Historic Landmark toward Heart Mountain. Require all undertakings in the viewshed to have a Visual Contrast Rating and, as appropriate, require visual simulation. Avoid, minimize and/or compensate adverse effects from all undertakings by using BMPs (Appendix L).	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Heart Mountain Relocation Center National Historic Landmark									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7296	X		SD:1.1 SD:2.1	No similar action.	Manage areas within 3 miles (12,506 acres of federal mineral estate) as closed to leasing and apply a CSU stipulation in view within 5 miles (7,367 acres of federal mineral estate) of the Heart Mountain National Historic Landmark (Map 93).	Manage areas within the footprint of the original Heart Mountain Urban Area (833 acres of federal mineral estate) as closed to leasing.	Same as Alternative C, plus apply a CSU stipulation and BMPs (Appendix L) to avoid, minimize and/or compensate adverse effects within the viewshed from the Heart Mountain Relocation Camp National Historic Landmark toward Heart Mountain.	Same as Alternative B.	Same as Alternative D.
7297	X		SD:1.1 SD:2.1	No similar action.	Close the area within 3 miles (12,506 acres of federal mineral estate) and in view within 5 miles (7,367 acres of federal mineral estate) of Heart Mountain National Historic Landmark to mineral materials disposal (Map 93).	The area within ¼ mile (387 acres of federal mineral estate), and in view within 1 mile (978 acres of federal mineral estate) of Heart Mountain National Historic Landmark is closed to mineral materials disposal (Map 93).	Prohibit mineral materials disposal within the National Historic Landmark Urban Center.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – National Historic Trails and Other Historic Trails									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				GOAL SD:3 Manage National Historic Trails and Other Historic Trails for long-term heritage and educational values and to enhance the public experience. **Objectives:** **SD:3.1** Maintain compatible recreational use with historic trail values. **SD:3.2** Maintain setting for those contributing trail segments where setting is an aspect of integrity by utilizing viewshed management tools. **SD:3.3** Safeguard the nature and purposes; and conserve, protect, and restore the National Historic Trail resources, qualities, values, and associated settings and the primary use or uses. **SD:3.4** Provide premier trail visitor experiences for public benefit. **SD:3.5** Maximize opportunities for shared National Historic Trail stewardship. **SD:3.6** Reduce the potential for uses that substantially interfere with the nature and purposes of the National Historic Trail. **SD:3.7** Avoidance of activities that are incompatible with the purposes for which the National Historic Trail was established. **SD:3.8** Identify and manage the historic route and historic remnants and artifacts for public use, enjoyment, and vicarious trail experiences. **SD:3.9** Identify and manage high potential historic sites or high potential route segments, including the recommendation of additional Federal Protection Components. **GOAL SD:4** Enhance public experience through interpretive facilities and support of heritage tourism. **Objectives:** **SD:4.1** Sites associated with historic trails will be interpreted and developed as needed. **SD:4.2** Maximize partnership and cooperative management opportunities (e.g., cooperate with private landowners to install trail markers, provide public access, etc.).					
				MANAGEMENT ACTIONS BY ALTERNATIVE					
				Nez Perce National Historic Trail					
7298	X		SD:3.1 SD:3.2 SD:4.1 SD:4.2	Avoid surface-disturbing activities in view within ¼ mile of the Nez Perce (Neeme-poo) NHT (Map 91).	Avoid surface-disturbing activities in view within 5 miles of the Nez Perce (Neeme-poo) NHT, except within existing utility corridors (Map 91).	Same as Alternative A.	Avoid surface-disturbing activities and protect the foreground of National Historic Trails (defined in Glossary) up to 3 miles or the visual horizon whichever is closer (the SCZ) where setting is an important aspect of the integrity of the trail. Use BMPs (Appendix L) to avoid, minimize and/or compensate adverse effects.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – National Historic Trails and Other Historic Trails									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7299	X		SD:3.1 SD:3.2 SD:4.1 SD:4.2	Apply a NSO restriction within ¼ mile of the Nez Perce (Neeme-poo) NHT.	Apply a NSO restriction within 3 miles and a CSU stipulation in view within 5 miles of the Nez Perce (Neeme-poo) NHT.	Apply a NSO restriction within ¼ mile and a CSU stipulation within 1 mile of the Nez Perce (Neeme-poo) NHT.	Protect the foreground of National Historic Trails (defined in Glossary) up to 3 miles or the visual horizon whichever is closer (the SCZ) where setting is an important aspect of the integrity for the trail. Use BMPs (Appendix L) to avoid, minimize and/or compensate adverse effects.	Same as Alternative B.	Same as Alternative D.
7300	X		SD:3.1 SD:3.2 SD:4.1 SD:4.2	Avoid surface-disturbing activities in view within ¼ mile of the Nez Perce (Neeme-poo) NHT.	Areas within 3 miles, or in view within 5 miles of the Nez Perce (Neeme-poo) NHT are closed to mineral materials disposal.	Areas within ¼ mile, or in view within 1 mile of the Nez Perce (Neeme-poo) NHT are closed to mineral materials disposal.	Avoid surface-disturbing activities and protect the foreground of National Historic Trails (defined in Glossary) up to 3 miles or the visual horizon whichever is closer (the SCZ) where setting is an important aspect of the integrity for the trail. Use BMPs (Appendix L) to avoid, minimize and/or compensate adverse effects.	Same as Alternative B.	Same as Alternative D.
7301	X		SD:3.1 SD:3.2 SD:4.1 SD:4.2	Avoid surface-disturbing activities in view within ¼ mile of the Nez Perce (Neeme-poo) NHT.	Motorized vehicle use is limited to designated roads and trails in view within 5 miles of the Nez Perce (Neeme-poo) NHT.	Motorized vehicle use is limited to designated roads and trails in view within ¼ miles of the Nez Perce (Neeme-poo) NHT.	Motorized vehicle use is limited to existing roads and trails in view within 5 miles of the Nez Perce (Neeme-poo) NHT, except where other resources considerations impose more restrictive management.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – National Historic Trails and Other Historic Trails									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
Regionally Important Prehistoric and Historic Trails (Other Trails)									
7302	X	X	SD:3.1 SD:3.2 SD:4.1 SD:4.2	Avoid surface-disturbing activities in the immediate vicinity of important cultural resources and canals and in view within ¼ mile of significant segments of the Bridger Trail and Fort Washakie to Meeteetse to Red Lodge Trail (Other Trails) (Map 91).	Avoid surface-disturbing activities and ROW authorizations in view within 5 miles of Other Trails (, except within existing utility corridors (Map 91).	Avoid surface-disturbing activities and ROW authorizations in view within ¼ mile of Other Trails, except within existing utility corridors where the trail lacks physical integrity or where the trail setting has been previously compromised (Map 91).	Avoid surface-disturbing activities and protect the foreground of Historic Trails (defined in Glossary) up to 2 miles or the visual horizon whichever is closer (the SCZ) where setting is an important aspect of the integrity for the trail. Use BMPs (Appendix L) to avoid, minimize and/or compensate adverse effects, except within designated utility corridors.	Same as Alternative B.	Same as Alternative D.
7303	X	X	SD:3.1 SD:3.2 SD:4.1 SD:4.2	Apply a NSO restriction within ¼ mile of Other Trails.	Apply a NSO restriction within 3 miles and a CSU stipulation in view within 5 miles of Other Trails.	Apply a NSO restriction within ¼ mile and a CSU stipulation within 1 mile of Other Trails, except where the trail is known to lack physical integrity or the trail setting has been previously compromised.	Protect the foreground of Historic Trails (defined in Glossary) up to 2 miles or the visual horizon whichever is closer (the SCZ) where setting is an important aspect of the integrity for the trail, and use BMPs (Appendix L) to avoid, minimize and/or compensate adverse effects.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – National Historic Trails and Other Historic Trails									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7304	X	X	SD:3.1 SD:3.2 SD:4.1 SD:4.2	Avoid surface-disturbing activities in the immediate vicinity of important cultural resources and in view within ¼ mile of significant segments of Other Trails.	Areas within 3 miles, or in view within 5 miles of Other Trails are closed to mineral materials disposal.	Areas within ¼ mile, or in view within 1 mile of Other Trails are closed to mineral materials disposal, except where the trail is known to lack physical integrity or the trail setting has been previously compromised.	Avoid surface-disturbing activities and protect the foreground of Historic Trails (defined in Glossary) up to 2 miles or the visual horizon whichever is closer (the SCZ) where setting is an important aspect of the integrity for the trail. Use BMPs (Appendix L) to avoid, minimize and/or compensate adverse effects.	Same as Alternative B.	Same as Alternative D.
7305	X	X	SD:3.1 SD:3.2 SD:4.1 SD:4.2	No similar action.	Motorized vehicle use is limited to designated roads and trails in view within 5 miles of Other Trails.	Motorized vehicle use is limited to designated roads and trails in view within ¼ mile of Other Trails, except where the trail is known to lack physical integrity or the trail setting has been previously compromised.	Motorized vehicle use is managed consistent with other resource objectives (Map 72).	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Wild and Scenic Rivers									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				GOAL SD:5 Protect the free-flowing condition, water quality, tentative classification, and any outstanding remarkable values of suitable river segments until Congress designates the river or releases it for other uses. **Objective:** **SD:5.1** Protect outstanding remarkable values of eligible and suitable WSR segments.					
				MANAGEMENT ACTIONS BY ALTERNATIVE					
7306	X	X	SD:5.1	Continue interim management into perpetuity on the following WSR eligible waterways (Map 94): • Deep Creek: 5.29 miles (Wild) • Dry Medicine Lodge Creek: 10.61 miles (Scenic) • Medicine Lodge Creek: 5.72 miles (Wild) • Middle Fork of the Powder River: 1.12 miles (Recreational) • Paint Rock Creek Unit (Includes Paint Rock: 6.61 miles, South Fork of Paint Rock: 3.27 miles, and a portion of Laddie Creek: 0.69 miles): 11.18 miles (Recreational) • Trapper Creek: 10.91 miles (Wild) • White Creek (downstream portion): 6.98 miles (Wild) • Porcupine Creek: 10.8 miles (Wild and Scenic) • Deer Creek: 1.45 miles (Scenic)	Manage all waterways listed under Alternative A as suitable for inclusion in the NWSRS. Apply protective management based on a case-by-case review.	Manage all waterways listed under Alternative A as unsuitable for inclusion in the NWSRS, and release these areas to other uses. No special management actions are applied to these areas.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Wild and Scenic Rivers									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				• Oasis Spring Creek: 2.07 miles (Wild) • Trout Creek: 0.96 miles (Wild) • Cow Creek: Segments 1 and 2- 1.92 miles (Wild) • Cottonwood Creek (Segment 2): 4.05 miles (Scenic) • Clarks Fork of the Yellowstone River (Segment 3): 4.74 miles (Scenic) Unless otherwise noted, interim management on the following waterways is based on case-by-case evaluations of discretionary actions: Clarks Fork of the Yellowstone (Segment 2) (3.77 miles); Meeteetse Creek (2.78 miles); North fork Shoshone River (0.85 miles); Pat O'Hara Creek (2.17 miles); South Fork Shoshone River (1.98 miles); Canyon Creek (1.3 miles); Kirby Creek (0.15 miles); Paint Rock Creek Unit (upstream portion of Laddie Creek) (0.7 miles); and White Creek (upstream portion) (1.26 miles). See the WSR Report for a complete description of the above waterway segments.					

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Wild and Scenic Rivers									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7307	X	X	SD:5.1	Close BLM-administered lands within the waterway corridors of WSR eligible and suitable segments to land disposal actions.	Same as Alternative A.	Manage BLM-administered lands within these areas consistent with other resource objectives.	Same as Alternative C.	Same as Alternative A.	Same as Alternative D.
7308	X	X	SD:5.1	Prohibit water impoundments, major diversions, or hydroelectric power facilities on all waterways identified above.	Same as Alternative A.	Manage the area in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative A.	Same as Alternative C.
7309	X	X	SD:5.1	Continue to pursue a withdrawal from appropriation under the mining laws for BLM-administered land within the following waterways and manage as closed to mineral leasing: • Deep Creek • Dry Medicine Lodge Creek (within the Spanish Point Karst ACEC) • Medicine Lodge Creek • Trapper Creek • White Creek (downstream portion) • Porcupine Creek ("wild" portion only) • Oasis Spring Creek • Trout Creek • Cow Creek Allow existing mineral leases to expire.	Pursue a withdrawal from appropriation under the mining laws for BLM-administered land within all waterway segments. Land within these segments is closed to mineral leasing.	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Wild and Scenic Rivers									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7310	X	X	SD:5.1	BLM-administered land within the following scenic and recreational waterway segments is open to mineral leasing with a NSO and a seasonal NSO (WFO only): • Dry Medicine Lodge Creek (outside the Spanish Point Karst ACEC) • Middle Fork of the Powder River • Paint Rock Creek Unit (A portion of Laddie Creek, Paint Rock, and South Fork Paint Rock) • Porcupine Creek ("scenic" portion only) • Deer Creek • Cottonwood Creek • Clarks Fork of the Yellowstone River (Segment 3) Permit reasonable mining claim and mineral lease access.	Pursue a withdrawal from appropriation under the mining laws for BLM-administered land within all waterway segments. Land within these segments is closed to mineral leasing.	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7311	X	X	SD:5.1	Close the following waterway segments to recreational dredging for minerals, such as gold, and to mineral materials disposal: • Deep Creek • Dry Medicine Lodge Creek • Medicine Lodge Creek • Trapper Creek	Same as Alternative A.	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative A.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Wild and Scenic Rivers									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				• White Creek (downstream portion) • Porcupine Creek • Deer Creek • Oasis Spring Creek • Trout Creek • Cow Creek • Cottonwood Creek • Clarks Fork of the Yellowstone River (Segment 3)					
7312	X	X	SD:5.1	Limit geophysical exploration on BLM-administered land within the following waterway segments to foot access: • Deep Creek • Medicine Lodge Creek • Trapper Creek • White Creek (downstream portion) • Porcupine Creek • Deer Creek • Oasis Spring Creek • Trout Creek • Cow Creek • Cottonwood Creek • Clarks Fork of the Yellowstone (Segment 3)	BLM-administered land within all waterway segments is closed to geophysical exploration.	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7313		X	SD:5.1	BLM-administered land within the following scenic and recreational waterway segments is open to geophysical exploration: • Middle Fork of the	Close BLM-administered land within all waterway segments to geophysical exploration.	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Wild and Scenic Rivers									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				Powder River • Dry Medicine Lodge Creek • Paint Rock Creek Unit (a portion of Laddie Creek, Paint Rock, and South Fork Paint Rock) Motorized vehicle use is limited to existing roads and trails.					
7314	X	X	SD:5.1	Allow surface-disturbing activities on BLM-administered land within the following scenic and recreational waterway segments on a case by case basis: • Middle Fork of the Powder River • Paint Rock Creek Unit (a portion of Laddie Creek, Paint Rock, and South Fork Paint Rock) • Dry Medicine Lodge Creek Allow for activities such as recreation, range, and wildlife habitat improvements.	Prohibit surface-disturbing activities on BLM-administered land within all waterway segments.	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7315	X	X	SD:5.1	Prohibit surface-disturbing activities such as construction of major recreation developments, wildlife habitat improvements, and range improvements on BLM-administered land within the following waterway segments:	Same as Alternative A.	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Wild and Scenic Rivers									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				• Deep Creek • Medicine Lodge Creek • Trapper Creek • White Creek (downstream portion) • Porcupine Creek • Deer Creek • Oasis Spring Creek • Trout Creek • Cow Creek • Cottonwood Creek • Clarks Fork of the Yellowstone River (Segment 3)					
7316		X	SD:5.1	Manage BLM-administered land within the following wild waterway segments as ROW exclusion areas: • Deep Creek • Medicine Lodge Creek • Trapper Creek • White Creek (downstream portion)	Manage BLM-administered land within all waterway segments as ROW exclusion areas, except where private land access must be provided according to policy.	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7317	X	X	SD:5.1	Manage BLM-administered land within the following wild, scenic, and recreational waterway segments as ROW avoidance areas: • Dry Medicine Lodge Creek • Paint Rock Creek Unit (a portion of Laddie Creek, Paint Rock, and South Fork Paint Rock) • Porcupine Creek	Manage BLM-administered land within all waterway segments as ROW exclusion areas, except where private land access must be provided according to policy.	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Wild and Scenic Rivers									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				• Deer Creek • Oasis Spring Creek • Trout Creek • Cow Creek • Cottonwood Creek • Clarks Fork of the Yellowstone River (Segment 3)					
7318		X	SD:5.1	BLM-administered land within the following recreational waterway segment is open to ROW authorizations: • Middle Fork of the Powder River	Manage BLM-administered land within all waterway segments as ROW exclusion areas, except where private land access must be provided according to policy.	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7319		X	SD:5.1	BLM-administered land within the following wild waterway segments is closed to motorized vehicle use and the use of motorized or mechanized vehicle ground equipment to suppress fires is prohibited, except were life is at risk: • Deep Creek • Medicine Lodge Creek • Trapper Creek • White Creek (downstream portion) • Canyon Creek Motorized vehicle use is limited to existing roads and trails, and the use of motorized and mechanized vehicle ground equipment off existing roads and trails to suppress fires is	BLM-administered land within the following wild, scenic, and recreational waterway segments is closed to motorized vehicle use and the use of motorized or mechanized vehicle ground equipment to suppress fires is prohibited: • Dry Medicine Lodge Creek • Paint Rock Creek Unit (Laddie Creek, Paint Rock, and South Fork Paint Rock) • Deep Creek • Medicine Lodge Creek • Trapper Creek • White Creek Motorized vehicle use is limited to designated roads and trails, and the	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Wild and Scenic Rivers									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				prohibited on BLM-administered land within the following scenic and recreational waterway segments, except where life is at risk: • Dry Medicine Lodge Creek • Middle Fork of the Powder River • Paint Rock Creek Unit (a portion of Laddie Creek, Paint Rock, and South Fork Paint Rock) • Kirby Creek	use of motorized or mechanized vehicle ground equipment to suppress fires is prohibited on BLM-administered land within the following recreational waterway segment: • Middle Fork of the Powder River • Canyon Creek • Kirby Creek				
7320	X		SD:5.1	Motorized vehicle use is limited to designated roads and trails within the following areas to maintain the outstanding remarkable values associated with wild and scenic waterway segments: • Porcupine Creek • Deer Creek • Oasis Spring Creek • Trout Creek • Cow Creek • Clarks Fork of the Yellowstone River (Segment 3) • Meeteetse Creek • North Fork of the Shoshone River • South Fork of the Shoshone River Cottonwood Creek is	Motorized vehicle use is limited to designated roads and trails within the following areas to maintain the outstanding remarkable values associated with wild, scenic, recreational waterway segments: • North Fork of the Shoshone River • South Fork Shoshone River • Clarks Fork of the Yellowstone River (Segment 2) • Meeteetse Creek BLM-administered land within all other waterway segments is closed to motorized and mechanized vehicle use and the use of motorized or mechanized vehicle ground equipment	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Wild and Scenic Rivers									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				closed to motorized vehicle use. Allow motorized and mechanized vehicles to suppress fires.	to suppress fires is prohibited.				
7321	X	X	SD:5.1	Prohibit fire retardant along BLM-administered land within the following wild and scenic waterway segments: • Deep Creek • Medicine Lodge Creek • Middle Fork of the Powder River • Paint Rock Creek Unit (Laddie Creek, Paint Rock, and South Fork Paint Rock) • Trapper Creek • White Creek • Porcupine Creek • Oasis Spring • Trout Creek • Deer Creek	Prohibit fire retardant along BLM-administered land within all waterway segments.	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7322	X	X	SD:5.1	Close BLM-administered land within the following wild and scenic waterway segments to timber sale or harvesting: • Deep Creek • Dry Medicine Lodge Creek • Medicine Lodge Creek • Middle Fork of the Powder River • Trapper Creek • White Creek	Close BLM-administered land within all waterway segments to timber sale or harvesting.	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Wild and Scenic Rivers									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				(downstream portion) • Porcupine Creek • Deer Creek • Oasis Spring Creek • Trout Creek • Cow Creek • Cottonwood Creek • Clarks Fork of the Yellowstone River (Segment 3)					
7323	X	X	SD:5.1	Manage to prevent an increase in actual grazing use on BLM-administered land within all waterway segments.	Prohibit grazing use, including trailing, on BLM-administered land within all waterway segments.	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.
7324	X	X	SD:5.1	Close BLM-administered land within all waterway segments to vegetation treatment or manipulation by means other than hand or aerial seeding methods.	Same as Alternative A.	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative A.	Same as Alternative C.
7325	X	X	SD:5.1	Manage BLM-administered land within the following wild and recreational waterway segments as VRM Class IV: • Deep Creek • Middle Fork of the Powder River Manage BLM-administered land within the following wild, scenic, and recreational waterway segments as VRM Class II, except portions within WSAs, which are managed as Class I:	Manage BLM-administered land within the following wild, scenic, and recreational waterway segments as VRM Class II: • Middle Fork of the Powder River • Paint Rock Creek Unit (Laddie Creek, Paint Rock, and South Fork Paint Rock) • Clarks Fork of the Yellowstone River • Meeteetse Creek • North Fork of the	Manage these areas in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Wild and Scenic Rivers									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				• Dry Medicine Lodge Creek (except within Medicine Lodge WSA) • Medicine Lodge Creek (except within Medicine Lodge WSA) • Paint Rock Creek Unit (a portion of Laddie Creek, Paint Rock, and South Fork Paint Rock) • Trapper Creek (except within Trapper Creek WSA) • White Creek (downstream portion) • Porcupine Creek • Deer Creek • Oasis Spring Creek • Trout Creek • Cow Creek • Cottonwood Creek • Clarks Fork of the Yellowstone River(Segment 3)	Shoshone River • Canyon Creek • Pat O'Hara Creek • South Fork Shoshone River Manage BLM-administered land within the following wild and scenic waterway segments as VRM Class I: • Deep Creek • Dry Medicine Lodge Creek • Medicine Lodge Creek • Trapper Creek • White Creek • Porcupine Creek • Deer Creek • Oasis Spring Creek • Trout Creek • Cow Creek • Cottonwood Creek Manage BLM-administered land within Kirby Creek as VRM IV.				

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
7000 SPECIAL DESIGNATIONS (SD) – Wilderness Study Areas									
				GOAL SD:6 Manage WSAs to maintain their suitability as wilderness. **Objective:** **SD:6.1** Areas managed as WSAs will maintain a high degree of naturalness, outstanding opportunities for solitude, outstanding opportunities for primitive and unconfined recreation.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
7326	X	X	SD:6	Manage all WSAs under the guidance of BLM Manual 6330, *Management of BLM Wilderness Study Areas* (BLM 2012a), to maintain the non-impairment standard.					
7327	X	X	SD:6	The following WSAs (Map 93) are managed under BLM Manual 6330: • McCullough Peaks (24,531 acres) • Alkali Creek (9,475 acres) • Cedar Mountain (20,425 acres) • Honeycombs (20,156 acres) • Medicine Lodge (7,181 acres) • Trapper Creek (7,475 acres) • Owl Creek (668 acres) • Sheep Mountain (23,256 acres) • Red Butte (10,805 acres) • Bobcat Draw Badlands (16,969 acres)					
7328	X	X	SD:6	Manage all WSAs as VRM Class I.					
7329	X	X	SD:6	Manage WSAs as ROW avoidance areas, as detailed in BLM Manual 6330, Management of Wilderness Study Area.					
7330	X	X	SD:6	WSAs are closed to renewable energy development.					
7331	X	X	SD:6	Manage all mineral activities in WSAs as in accordance with BLM Manual 6330.					
7332	X	X	SD:6	WSAs are closed to mineral and geothermal leasing.					
7333	X	X	SD:6	WSAs are closed to mineral materials disposal.					
7334	X	X	SD:6	WSAs that are released by Congress from wilderness study will no longer be subject to BLM Manual 6330 and will be managed under general BLM management authorities found in FLPMA (43 U.S.C. 1701 et seq.) and associated regulations and policies, in accordance with the adjacent BLM-administered lands, consistent with other resource objectives.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
7335		X	SD:6	Motorized vehicle use is limited to existing roads and trails within the Cedar Mountain and Honeycombs WSAs.	The Cedar Mountain and Honeycombs WSAs are closed to motorized and mechanized vehicle use.	Motorized vehicle use is limited to designated roads and trails within the Cedar Mountain and Honeycombs WSAs.	Same as Alternative C, which may include the routes inventoried during the initial assessment.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

7000 SPECIAL DESIGNATIONS (SD) – Wilderness Study Areas									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
7336		X	SD:6	Motorized vehicle use is limited to designated roads and trails within the Trapper Creek, Medicine Lodge, and Alkali Creek WSAs. Portions of the Trapper Creek and Medicine Lodge WSAs within the Spanish Point ACEC are closed motorized vehicle use.	The Trapper Creek, Medicine Lodge, and Alkali Creek WSAs are closed to motorized and mechanized vehicle use.	Motorized vehicle use is limited to designated roads and trails identified at the time of the WSA inventory in the Trapper Creek, Medicine Lodge, and Alkali Creek WSAs.	Motorized vehicle use is limited to designated roads and trails in the Trapper Creek, Medicine Lodge, and Alkali Creek WSAs, which may include the routes inventoried during the initial assessment.	Same as Alternative B.	Same as Alternative D.
7337	X		SD:6	Carry forward the McCullough Peaks Travel Management Plan, in which motorized vehicle use is limited to designated roads and trails within the McCullough Peaks WSA.	The McCullough Peaks WSA is closed to motorized and mechanized vehicle use.	Motorized vehicle use is limited to designated roads and trails identified at the time of the WSA inventory in the McCullough Peaks WSA.	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.
7338		X	SD:6	Carry forward the Owl Creek, Sheep Mountain, Red Butte, and Bobcat Draw Badlands travel management plans, in which Owl Creek, Sheep Mountain, Red Butte, and Bobcat Draw Badlands WSAs are closed to motorized vehicle use.	Owl Creek, Sheep Mountain, Red Butte, and Bobcat Draw Badlands WSAs are closed to motorized and mechanized vehicle use.	Motorized vehicle use is limited to designated roads and trails from the time of the WSA inventory in the Owl Creek, Sheep Mountain, Red Butte, and Bobcat Draw Badlands WSAs.	Same as Alternative A.	Same as Alternative B.	Same as Alternative D.
7339	X	X	SD:6	Acquire 639 acres of state land in Bobcat Draw.	Acquire inholdings and/or lands or interest in lands within WSA boundaries in cooperation with willing landowners. Manage acquired inholdings under WSA Interim Management Policy.	Do not pursue acquisition of inholdings, lands, or interests in lands within WSA boundaries.	Acquire inholdings and/or lands or interest in lands within WSA boundaries in cooperation with willing landowners. Manage acquired inholdings to preserve their wilderness characteristics.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
8000 SOCIOECONOMIC RESOURCES (SR) – Social and Economic									
				GOAL SR:1 Provide opportunities for economic and social sustainability at the national, regional, and local level. Ensure local and regional economic development and local land use plans are considered. **Objectives:** **SR:1.1** Consider and address the economic impact of BLM decisions on the sectors affected by public land management decisions. Also, coordinate and address the impacts to the social structure of the study region to the extent these same management decisions are expected to produce major changes to the study area's social structure. **SR:1.2** Recognize infrastructure needs, including implementation and maintenance, directly and indirectly associated with BLM actions. **GOAL SR:2** Provide sustainable consumptive economic development opportunities for a diversity of resources and resource uses that are balanced against nonconsumptive uses that affect market and nonmarket values. **Objective:** **SR:2.1** Consider the options to access and utilize resources consistent with a multiple resource management philosophy that provides a sustainable and viable economic, cultural, and social environment at the national, regional, and local levels while also providing a balance between consumptive and nonconsumptive uses. **GOAL SR:3** Manage use conflicts through public education and outreach efforts. **Objective:** **SR:3.1** Work cooperatively with local agencies to foster public awareness, where suitable, through appropriate measures.				
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
8001	X	X	SR:1	Ensure BLM actions consider local and regional economic development and land use plans.					
8002	X	X	SR:2	Incorporate BLM actions that are sensitive to the economic and social health of the affected area.					
8003	X	X	SR:1	Management refers to available socioeconomic monitoring plans that provide indicators for the economic and social health of an affected area.					
MANAGEMENT ACTIONS BY ALTERNATIVE									
8004	X	X	SR:1	Manage in a way that recognizes BLM actions are integrally connected with both socioeconomics and the cultural health of the Planning Area. BLM's management recognizes and considers local and regional economic development and land use plans. To the extent possible, quantify socioeconomic impacts associated with site-specific and	Manage in a way that not only recognizes that BLM actions are integrally connected with socioeconomics and cultural health of the study area, but also with the explicit goal of developing mitigation strategies designed to resolve conflicts that have a detrimental effects on multiple resource use. Moreover, manage in a way that recognizes and	Manage in a way that not only recognizes the fact that BLM actions are integrally connected with socioeconomics and cultural health of the study area, but also with the goal of developing management strategies designed to recognize and point out conflicts that are expected to have an impact on multiple resource use. However, the focus of this strategy is	Same as Alternative A.	Same as Alternative B.	Same as Alternative A.

Table 2-9. Detailed Alternatives (Continued)

8000 SOCIOECONOMIC RESOURCES (SR) – Social and Economic									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
				programmatic BLM actions. Share the results with state and local governmental officials for the purpose of promoting collaborative management, where possible, to ensure the affected parties and overlapping jurisdictions are provided that information as required by law.	incorporates, to the extent possible, local and regional economic development and land use plans so long as they are consistent and sensitive to the multiple resource use philosophy. Quantify socioeconomic impacts associated with site-specific and programmatic BLM actions to the extent possible. Share the results with state and local governmental officials for the purpose of working together cooperatively and providing that information to the affected parties and overlapping jurisdictions as required by law.	to promote extractive industries that rely on public resources. Manage to recognize and consider local and regional economic development and land use plans. Quantify the socioeconomic impacts associated with site-specific and programmatic BLM actions to the extent possible. Share the results with state and local governmental officials for the purpose of promoting collaborative management, where possible, and to ensure the affected parties and overlapping jurisdictions are provided that information as required by law.			
8005	X	X	SR:1	No similar action.	Manage with minimal consideration of economic benefits on local communities.	Manage to maximize the economic benefits to the local communities.	Manage to provide a predictable supply of goods and services within the sustainable limits of the ecosystem, which help meet public demand. Encourage public and private partnerships to achieve the shared economic objectives of providing employment and income to local communities while benefiting ecosystem health.	Same as Alternative B.	Same as Alternative D.

Table 2-9. Detailed Alternatives (Continued)

Record #	C[1]	W[2]	Goal/ Obj.	Alternative A (Current Management)	Alternative B (Least Resource Use)	Alternative C (More Resource Use)	Alternative D (Proposed RMP)	Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)	Alternative F (Greater Sage-Grouse PHMAs ACEC)
8000 SOCIOECONOMIC RESOURCES (SR) – Health and Safety									
				GOAL SR:4 Manage risks to public health and safety and the environment posed by human-caused hazards and/or natural geologic hazards on the National System of Public Lands. **Objectives:** **SR:4.1** Protect public health and safety and the environment through complying with federal and state laws and regulations governing hazardous substances and the generation of hazardous wastes; maintaining the health of ecosystems though assessment, cleanup, and restoration of contaminated sites; and integrating environmental protection and compliance into all BLM activities. **SR:4.2** Collaborate with Wyoming DEQ through existing or new MOUs to identify and plan for remediation of Abandoned Mine Land sites, including the appropriate level of environmental review prior to on-the-ground work. **SR:4.3** Protect public health and safety through review of geologic hazards and application of appropriate management. **SR:4.4** Manage public exposure to H_2S on public lands. **SR:4.5** Reduce or eliminate hazards to human health and safety and the environment from hazardous substances or hazardous wastes.					
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES									
8006	X	X	SR:4.1 SR:4.5	Manage hazardous substances to reduce human and environmental risk, restore contaminated lands, and carry out emergency response activities.					
8007	X	X	SR:4.1 SR:4.5	Prepare Environmental Site Assessments on lands acquired or conveyed. Notify the public of conveyance of public lands affected by hazardous substances (CERCLA 120[h]).					
8008	X	X	SR:4.1	Warn the public of the release of hazardous substances. Work to prevent public exposure to contaminated areas.					
8009	X	X	SR:4.1 SR:4.5	Manage hazardous materials, including but not limited to hazardous substances, hazardous wastes, and hazardous materials, to reduce the risk to visitors, employees, and the environment, to restore contaminated lands, and to carry out emergency response activities, as per appropriate laws, policies, and regulations.					
8010	X	X	SR:4.1 SR:4.5	Require public notification by the BLM of the type and quantity of the hazardous substances, as required under CERCLA 120(h), and BLM policy to prepare Environmental Site Assessments for the acquisition and disposal of real property before the sale, exchange, or other transfer of public lands on which storage or disposal of hazardous substances is or has been known to have occurred.					
8011	X	X	SR:4.3	Develop a geologic hazards database that ranks threats to public health and safety. Inform applicants and project proponents of geologic hazards, and develop mitigation where appropriate.					
8012	X	X	SR:4.1 SR:4.4	Comply with the requirements of Occupational Safety and Health Administration and Onshore Order #6 relative to H_2S plans for new oil and gas wells.					
8013	X	X	SR:4.4	Mitigate potential safety concerns of H_2S wells and pipelines through signs, warning sirens, and public education. Safety distances are determined through site-specific H_2S plans.					
8014	X	X	SR:4	Consistent with Wyoming DEQ and EPA requirements, require Hazardous Spill Response Plans for all projects involving hazardous materials. Report spills and releases of chemicals, petroleum products, and produced water to Wyoming DEQ in accordance with Wyoming law.					

Table 2-9. Detailed Alternatives (Continued)

8000 SOCIOECONOMIC RESOURCES (SR) – Health and Safety									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**
MANAGEMENT ACTIONS BY ALTERNATIVE									
8015	X	X	SR:4.2	Inventory AML sites for hazards, and prioritize AML sites for reclamation in coordination with Wyoming DEQ.	Same as Alternative A, plus identify AML sites with warning signage and consider adding protective fencing around shafts and adits.	Same as Alternative A, except sites are not prioritized for reclamation.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
8016	X	X	SR:4.3 SR:4.5	Allow activities in AML areas (Map 95) on a case-by-case basis.	Prohibit activities within ¼ mile of AML areas (Map 95).	Allow activities in mitigated AML areas.	Allow activities in AML areas if the impacts can be avoided, minimized and/or compensated.	Same as Alternative B.	Same as Alternative D.
8017	X	X	SR:4.3	Provide warnings for geologic hazards.	Identify geologic hazard sites with warning signage, and inventory geologic hazards. Prohibit activities in geologic hazard areas.	Same as Alternative A. Identify geologic hazards on case-by-case. Allow activities in mitigated (remediated) geologic hazard areas.	Same as Alternative C.	Same as Alternative B.	Same as Alternative C.

[1]Cody Field Office
[2]Worland Field Office
[3]Land Use Classification – criteria are based on that found in existing plans.
[4]Subject to restrictions due to other management actions.
[5]This area is managed in accordance with multiple use principles consistent with other resource objectives.
[6]"Priority habitat" when used in management actions common to alternatives E and F refers to either Key Habitat Areas (for Alternative E) or PHMAs (for Alternative F).
[7]Management is included under this alternative at this location for comparison purposes; the ACEC does not occur under Alternative B or the Proposed Plan, but this management is what would be applied to the ACEC area.

Table 2-9. Detailed Alternatives (Continued)

8000 SOCIOECONOMIC RESOURCES (SR) – Health and Safety									
Record #	**C[1]**	**W[2]**	**Goal/ Obj.**	**Alternative A (Current Management)**	**Alternative B (Least Resource Use)**	**Alternative C (More Resource Use)**	**Alternative D (Proposed RMP)**	**Alternative E (Greater Sage-Grouse Key Habitat Areas ACEC)**	**Alternative F (Greater Sage-Grouse PHMAs ACEC)**

ACEC	Area of Critical Environmental Concern
AML	Abandoned Mine Land
AMP	Allotment Management Plan
APD	Application for Permit to Drill
APHIS	Animal and Plant Health Inspection Service
AUM	Animal Unit Month
BLM	Bureau of Land Management
BMP	Best Management Practice
BOR	Bureau of Reclamation
C&MU	Classification and Multiple Use
CBNG	Coalbed Natural Gas
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COA	Conditions of Approval
COT	Conservation Objectives Team
CSU	Controlled Surface Use
CYFO	Bureau of Land Management Cody Field Office
dBA	Decibels with an A-weighted scale
DEQ	Department of Environmental Quality
DLE	Desert Land Entry
DOI	United States Department of the Interior
DPC	Desired Plant Community
EIS	Environmental Impact Statement
EO	Executive Order
EPA	United States Environmental Protection Agency
ERMA	Extensive Recreation Management Area
ESD	Ecological Site Description
FLPMA	Federal Land Policy and Management Act
FMP	Fire Management Plan
FRCC	Fire Regime Condition Class
GHMA	General Habitat Management Area
H_2S	Hydrogen Sulfide
HA	Herd Area
HMA	Herd Management Area
HMG	Habitat Management Guidelines
HMP	Habitat Management Plan
HUC	Hydrologic Unit Code
IM	Instruction Memorandum
LRP	Limited reclamation potential
MLP	Master Leasing Plan
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NHT	National Historic Trail
NOS	Notice of Staking
NRHP	National Register of Historic Places
NSO	No Surface Occupancy
NWSRS	National Wild and Scenic River System
OHV	Off-Highway Vehicle
PARC	Partners in Amphibian and Reptile Conservation
PEIS	Programmatic Environmental Impact Statement
PETM	Paleocene-Eocene Thermal Maximum
PFC	Proper Functioning Condition
PFYC	Potential Fossil Yield Classification
PHMAs	Priority Habitat Management Areas
PSD	Prevention of Significant Deterioration
R&PP	Recreation and Public Purposes
RAMP	Recreation Area Management Plan
RMA	Recreation Management Area
RMG	Reservoir Management Group
RMP	Resource Management Plan
RMZ	Recreation Management Zone
ROD	Record of Decision
ROW	Rights-of-way
SCZ	Setting Consideration Zone
SHPO	State Historic Preservation Office
SMA	Special Management Area
SRMA	Special Recreation Management Area
SRP	Special Recreation Permit
TLS	Timing Limitations
TMDL	Total Maximum Daily Load
TMP	Travel Management Plan
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
VRM	Visual Resource Management
WFO	Bureau of Land Management Worland Field Office
WGFD	Wyoming Game and Fish Department
WHMA	Wildlife Habitat Management Area
WQD	Water Quality Division
WSA	Wilderness Study Area
WSR	Wild and Scenic River

2.8 Summary of Environmental Consequences by Alternative

Table 2-10 summarizes potential impacts under alternatives A through F. Where appropriate, the table quantifies potential impacts anticipated from BLM-authorized actions. Table 2-10 summarizes impacts under the six alternatives in acres and actions. For example, more acreage implies more impact (either beneficial or adverse). The Summary of Impacts by Alternative section for each resource in Chapter 4 provides a more detailed comparison of impacts between alternatives. Chapter 4 describes cumulative impacts from non-BLM actions; Table 2-10 does not include cumulative impacts.

The environmental consequences of alternatives are not anticipated to exceed known legal thresholds or standards over the life of this RMP, with the exception of air quality under Alternative C which has the potential to exceed thresholds, and water quality under all alternatives, which has the potential to exceed state water quality standards over the life of the RMP. No additional impacts to surface water quality are anticipated under any of the alternatives, other than the potential for those waters listed as impaired in Chapter 3, to continue to exceed state standards for fecal coliform and *E. coli* until the source of contamination can be identified and all landowners support the implementation of BLM approved BMPs (see Record #1039). Standard practices, BLM-approved BMPs, and guidelines for surface-disturbing activities are built into each alternative to avoid and minimize potential impacts. The BLM would consider mitigation of residual impacts during subsequent implementation-level projects and any associated environmental analyses performed at that time. All alternatives include reclamation of surface disturbance to reduce long-term impacts.

Table 2-10. Summary of Environmental Consequences by Alternative

Resources	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Air Quality						
NAAQS	Not anticipated to exceed	Not anticipated to exceed	Potential to exceed	Not anticipated to exceed	Not anticipated to exceed	Not anticipated to exceed
WAAQS	Not anticipated to exceed	Not anticipated to exceed	Potential to exceed	Not anticipated to exceed	Not anticipated to exceed	Not anticipated to exceed
Air Quality Related Value Impacts	Potential	Lowest Potential	Highest Potential	Potential	Lowest Potential	Potential
Visibility Impacts	Potential	Lowest Potential	Highest Potential	Potential	Lowest Potential	Potential
Atmospheric Deposition	Potential	Lowest Potential	Highest Potential	Potential	Lowest Potential	Potential

Table 2-10. Summary of Environmental Consequences by Alternative (Continued)

Resources	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Soil and Water						
Acres of Surface Disturbance Anticipated	136,253 short-term/ 15,646 long-term	73,940 short-term/ 10,893 long-term	245,642 short-term/ 41,485 long-term	140,175 short-term/ 18,306 long-term	71,829 short-term/ 10,802 long-term	137,064 short-term/ 17,663 long-term
Long-term Erosion Rate (Based on Disturbance from BLM Actions)	25,065 tons/year	17,450 tons/year	66,459 tons/year	29,326 tons/year	17,305 tons/year	28,297 tons/year
Groundwater Impacts	Potential	Lowest Potential	Potential	Potential	Lowest Potential	Potential
Produced Water Impacts	Potential	Lowest Potential	Potential	Potential	Lowest Potential	Potential
Surface Water Impacts	Potential	Lowest Potential	Greatest Potential	Potential	Lowest Potential	Potential
Minerals						
Acres Withdrawn or Recommended for Withdrawal from Appropriation under the Mining Laws for Locatable Mineral Entry	72,861	314,223	48,095	83,321	1,759,312	83,321
Total Projected New Oil and Gas Wells/Pads	1,695	968	1,815	1,652	965	1,652
Acres of BLM-administered Surface with Moderate Oil and Gas Potential Managed as Closed to Leasing or with Major Constraints	32,076	227,441	3,435	56,198	227,441	56,411
Acres of BLM-administered Surface with Moderate Oil and Gas Potential Affected by Raptor Nest TLS Buffer Areas	47,429	72,717	7,908	12,035	72,717	12,035
Acres of BLM-administered Surface with Moderate Oil and Gas Potential Affected by VRM Class I and II Areas	14,128	170,583	1,888	68,253	170,583	68,253
Fire and Fuels Management						
Acres of Disturbance from Prescribed Fire	40,000 short-term/ 0 long-term	20,000 short-term/ 0 long-term	80,000 short-term/ 0 long-term	40,000 short-term/ 0 long-term	18,000 short-term/ 0 long-term	40,000 short-term/ 0 long-term
Acres of Disturbance from Mechanical Fuels Treatment	30,000 short-term/ 0 long-term	5,000 short-term/ 0 long-term	60,000 short-term/ 0 long-term	30,000 short-term/ 0 long-term	5,000 short-term/ 0 long-term	30,000 short-term/ 0 long-term
Vegetation						
Acres of Surface-disturbing Activities in Grassland and Shrubland Communities	116,578 short-term/ 13,387 long-term	63,263 short-term/ 9,320 long-term	210,171 short-term/ 35,495 long-term	119,933 short-term/ 15,663 long-term	61,457 short-term/ 9,242 long-term	117,273 short-term/ 15,113 long-term

Table 2-10. Summary of Environmental Consequences by Alternative (Continued)

Resources	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Fragmentation of Native Plant Communities	Potential	Lowest Potential	Potential	Low Potential	Lowest Potential	Low Potential
Acres within and around Riparian/Wetland Areas where Surface-disturbing Activities are Restricted	70,715 (prohibited unless mitigated)	162,887 (prohibited)	CBC	70,715 (avoided) up to 140,464 if needed	162,887 (prohibited)	70,715 (avoided) up to 140,464 if needed
Wetland Impacts	Potential	Lowest Potential	Potential	Low Potential	Lowest Potential	Low Potential
Invasive Species and Pest Management						
Contribute to Spread of Invasive and/or Pest Species	Potential	Lowest Potential	Highest Potential	Potential	Lowest Potential	Potential
Fish and Wildlife						
Impacts to Water Quality and Fish Habitat	Potential	Lowest Potential	Highest Potential	Potential	Lowest Potential	Potential
Acres/Percent of Big Game Crucial Winter Range Closed to Mineral Leasing or with Major/Moderate Constraints	1,830,970/ 99%	1,830,970/ 99%	732,322/ 62%	1,830,970/ 99%	1,830,970/ 99%	1,830,970/ 99%
Acres of Big Game Crucial Winter Range Exempted from Seasonal Stipulations due to Oil and Gas Management Area	N/A	N/A	260,460	190,891	N/A	190,891
Special Status Species						
Adverse Effects to ESA Species within the Planning Area	Potential	Low Potential	Highest Potential	Low Potential	Lowest Potential	Low Potential
Acres of Priority Sage-grouse Habitat Closed to Oil and Gas Leasing[1]	41,120	1,490,758	23,535	75,325	1,490,758	67,476
Acres of Sage-grouse Winter Habitat/Key Habitat Area Exempted from Seasonal Stipulations within Oil and Gas Management Area	0	0	194,363	0	0	0
Wild Horses						
Acres of Federal Mineral Estate in McCullough Peaks and Fifteenmile HMAs Closed to Oil and Gas Leasing	33,837	165,921	27,767	37,599	165,921	37,599
Application of Seasonal Restrictions	No	Yes	No	Yes	Yes	Yes
Heritage						
Potential to Impact Eligible/Listed Cultural Sites and Paleontological Localities	Highest Potential	Lowest Potential	Potential	Low Potential	Lowest Potential	Low Potential

Table 2-10. Summary of Environmental Consequences by Alternative (Continued)

Resources	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Renewable Energy						
Acres with High Wind Energy Potential (Wind Power Class 4-7) within Renewable Energy Avoidance Areas	N/A	61,698	25,131	43,841	50,408	43,841
Acres with High Wind Energy Potential (Wind Power Class 4-7) within Renewable Energy Exclusion Areas	N/A	28,152	3,157	15,680	39,443	15,680
Rights-of-Way and Corridors						
Acres of Rights-of-Way and Corridors	787,618	133,184	131,184	131,852	133,184	131,852
Travel and Transportation Management						
Miles/Acres of New Roads and Trails due to User-pioneered and BLM-created Routes	847 miles/ 1,233 acres	1,908 miles/ 2,776 acres	8,873 miles/ 12,907 acres	4,001 miles/ 5,820 acres	839 miles/ 1,221 acres	4,001 miles/ 5,820 acres
Miles/Acres of New Roads and Trails due to ROW Authorizations	1,351 miles/1,966 acres (short-term) 675 miles/983 acres (long-term)	845 miles/1,229 acres (short-term) 422 miles/615 acres (long-term)	3,188 miles/4,638 acres (short-term) 1,594 miles/2,319 acres (long-term)	1,351 miles/1,966 acres (short-term) 675 miles/983 acres (long-term)	845 miles/1,229 acres (short-term) 422 miles/615 acres (long-term)	1,351 miles/1,966 acres (short-term) 675 miles/983 acres (long-term)
Acres Closed to Motorized Vehicle Use	68,115	170,253	9,274	61,010	170,253	61,010
Acres Open to Motorized Vehicle Use	1,311	3,132	14,830	5,885	3,132	5,885
Acres Limited to Existing Roads and Trails	2,315,896	592,563	2,137,574	1,955,943	592,563	1,295,072
Acres Limited to Designated Roads and Trails	797,077	2,416,378	1,020,748	1,159,557	2,416,378	1,820,427
Recreation						
Potential to Impact Recreation Desired Settings, Opportunities, Activities, Experiences, and Beneficial Outcomes	Potential	Lowest Potential	Highest Potential	Low Potential	Lowest Potential	Low Potential
Lands with Wilderness Characteristics						
Potential to Impact Lands with Wilderness Characteristics	Potential	Lowest Potential	Highest Potential	Potential	Lowest Potential	Low Potential
Livestock Grazing						
Total Active (Use) AUMs[2] Lost from Closures and from Surface-disturbing Activity	1,663	163,609	4,120	1,912	163,609	1,851

Table 2-10. Summary of Environmental Consequences by Alternative (Continued)

Resources	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Potential for Effects from Restrictions in Greater Sage-Grouse Key and PHMAs	Low Potential	Highest Potential	Low Potential	Potential	Highest Potential	Potential
Active (Use) AUMs Projected at the End of the Planning Cycle/Percent Reduction from Baseline (305,264)	303,601/ <1%	141,655/ 54%	301,144/ 1%	303,352/ <1%	141,663/ 54%	303,413/ <1%
Total Authorized AUMs[3] Lost from Closures and from Surface-disturbing Activity	1,068	105,053	2,645	1,228	105,048	1,189
Authorized AUMs[3] Projected at the End of the Planning Cycle/Percent Reduction from Baseline (196,010)	194,942/ <1%	90,957/ 54%	193,365/ 1%	194,782/ <1%	90,962/ 54%	194,821/ <1%
Special Designations						
Acres Designated as ACECs	71,646	302,490	11,799	105,498	1,535,851	1,222,146
Special Designations (ACECs, SMAs, WSR eligible and suitable waterways, WSAs) Focusing on Resource Conservation	237,586	466,243	178,433	269,417	1,550,320	1,348,797
Nez Perce NHT	Potential	Lowest Potential	Potential	Low Potential	Lowest Potential	Low Potential
National Trails System – Other Historic Trails	Potential	Lowest Potential	Potential	Low Potential	Lowest Potential	Low Potential
Socioeconomics						
Effect on Planning Area Population	Low Impact	Medium Impact (potential reductions focused in oil/gas service areas, which generally correspond to population centers)	Low Impact	Low Impact	Medium Impact (potential reductions focused in oil/gas service areas, which generally correspond to population centers)	Low Impact
Effect on Housing and Community Services	Low Impact	Medium Impact (due to potential population reductions)	Low Impact	Low Impact	Medium Impact (due to potential population reductions)	Low Impact

Table 2-10. Summary of Environmental Consequences by Alternative (Continued)

Resources	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Impacts on Quality of Life and Local Culture	Low Impact	Medium Impact (change from recent trends would constitute greater emphasis on resource conservation)	Medium Impact (change from recent trends would constitute greater emphasis on resource development)	Low Impact	Low to medium Impact (change from recent trends would constitute greater emphasis on resource conservation)	Low Impact
Forecasted annual earnings (millions of 2011 dollars) due to activities on BLM-administered surface[4]	$86.7	$38.5	$94.1	$83.9	$38.3	$83.8
Forecasted annual employment due to activities on BLM-administered surface[4]	1,520	763	1,631	1,478	761	1,477

[1]Priority and Key Habitat Areas exist within the Planning Area, but Key Habitat Areas are only managed under alternatives B and C, while PHMAs are only managed under alternatives D and F.
[2]Permitted AUMs are AUMs that are allowed on a permit/lease that can be used in any given year provided the forage is available.
[3]Authorized AUMs are the AUMs actually billed for and paid for each year by the permittee/lessee. The ratio of historical average billed use or actual use to permitted use in the Planning Area is 64 percent.
[4]Estimate of annual earnings and employment includes direct, indirect, and induced economic activity (the "multiplier effect").

<	less than
ACEC	Area of Critical Environmental Concern
AUM	animal unit month
BLM	Bureau of Land Management
CBC	case-by-case
ESA	Endangered Species Act
HMA	Herd Management Area
N/A	not applicable
NAAQS	National Ambient Air Quality Standards
NHT	National Historic Trail
PHMA	Priority Habitat Management Area
ROW	right-of-way
SMA	Special Management Area
VRM	Visual Resource Management
WAAQS	Wyoming Ambient Air Quality Standards
WSA	Wilderness Study Area
WSR	Wild and Scenic River

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CHAPTER 3 – AFFECTED ENVIRONMENT

This chapter describes existing conditions for Bureau of Land Management (BLM) resource programs, resource uses, and special designations, and the socioeconomic environment in the Bighorn Basin Planning Area. As summarized in Chapter 1, various laws, regulations, policies, and other requirements direct management of resources and resource uses on BLM-administered public lands. The Cody Field Office (CYFO) and Worland Field Office (WFO), which comprise the Planning Area, operate under these requirements and guidance. The CYFO and WFO also consider Best Management Practices (BMP) in the management of resources and resource uses in the Planning Area.

In addition to describing existing conditions, where appropriate this chapter identifies management challenges for resource programs and resource uses on BLM-administered lands. The BLM identified these management challenges through its Analysis of the Management Situation (AMS), and by issues identified during the scoping process for the Bighorn Basin Resource Management Plan (RMP) Revision. Because it describes existing conditions in the Planning Area, this chapter serves as the baseline against which the BLM analyzes and compares impacts of alternatives A through F in Chapter 4.

Overview of the Planning Area

The Planning Area comprises 3,187,814 acres of BLM-administered federal surface lands (Map 1) and 4,203,213 acres of BLM-administered federal mineral estate (Map 2) in Big Horn, Hot Springs, Park, and Washakie counties in north-central Wyoming. The CYFO extends west beyond the Bighorn Basin, but generally, the United States Department of Agriculture (USDA) Forest Service (USFS) and the National Park Service manage those lands; therefore, this RMP and Environmental Impact Statement (EIS) does not consider them. In each of the four counties there are large contiguous areas of BLM-administered land and smaller tracts of BLM-administered land interspersed with private and state land. There is a checkerboard pattern of state, private, and BLM-administered lands in the northwestern portion of the Planning Area.

The Planning Area lies within two Major Land Resource Areas (MLRA) – the Northern Intermountain Desertic Basins and Central Rocky Mountains. The Planning Area is in the Bighorn Basin, an asymmetric heart-shaped intermontane basin of the Rocky Mountain foreland in north-central Wyoming and south-central Montana. The basin is surrounded by mountainous uplifts, including the Big Horn and Pryor Mountains to the east and northeast, respectively, the Owl Creek Mountains to the south, the Absaroka Range to the west, and the Beartooth Mountains to the northwest (Roberts and Rossi 1999). The central low-lying part of the basin is dominated by desert shrubland and grasslands. At high elevations the dominant vegetation transitions from sagebrush and grassland to mountain shrublands and ultimately to coniferous forests. The Planning Area generally has a dry, windswept, rain-shadow climate like much of the state of Wyoming, but variations in elevation have a substantial effect on vegetation types and suitability of areas for agriculture and grazing.

The topography of the Planning Area varies from rolling plains, flat mesas, and badlands to alluvial valleys, benches, foothills and mountains (BLM 1993). Elevations in the Planning Area range from approximately 3,552 feet above mean sea level (amsl) in the middle of the basin to 11,657 feet amsl in the higher mountain ranges.

The Bighorn River and its tributaries (including the Shoshone, Nowood, Greybull and Wood Rivers, and Owl, Gooseberry, Cottonwood, Shell, Nowater, Kirby and Fifteenmile Creeks) drain the Bighorn Basin. The Clarks Fork of the Yellowstone River also drains the basin.

Basin climate is arid to semi-arid. Precipitation in the central basin is less than 10 inches per year, but up to 40 or more inches per year in the mountainous regions surrounding the basin (BLM 1993). The average annual temperature in the basin is approximately 44 degrees Fahrenheit (°F), but substantially colder in the mountain regions.

Soils and vegetation in the Planning Area generally provide rangeland suitable for year-round livestock grazing in the lower elevations. Higher elevations are generally grazed during summer and/or fall. Livestock grazing includes the grazing of domestic animals such as cattle, sheep, horses, and bison.

Agricultural production in the Planning Area is limited by low precipitation and scarcity of surface water. Major crops in the Planning Area include spring wheat, barley, oats, dry beans, sugar beets, alfalfa hay, and corn (Headwaters Economics 2007a).

Big Horn County

Big Horn County was organized in 1897, created from parcels taken from Johnson, Fremont, and Sheridan counties. In the same year, Basin, Wyoming, was named as the county seat. A portion of the Big Horn County National Recreation Area, which straddles the Wyoming-Montana state line, is in Big Horn County. The United States (U.S.) Department of Defense also administers a small parcel of land in Big Horn County.

The Bighorn River watershed, which drains the entire basin, flows through the middle of the county. Bighorn National Forest is along the eastern portion of the county and is comprised primarily of the foothills and higher mountain regions of the Big Horn Mountains.

The principle industries in Big Horn County are bentonite mining, farming, sugar-beet and bean processing, and tourism.

U.S. Highways 20 and 310 are the main north-south arteries in Big Horn County. U.S. Highway 14 traverses east-west, intersecting Highway 20 in Greybull.

Big Horn County is comprised of approximately 1,664,796 surface acres in the Planning Area, of which the BLM administers approximately 1,157,920. In addition, the BLM administers approximately 1,288,238 acres of federal mineral estate in Big Horn County.

Hot Springs County

Hot Springs County was established in 1911, the same year Thermopolis, Wyoming, was named the county seat. The county's name is derived from geothermal features that attract tourists to the county.

Most of the Wind River Canyon, with the Owl Creek Mountains on the west and the Bridger Mountains on the east, is in Hot Springs County. The Big Horn Mountains ring the eastern portion of the county, with the Absaroka Range to the west.

State Highway 789 and U.S. Highway 20 are the main north-south corridors in Hot Springs County. The county is also served by Wyoming Highway 120, which runs northwest from Thermopolis, through Meeteetse, and on to Cody.

The smallest county by area in Wyoming, Hot Springs County also has the fewest BLM-administered surface and mineral estate acres in the Planning Area. Hot Springs County is comprised of approximately 984,429 surface acres in the Planning Area, of which the BLM administers approximately 500,631. In addition, the BLM administers approximately 741,151 acres of federal mineral estate in Hot Springs County.

Park County

The largest county by area in the Planning Area, Park County also is the most populous, with approximately 27,000 residents in 2005 (Headwaters Economics 2007b). A large portion of Park County is in Yellowstone National Park, which the National Park Service administers.

What is now Park County was first a part of Sweetwater County, then Fremont County, and then Big Horn County, until 1909 when the Wyoming State Legislature defined and set aside the boundaries of Park County. Cody, Wyoming, named for William "Buffalo Bill" Cody, was chosen as the county seat the following year.

Three rivers flow through Park County – the Greybull and Shoshone Rivers, which are tributaries to the Bighorn River, and the Clarks Fork of the Yellowstone River, which flows into the Yellowstone River. Three highways serve Park County (U.S. Highway 14-16-20 east and west, U.S. Highway 14 Alternate, and Wyoming 120 north and south).

The major industries in Park County are oil and gas production, agriculture, and tourism. Park County is comprised of approximately 1,618,644 surface acres in the Planning Area, of which the BLM administers approximately 624,870. In addition, the BLM administers approximately 1,049,904 acres of federal mineral estate in Park County.

Washakie County

Washakie County was organized in 1911 and named after the head chief of the Shoshone people, Chief Washakie. The county seat of Washakie County is Worland, Wyoming.

The western part of Washakie County is intensively irrigated farmlands that lie adjacent to the Bighorn River, which winds its way through Worland. Other farmlands are along the Gooseberry and Cottonwood Creeks. The agriculture of the eastern part of Washakie County is based primarily on the production of sheep and cattle (Washakie County Conservation District 2009).

U.S. Highway 16 is the main east-west corridor in the county, passing over the Big Horn Mountains and through Ten Sleep, before turning north in Worland. State Highway 789 and U.S. Highway 20 are the main north-south arteries in Washakie County.

Washakie County is comprised of approximately 1,375,849 surface acres in the Planning Area, of which the BLM administers approximately 903,846. In addition, the BLM administers approximately 1,123,281 acres of federal mineral estate in Washakie County.

3.1 Physical Resources

Physical resources in the Planning Area include air quality, geologic resources, soil, water, and cave and karst resources. The following five resource sections define and describe the resource, its existing condition, and any management challenges for the resource.

3.1.1 Air Quality

This section describes the climate and existing air quality in the region potentially affected by the six alternatives described in Chapter 2. Air pollutants addressed include criteria pollutants, hazardous air pollutants (HAPs), and sulfur and nitrogen compounds that could impair visibility or cause atmospheric deposition, including acid rain.

Air Quality Indicators

Wyoming Ambient Air Quality Standards (WAAQS) and National Ambient Air Quality Standards (NAAQS) identify maximum limits for concentrations of criteria air pollutants at all locations to which the public has access. The WAAQS and NAAQS are legally enforceable standards. Concentrations above the WAAQS and NAAQS represent a risk to human health that, by law, require public safeguards to be implemented. State standards must be at least as protective of human health as federal standards, and may be more restrictive than federal standards, as allowed by the Clean Air Act. The Wyoming Prevention of Significant Deterioration (PSD) program establishes allowable increases of a given pollutant for a particular area from specific sources.

In Wyoming, it is the responsibility of Wyoming Department of Environmental Quality (DEQ) Air Quality Division, subject to United States Environmental Protection Agency (EPA) oversight, to ensure compliance with federal and state air quality standards; setting maximum allowable limits (NAAQS and WAAQS) for six criteria pollutants—CO (carbon monoxide), SO_2 (sulfur dioxide), NO_2 (nitrogen dioxide), O_3 (ozone) and particulate matter (PM_{10} and $PM_{2.5}$); and setting maximum allowable increases (PSD Increments) above legal baseline concentrations for three of these pollutants (SO_2, NO_2, and PM_{10}) in Class I and Class II areas.

Criteria Air Pollutants

The EPA established air quality standards (NAAQS) for criteria pollutants. Criteria pollutants include CO, NO_2, O_3, PM_{10} and $PM_{2.5}$, SO_2, and lead (Pb). Air-pollutant concentrations greater than the NAAQS represent a risk to human health.

Hazardous Air Pollutants

There are a wide variety of HAPs, including benzene, toluene, ethylbenzene, xylene (also referred to as BTEX), N-hexane, and formaldehyde. There are no federal air quality standards for HAPs (there are exposure thresholds), but some states have established “significance thresholds” to evaluate human exposure for potential chronic inhalation illness and cancer risks.

Visibility

Visibility, also referred to as visual range, is a subjective measure of the distance that light or an object can clearly be seen by an observer. Light extinction is used as a measure of visibility and is calculated from the monitored components of fine particle mass (aerosols) and relative humidity. It is expressed in terms of deciviews, a measure for describing perceived changes in visibility. One deciview is defined as a change in visibility that is just perceptible to an average person, which is approximately a 10 percent

change in light extinction. To estimate potential visibility impairment, monitored aerosol concentrations are used to reconstruct visibility conditions for each day monitored. The aerosol species include ammonium sulfate, ammonium nitrate, organic mass, elemental carbon, soil elements, and coarse mass. The daily values are then ranked from clearest to haziest and divided into three categories to indicate the mean visibility for all days (average), the 20 percent of days with the clearest visibility (20 percent clearest), and the 20 percent of days with the worst visibility (20 percent haziest). Visibility can also be defined by standard visual range (SVR) measured in miles, which is the farthest distance at which an observer can see a black object viewed against the sky above the horizon; the larger the SVR, the cleaner the air.

Since 1980, the Interagency Monitoring of Protected Visual Environments (IMPROVE) network has measured visibility in national parks and wilderness areas. These are managed as high visual quality Class I and II areas under the federal visual resource management (VRM) program. There are six IMPROVE stations in Wyoming, including one in the Planning Area at the North Absaroka site and two adjacent to the Planning Area (in the BLM Buffalo Field Office planning area) at the Thunder Basin National Grasslands and Cloud Peak National Wilderness areas.

Atmospheric Deposition

Atmospheric deposition refers to processes in which air pollutants are removed from the atmosphere and deposited into terrestrial and aquatic ecosystems. Air pollutants can be deposited by precipitation (rain and snow) or the gravitational settling of gaseous pollutants on soil, water, and vegetation. Much of the concern about deposition is due to secondary formation of acids and other compounds from emitted nitrogen and sulfur species, such as oxides of nitrogen (NO_x) and SO_2, which can contribute to acidification of lakes, streams, and soils and affect other ecosystem characteristics, including nutrient cycling and biological diversity.

Substances deposited include:

- Acids, such as sulfuric (H_2SO_4) and nitric (HNO_3), sometimes referred to as acid rain.
- Air toxics, such as pesticides, herbicides, and volatile organic compounds (VOC).
- Heavy metals, such as mercury.
- Nutrients, such as nitrates (NO_3-) and ammonium (NH_4+).

The accurate measurement of atmospheric deposition is complicated by contributions to deposition by several components – rain, snow, cloud water, particle settling, and gaseous pollutants. Deposition varies with precipitation and other meteorological variables (e.g., temperature, humidity, winds, and atmospheric stability), which in turn, vary with elevation and time.

Federal land managers, including the USFS and National Park Service, have established guidelines or Levels of Concern (LOC) for total deposition of nitrogen and sulfur compounds in Class I Wilderness Areas. Total nitrogen deposition of 1.5 kilograms (kg) per hectare (ha) per year or less is considered to be unlikely to harm terrestrial or aquatic ecosystems. For total sulfur deposition, the LOC is 3 kg per ha per year.

Monitoring of Air Quality, Visibility, and Deposition in the Planning Area

Although various state and federal agencies monitor air pollutant concentrations, visibility, and atmospheric deposition throughout Wyoming, at present there are only a few air quality monitors in and near the Planning Area. Table 3-1 lists the available air quality monitoring sites in the Bighorn Basin and relevant sites nearby. The Wyoming DEQ Air Quality Division operates a PM_{10} and $PM_{2.5}$ monitor as part of the State and Local Air Monitoring Site (SLAMS) network in Cody, Wyoming (Park County). Additional SLAMS and Special Purpose Monitoring (SPM) sites operate in nearby counties. These include several IMPROVE monitors and BLM-administered sites that are part of the Wyoming Air Resource Monitoring System (WARMS). The "Basin" WARMS site, located northwest of Worland, has only been operating since 2010 and has a limited data record available. This site was recently upgraded to a full Clean Air Status and Trends Network (CASTNet) site in 2012, but although deposition and SO_2 data are collected at this monitor, only ozone data were available for the analysis presented below. Atmospheric deposition (wet) measurements of NH_4, sulfate (SO_4), and various metals are taken at the Sinks Canyon site, which the BLM operates as part of the National Atmospheric Deposition Program (NADP), as well as the South Pass and Yellowstone Park sites. Figure 3-1 presents a map of northwestern Wyoming and parts of Montana and Utah that includes an outline of the Planning Area, the locations of Class I and II areas, and the locations of the various air quality and meteorological monitors discussed in this analysis.

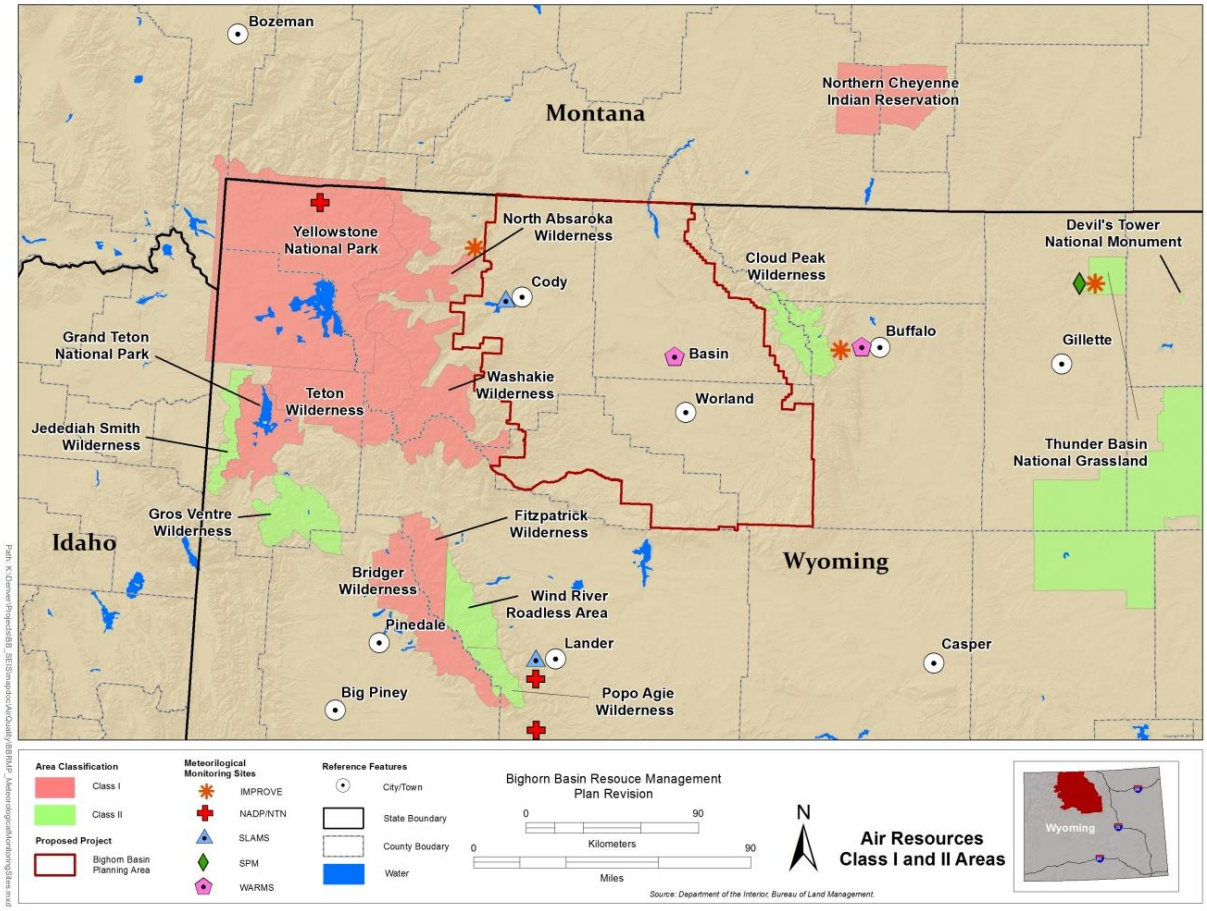
Table 3-1. Air Quality Monitoring Sites In or Near the Planning Area

County	Site Name	Type of Monitor	Parameter	Operating Schedule	Location	
					Longitude	Latitude
Park	Cody	SLAMS	$PM_{10,}$ $PM_{2.5}$	1/6	-109.073	44.532
	North Absaroka (managed by USFS)	IMPROVE	$PM_{2.5}$, NO_{3-}, Ammonium, Nitric Acid, Sulfate, Meteorology	1/3; Hourly Meteorology	-109.382	44.745
	Yellowstone National Park – Tower Falls	NADP/NTN	Wet Deposition Ions, Precipitation, pH	Weekly (Ions); Daily (Precip)	-110.420	44.917
Fremont	Lander	SLAMS	$PM_{2.5}$	1/3	-108.733	42.833
	Sinks Canyon	NADP/NTN	Wet Deposition Ions, Precipitation, pH	Weekly (Ions); Daily (Precip)	-108.850	42.734
	South Pass City	NADP/NTN	Wet Deposition Ions, Precipitation, pH	Weekly (Ions); Daily (Precip)	-108.832	42.494
Big Horn	Basin	WARMS CASTNet	Ozone, NO_{3-}, Ammonium, Nitric Acid, Sulfate, Sulfur Dioxide & Meteorology	1/7 (Speciated); Hourly (O3, Met)	-108.041	44.280
Campbell	Thunder Basin	SPM	Ozone, Nitrogen Oxides & Met	Hourly	-105.300	44.672
	Thunder Basin	IMPROVE	$PM_{2.5}$, NO_{3-}, Ammonium, Nitric Acid, Sulfate, Sulfur Dioxide & Meteorology	1/3 (Speciated); Hourly Met.	-105.287	44.663
Johnson	Buffalo	WARMS	$PM_{2.5}$, NO_{3-}, Ammonium, Nitric Acid, Sulfate, Sulfur Dioxide & Meteorology	1/3 ($PM_{2.5}$); 1/7 (others); Hourly Met	-106.019	44.144
	Cloud Peak	IMPROVE	$PM_{2.5}$, NO_{3-}, Ammonium, Nitric Acid, Sulfate, Sulfur Dioxide & Meteorology	1/3 (Speciated); Hourly Met	-106.956	44.333

Sources: WARMS 2013; EPA 2013; IMPROVE 2013; Wyoming DEQ 2013b; Wyoming DEQ 2013c; NADP 2013.

IMPROVE Interagency Monitoring of Protected Visual Environments
NO_3 Nitrate
PM Particulate Matter
SLAMS State and Local Air Monitoring Site
SPM Special Purpose Monitoring
USFS United States Forest Service
WARMS Wyoming Air Resource Monitoring System

Figure 3-1. Location of Meteorological and Air Quality Monitoring Sites and Class I and II Areas in Northwest Wyoming



Current Conditions

Climate

The climate in the Planning Area is designated as a combination of Intermountain Semi-desert and Southern Rocky Mountain Steppe. The Bighorn Basin is bounded on the northeast by the Pryor Mountains, on the east by the Big Horn Mountains, on the south by Owl Creek and Bridger and Washakie Ranges, on the west by the Absaroka Mountains, and open to the north into Montana. Summers are generally hot and short, and winters long and cold. Precipitation is generally low, though greater at higher elevations, and is generally evenly distributed across the year, with the exception of the drier summer months. Wind speeds are variable and generally strong. Table 3-2 lists temperature, precipitation, and wind speed data for the Planning Area. This information is derived from daily ambient measurements for 1981 through 2010. The summer period covers June, July, and August; the winter period covers December, January, and February. Based on these limited data, meteorological conditions vary somewhat across the Planning Area, with the Worland area in the middle of the Planning Area showing higher mean maximum summer temperatures, lower mean winter temperatures, and overall drier conditions compared to Cody, which is in the western part of the Planning Area.

Table 3-2. Temperature, Precipitation, and Wind Speed Data for the Planning Area (1981-2010)

Climate Component	Cody, Wyoming	Worland, Wyoming
Mean maximum summer temperatures (June, July, and August) (degrees Fahrenheit)	75.2, 83.8, 82.3	80.7, 90.1, 88.8
Mean minimum winter temperatures (December, January, and February) (degrees Fahrenheit)	15.8, 16.4, 18.2	6.1, 4.3, 10.7
Mean annual temperature (degrees Fahrenheit)	46.8	45.6
Mean annual precipitation (inches)	10.56	7.82
Mean annual snowfall (inches)	42.86	5.1[1]
Mean annual wind speed (miles per hour)	7.7[1]	5.6[1]
Prevailing wind direction	Northerly/westerly[1]	Northerly/southerly[1]

Source: Western Regional Climate Center 2013

[1]Data only available for these parameters for the period 1971-2000

In the Planning Area, the potential effects of climate change on air quality are likely to be varied. For example, if global climate change results in a warmer and drier climate, this could result in increased concentrations of PM due to increased windblown dust from drier and less stable soils. Less snow and an earlier snowmelt could result in a longer wildland fire season, which could lead to higher concentrations of ozone and PM.

Some activities within the Planning Area generate greenhouse gas (GHG) emissions. Oil and gas development activities can generate carbon dioxide (CO_2) and methane (CH_4). CO_2 emissions result from the use of combustion engines, while CH_4 can be released during processing. Wildland fires also are a source of CO_2 and other GHG emissions, while livestock grazing is a source of CH_4. Other activities in the Planning Area with the potential to contribute to climate change include soil erosion from disturbed areas and fugitive dust from roads, which have the potential to darken snow-covered surfaces and cause faster snow melt.

Please see the last section of this chapter for a further discussion of climate change.

Air Quality

With only one long-term air quality monitor (Cody – measuring PM_{10} and $PM_{2.5}$), one relatively new monitor (Basin – measuring ozone, NO_{3-}, ammonium, nitric acid, sulfate, and SO_2) within the Planning Area, and one monitor (North Absaroka/IMPROVE) located just outside the Planning Area, it is difficult to accurately assess existing air quality conditions throughout the area. However, as noted above, air quality, visibility, and atmospheric deposition are monitored throughout Wyoming, including adjacent planning areas. Therefore, the BLM assessed recent air quality conditions in the Bighorn Basin by examining data collected at the Cody and Basin monitors, supplemented by various monitors in neighboring planning areas, as summarized in Table 3-1. While there are limited ambient air quality monitoring data available in the study area, air quality is generally considered to be good, with no regions in the Planning Area designated as non-attainment for NAAQS or WAAQS. Since the Planning Area is in attainment of NAAQS, a General Conformity Determination is not required. Based on measurements in the area, visibility in the Planning Area is considered excellent. It should be noted that the monitoring data presented in this analysis were selected from the available list of sites in nearby

areas that would most closely match conditions in the Planning Area. For example, no data are presented for air quality monitoring sites located in the Upper Green River Basin (Sublette County), because, although some of these sites are closer to the Planning Area than other sites presented in the analysis, this area is located on the other side of the Wind River Range and has meteorological and emissions characteristics far different from those experienced in the Planning Area.

Table 3-3 is an overview of the applicable primary WAAQS and NAAQS and recent representative maximum pollutant concentrations measured in and at sites near the Planning Area. These representative concentrations can be compared with the applicable WAAQS and NAAQS to indicate the status of recent air quality conditions within the Planning Area relative to the standards.

Trends

This section describes recent trends in air quality in the Planning Area by examining data collected at the Cody PM_{10} monitor and nearby North Absaroka IMPROVE site, and as best as can be inferred criteria-pollutant (ozone), visibility, and deposition data collected at monitoring sites further outside the Bighorn Basin in adjacent areas. Because measurements of carbon monoxide (CO) are typically representative of local air quality and the Yellowstone monitor is the only site that measures CO near the Planning Area, the CO data presented in Table 3-3 may not be representative of conditions in the Planning Area.

Air Pollutant Concentrations

This section presents air quality data collected at the various monitors in and near the Planning Area (see Table 3-1) for PM_{10}, $PM_{2.5}$, O_3, SO_2, SO_4, NO_3, and NH_4. There are currently no measurements of HAPs within the Planning Area. Figure 3-2 shows annual peak 24-hour average PM_{10} concentrations at the Cody site for 2000 through 2012. Over this period, peak 24-hour average measurements of PM_{10} were well below the NAAQS (150 micrograms per cubic meter [$\mu g/m^3$]) and vary considerably from year to year. There is no real discernible trend during this period.

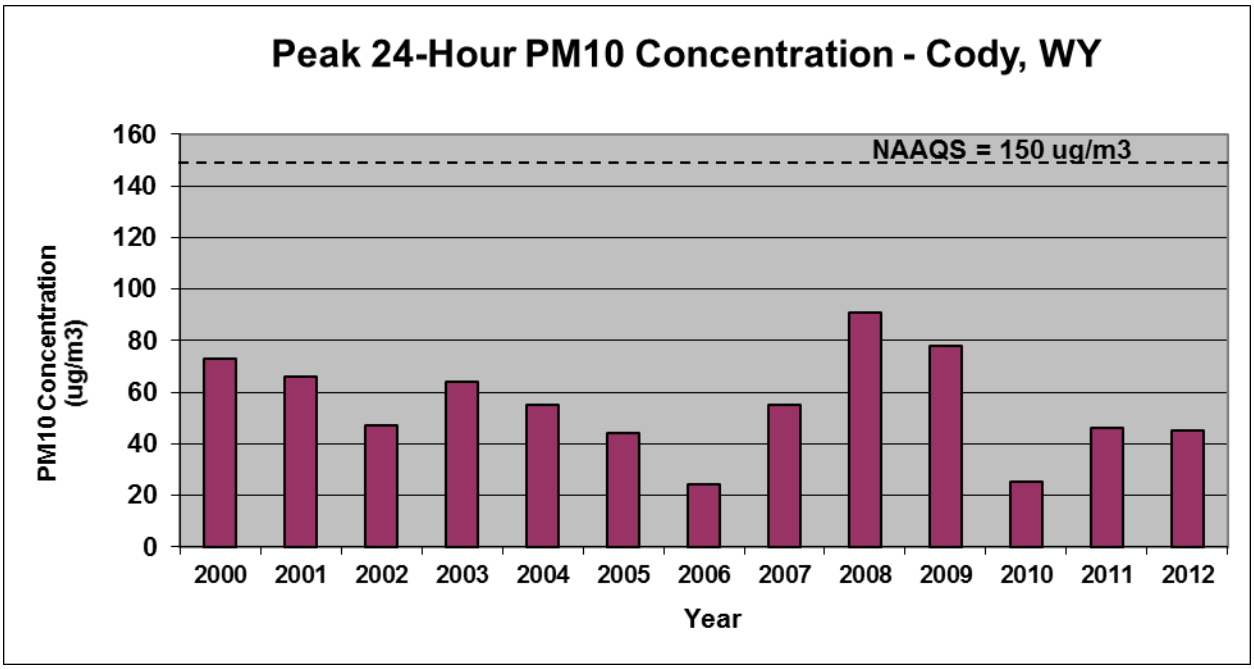
Table 3-3. Applicable National and State Primary Air Quality Standards for Criteria Pollutants and Current Representative Concentrations for the Planning Area

Pollutant	Averaging Time	NAAQS			WAAQS			Representative Concentrations		
		(ppm)	*(ppb)*	*(µg/m³)*	*(ppm)*	*(ppb)*	*(µg/m³)*	*(ppm)*	*(ppb)*	*(µg/m³)*
Carbon Monoxide	1 hour[1]	35	35,000	40,000	35	35,000	40,000	0.8	800	920
	8 hour[1]	9	9,000	10,000	9	9,000	10,000	0.3	300	345
Nitrogen Dioxide	1 hour [2]	0.10	100	188.7	N/A	N/A	N/A	0.011	11	21
	Annual[3] (Arithmetic Mean)	0.053	53	100	0.053	53	100	0.002	2.0	4
Ozone	8 hour[4]	0.075	75	147	0.075	75	147	0.056	56	110
PM_{10}	24 hour[5]	N/A	N/A	150	N/A	N/A	150	N/A	N/A	45
$PM_{2.5}$	24 hour[6]	N/A	N/A	35	N/A	N/A	65	N/A	N/A	11
	Annual[7]	N/A	N/A	15	N/A	N/A	15	N/A	N/A	2.4
Sulfur Dioxide[9]	1 hour[8]	0.075	75	195	N/A	N/A	N/A	0.033	33	86

[1]Not to be exceeded more than once per year. Data collected at Yellowstone National Park during 2012.
[2]To attain this standard, the 3-year average of the 98th percentile of 1-hour concentrations at each monitor within an area must not exceed 100 ppb. Thunder Basin data, 2010-2012.
[3]Thunder Basin annual average for 2012.
[4]To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 75 ppb. 3-year average of the fourth highest concentration for 2010-2012 for the Basin site.
[5]Not to be exceeded more than once per year on average over 3 years. Maximum 24-hour average for 2012 at Cody SLAMS site.
[6]To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations for 2010-2012 for the North Absaroka IMPROVE site.
[7]To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 12.0 µg/m³. 3-year average for 2010-2012 for the North Absaroka site.
[8]To attain this standard, the 3-year average of the 98th percentile of 1-hour concentrations at each monitor within an area must not exceed 75 ppb.
[9]The SO_2 value is from the Wyoming DEQ Casper monitor, located in Natrona County and is the 3-year average of the 98th percentile of 1-hour concentrations measured for 2011, 2012, and 2013. Although not located in the Bighorn Basin, this is the closest monitor with available recent data.

µg/m³	micrograms per cubic meter	ppb	parts per billion
N/A	Not Applicable	ppm	parts per million
NAAQS	National Ambient Air Quality Standards	SLAMS	State and Local Air Monitoring Site
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter	WAAQS	Wyoming Ambient Air Quality Standards
PM_{10}	particulate matter less than 10 microns in diameter	WARMS	Wyoming Air Resource Monitoring System

Figure 3-2. Peak 24-Hour Average Particulate Matter (PM_{10}) Concentrations (µg/m³) in Cody, Wyoming



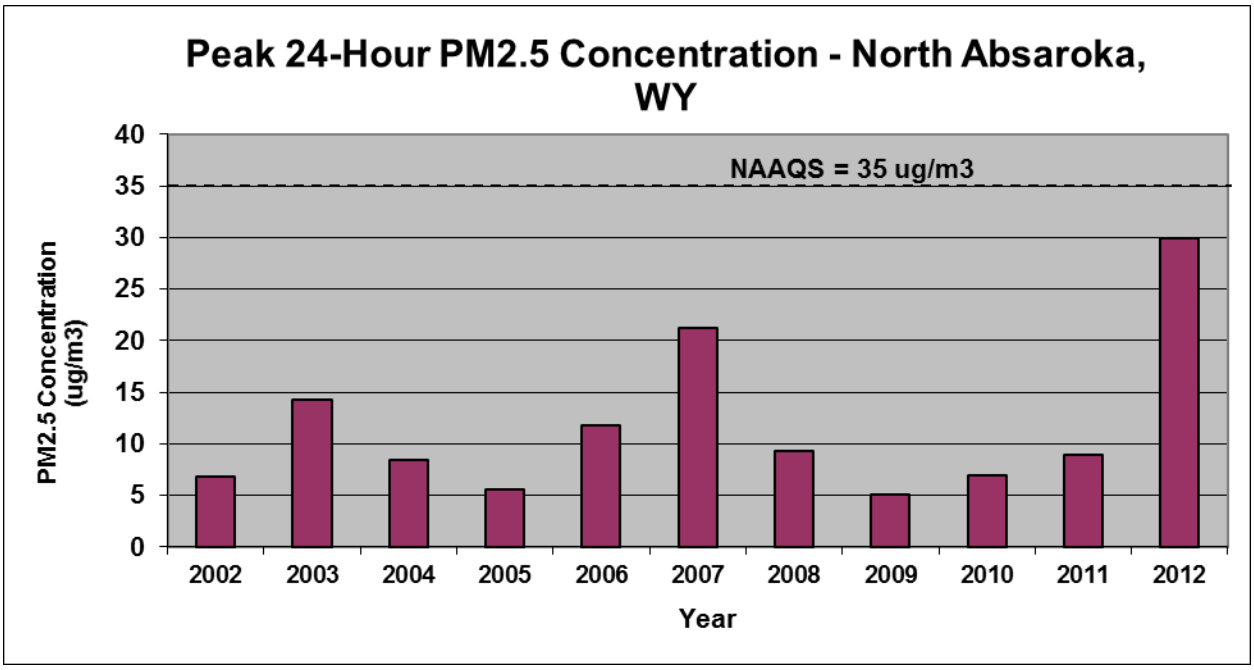
Source: EPA 2013

Note: The National Ambient Air Quality Standard for 24-hour average PM_{10} concentrations is 150 µg/m³.

µg/m³ micrograms per cubic meter
NAAQS National Ambient Air Quality Standards
PM_{10} particulate matter less than 10 microns in diameter

Figure 3-3 shows peak 24-hour average $PM_{2.5}$ data collected at the North Absaroka monitor for 2002 through 2012. With the exception of the peak value for 2012, the data indicate that the peak 24-hour average $PM_{2.5}$ concentration in the North Absaroka area was well below the NAAQS with no discernible trend during this period (IMPROVE 2013).

Figure 3-3. Peak 24-Hour Average Particulate Matter ($PM_{2.5}$) Concentrations (µg/m³) for the North Absaroka Site



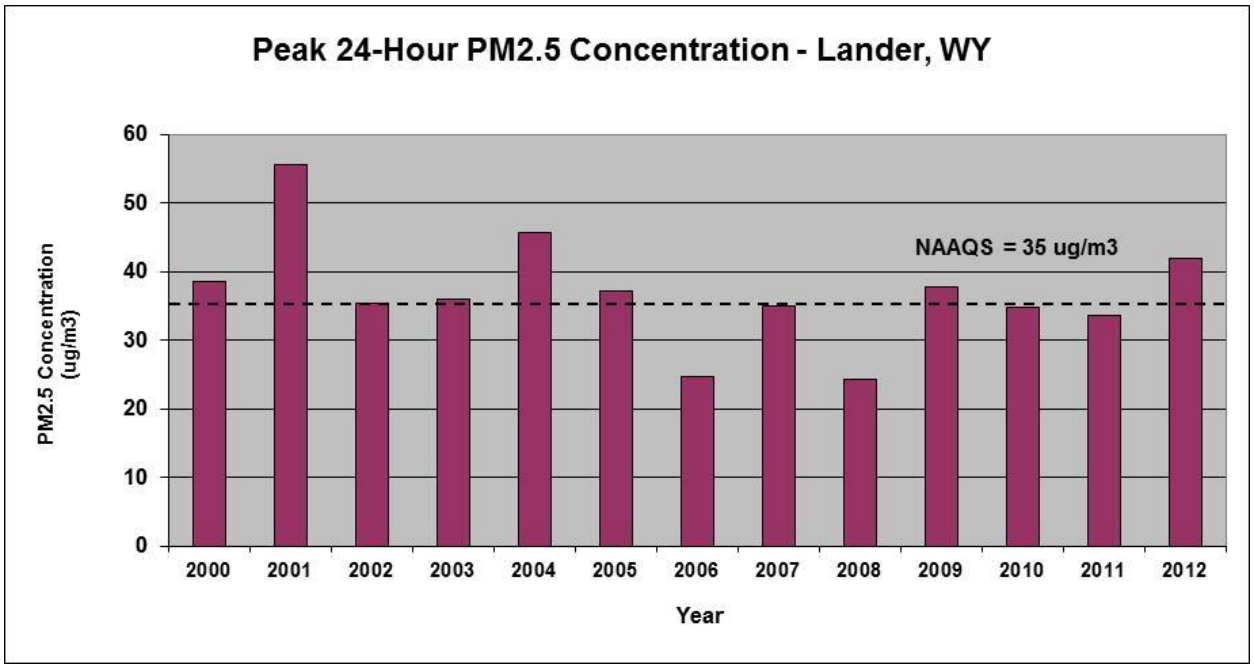
Sources: IMPROVE 2013; VIEWS 2013.

Note: The National Ambient Air Quality Standard for 24-hour average $PM_{2.5}$ concentrations is 35 µg/m³.

µg/m³ micrograms per cubic meter
NAAQS National Ambient Air Quality Standards
$PM_{2.5}$ particulate matter less than 2.5 microns in diameter

In addition to measurements collected in the Planning Area at North Absaroka, the BLM also examined data collected in an area to the south near Lander, Wyoming. Figure 3-4 lists peak 24-hour average $PM_{2.5}$ data collected at the Lander monitor for 2000 through 2012. The data for the last four years (2009-2012) indicate that these concentrations are approaching the NAAQS, however, the comparison with the NAAQS is with the 3-year average of the 98th percentile value, not the peak value. These values are comparable and vary from year to year, with peak values of 37.8 µg/m^3 in 2009 and 41.8 µg/m^3 in 2012.

Figure 3-4. Peak 24-Hour Average Particulate Matter ($PM_{2.5}$) Concentrations (µg/m^3) for the Lander Site



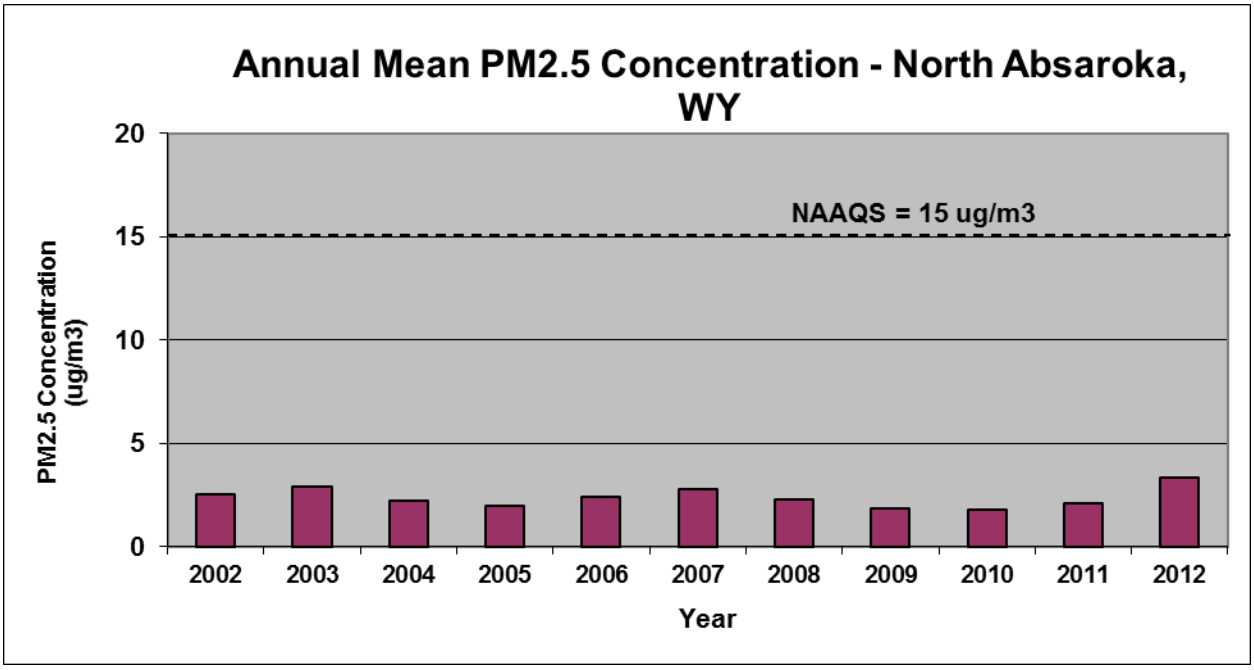
Source: EPA 2013

Note: The National Ambient Air Quality Standard for 24-hour average $PM_{2.5}$ concentrations is 35 µg/m^3.

µg/m^3 micrograms per cubic meter
NAAQS National Ambient Air Quality Standards
$PM_{2.5}$ particulate matter less than 2.5 microns in diameter

Figure 3-5 shows annual average $PM_{2.5}$ data collected at the North Absaroka monitor for 2002 through 2012, and Figure 3-6 presents annual average $PM_{2.5}$ data collected at the Lander monitor for 2000 through 2012. The data indicate that annual average $PM_{2.5}$ concentrations in the Lander area are higher than those measured at North Absaroka, but are still well below the NAAQS. Trends are relatively flat during this period at both monitors.

Figure 3-5. Annual Average Particulate Matter ($PM_{2.5}$) Concentrations ($\mu g/m^3$) for the North Absaroka Site

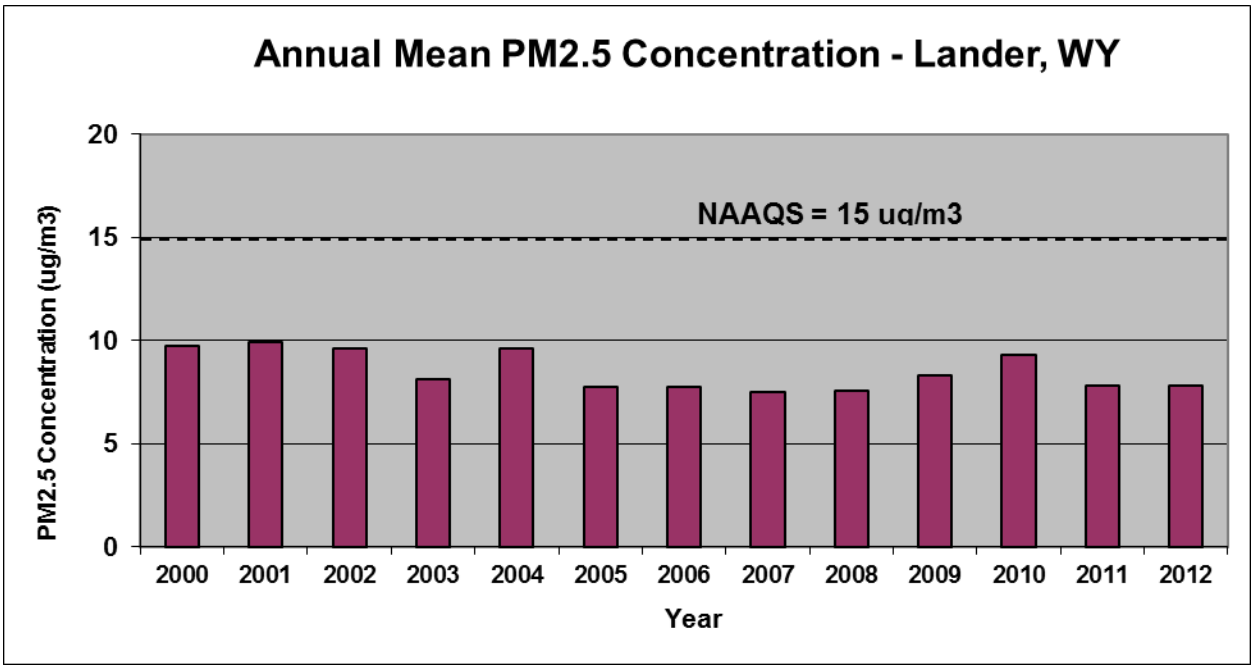


Sources: IMPROVE 2013; VIEWS 2013.

Note: The National Ambient Air Quality Standard for annual average $PM_{2.5}$ concentrations is 15 $\mu g/m^3$.

$\mu g/m^3$	micrograms per cubic meter
NAAQS	National Ambient Air Quality Standards
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter

Figure 3-6. Annual Average Particulate Matter ($PM_{2.5}$) Concentrations (µg/m³) for the Lander Site



Source: EPA 2013

Note: The National Ambient Air Quality Standard for annual average $PM_{2.5}$ concentrations is 15 µg/m³.

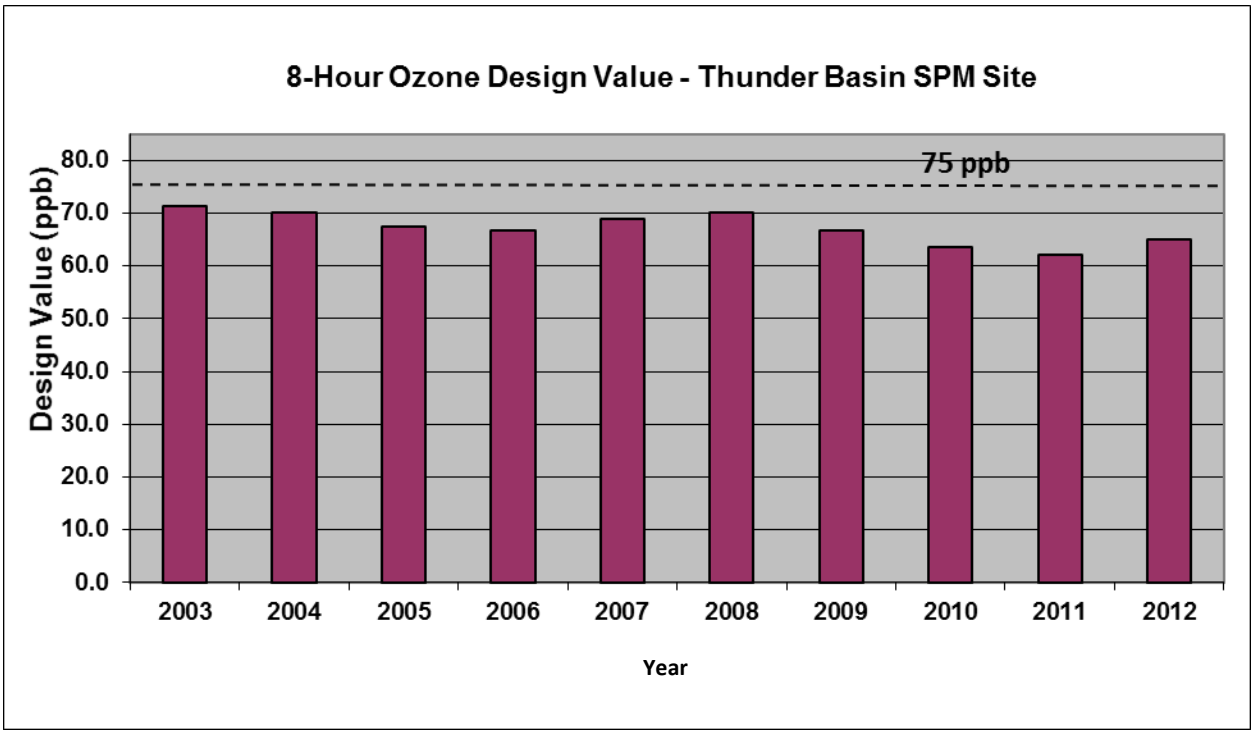
µg/m³	micrograms per cubic meter
NAAQS	National Ambient Air Quality Standards
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter

Although a new WARMS monitoring site, referred to as the "Basin" site, began operating northwest of Worland in March 2010, there are currently no other ozone monitors in the Planning Area with three complete years of data that are required to calculate an ozone design value, which is calculated as the 3-year average of the fourth highest observed concentration and is used to assess compliance with the NAAQS. The 4th highest 8-hour average ozone concentrations measured at the Basin site in recent years are 55, 56, and 57 ppb, for 2010, 2011, and 2012, respectively, for a calculated design value of 56 ppb, which is well below the current 8-hour ozone NAAQS.

For a longer-term evaluation of observed ozone near the Planning Area, Figure 3-7 lists the calculated design values for the Thunder Basin site calculated from data collected during the period for 2001 through 2012. The most recent design value for the Thunder Basin site for 2010 through 2012 is 65 parts per billion (ppb), which is below the current 8-hour ozone NAAQS of 75 ppb. (Currently EPA is evaluating the level of the standard and may reduce this value to 70 ppb or lower. If the 8-hour ozone NAAQS is reduced to 70 ppb, it is possible that areas with design values greater than the new standard (e.g., those located in the adjacent Buffalo and other planning areas in Wyoming) would be designated ozone nonattainment areas.) Although the data for Thunder Basin vary from year to year during this period, there is no discernible trend in the 8-hour ozone design values at this site. However, the Thunder Basin site also located in the adjacent Buffalo planning area on the other side of the Big Horn Mountain range and may not be representative of long-term ozone air quality trends in the Bighorn Basin. This is due to the influence of local sources of precursor emissions, differing weather conditions,

terrain, and other factors on secondary ozone production and transport in and throughout the Bighorn Basin.

Figure 3-7. 8-Hour Average Ozone Design Values for the Thunder Basin Special Purpose Monitoring Site



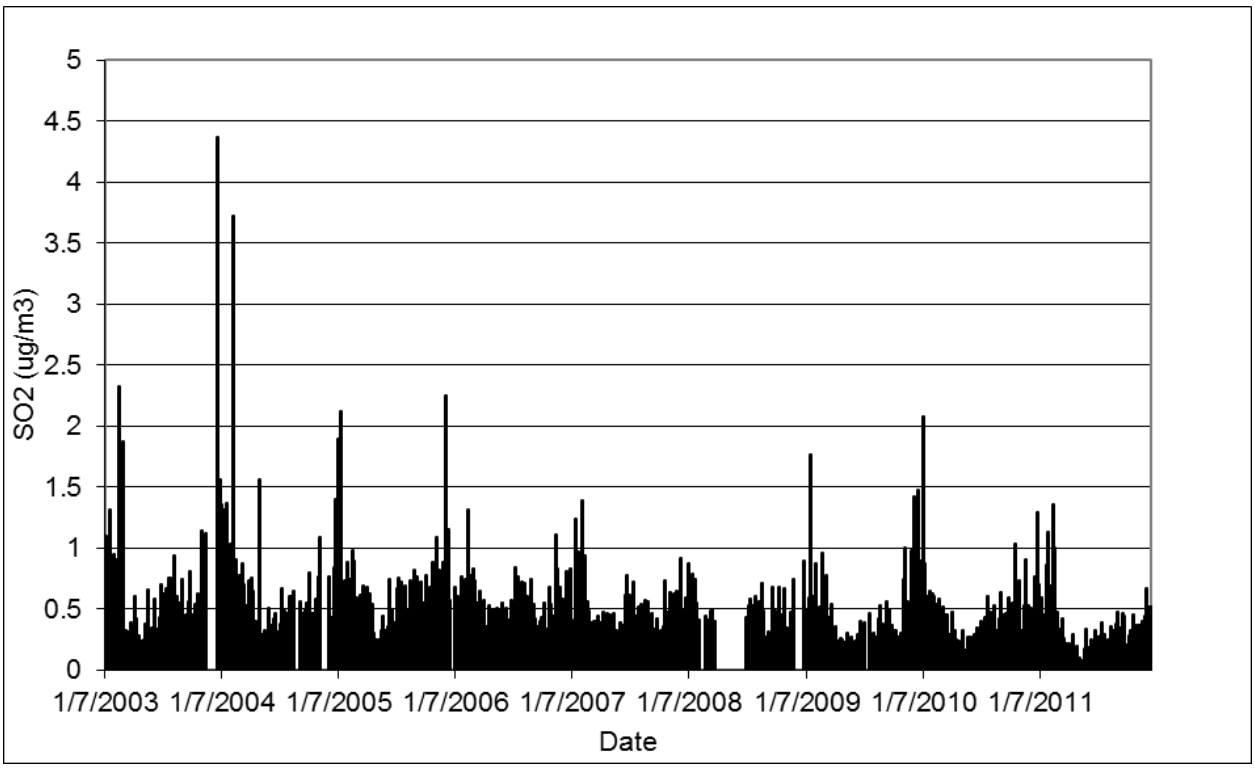
Source: Wyoming DEQ 2013b

Note: The National Ambient Air Quality Standard for 8-hour average ozone concentrations is 75 ppb.

ppb parts per billion

Although not in the Planning Area, the nearby Buffalo monitoring site is part of the WARMS network and provides a summary of observed concentrations of sulfur and nitrogen compounds in adjacent areas. Figures 3-8, 3-9, 3-10, and 3-11 show weekly average concentrations of SO_2, SO_4, NO_3, and NH_4 respectively, for the Buffalo site for 2003 through 2011. There are data missing for a number of weeks throughout this period, especially in 2008. The data show weekly and seasonal variations in these compounds, with no real discernible long-term trends over the period.

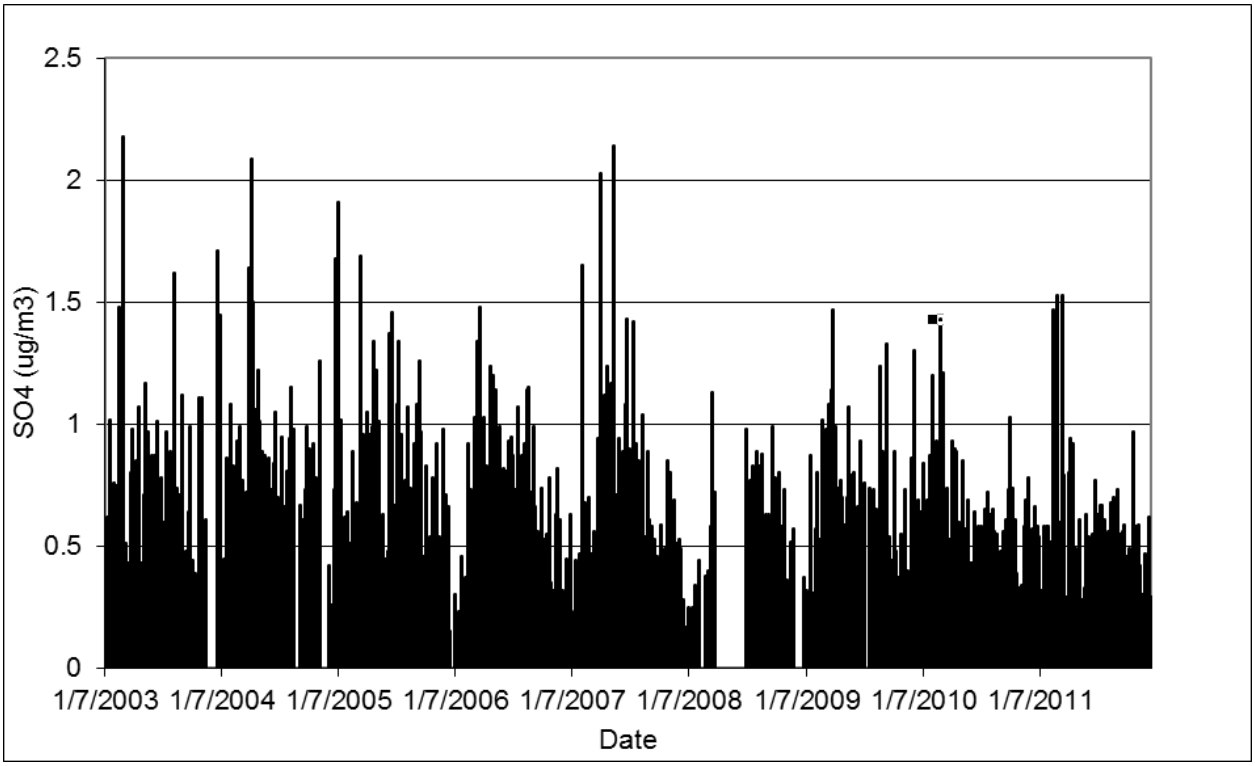
Figure 3-8. Weekly SO_2 Concentrations ($\mu g/m^3$) – Buffalo WARMS Monitor



Source: WARMS 2013

$\mu g/m^3$	micrograms per cubic meter
SO_2	sulfur dioxide
WARMS	Wyoming Air Resource Monitoring System

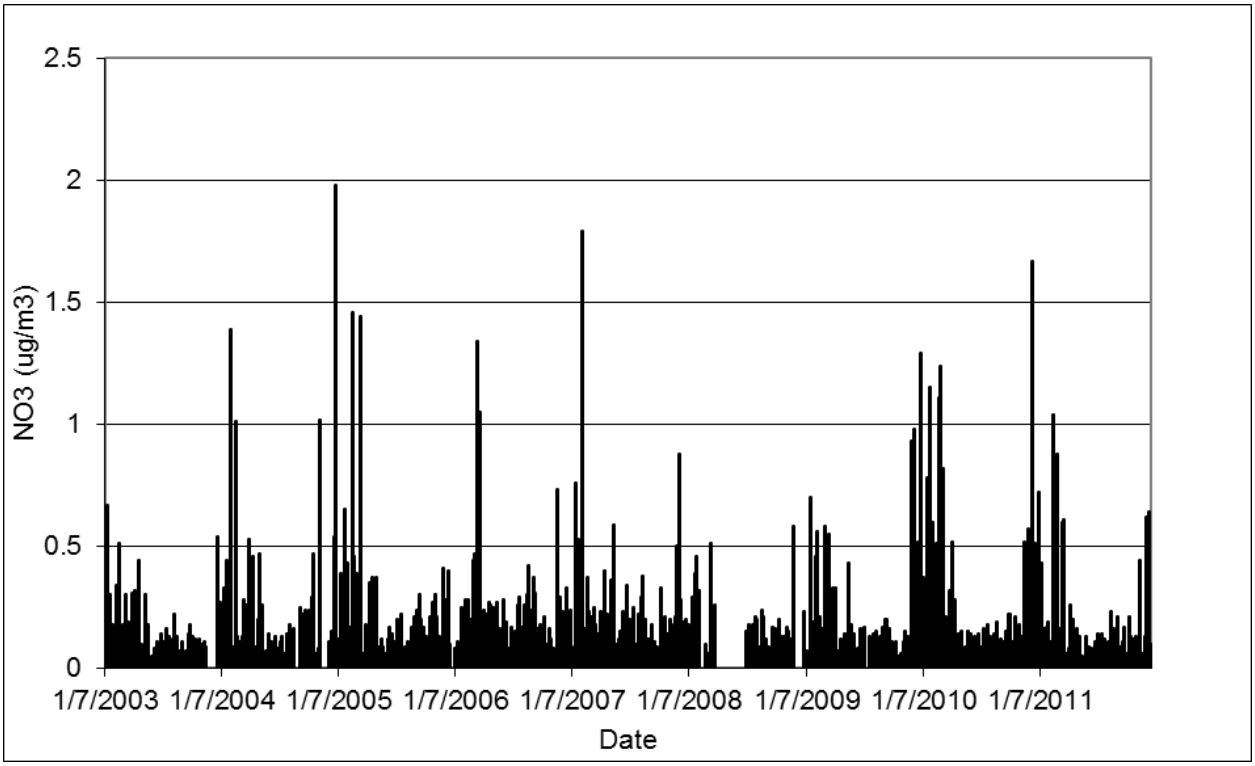
Figure 3-9. Weekly SO_4 Concentrations ($\mu g/m^3$) – Buffalo WARMS Monitor



Source: WARMS 2013

$\mu g/m^3$	micrograms per cubic meter
SO_4	sulfate
WARMS	Wyoming Air Resource Monitoring System

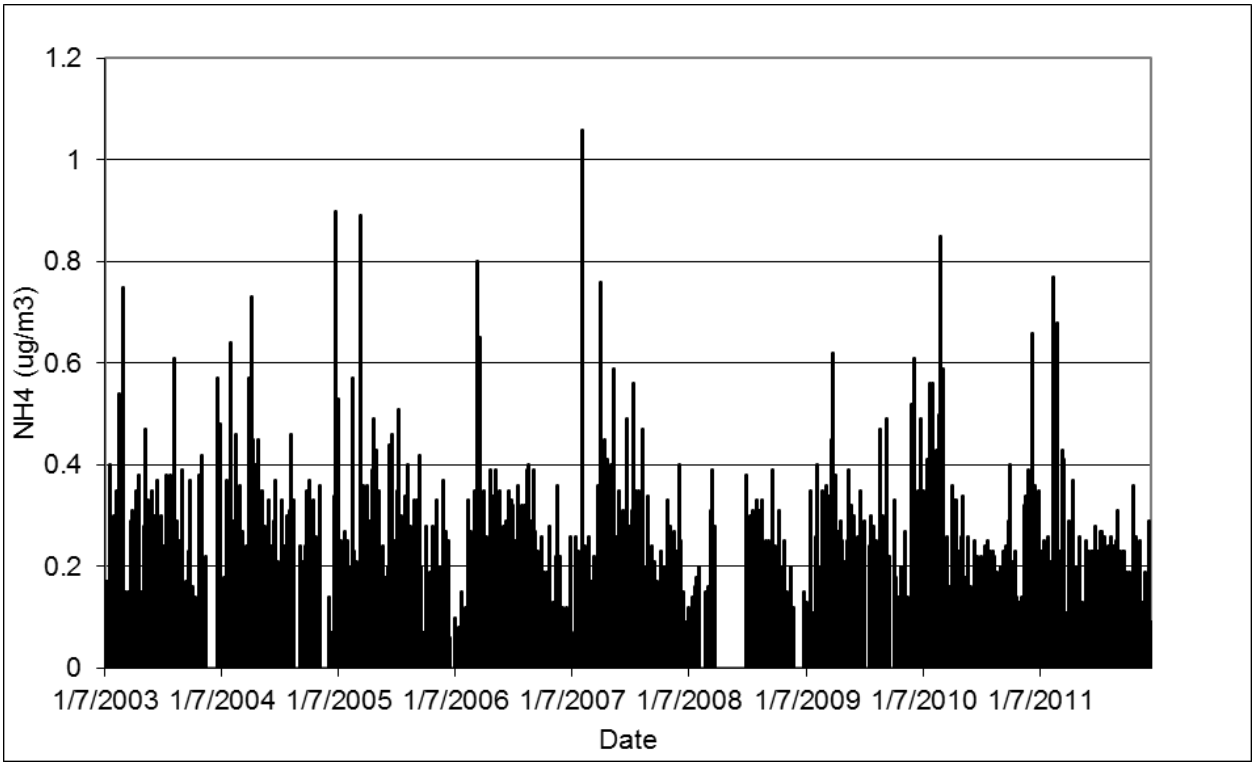
Figure 3-10. Weekly NO_3 Concentrations (µg/m³) – Buffalo WARMS Monitor



Source: WARMS 2013

µg/m³	micrograms per cubic meter
NO_3	nitrate
WARMS	Wyoming Air Resource Monitoring System

Figure 3-11. Weekly NH_4 Concentrations ($\mu g/m^3$) – Buffalo WARMS Monitor



Source: WARMS 2013

$\mu g/m^3$	micrograms per cubic meter
NH_4	ammonium
WARMS	Wyoming Air Resource Monitoring System

Visibility

There are several National Parks, recreation areas, wilderness areas, and National Forests in or near the Planning Area. As depicted on Figure 3-1, Table 3-4 lists areas designated as Class I or Class II.

Table 3-4. Class I and Class II Areas In or Near the Planning Area

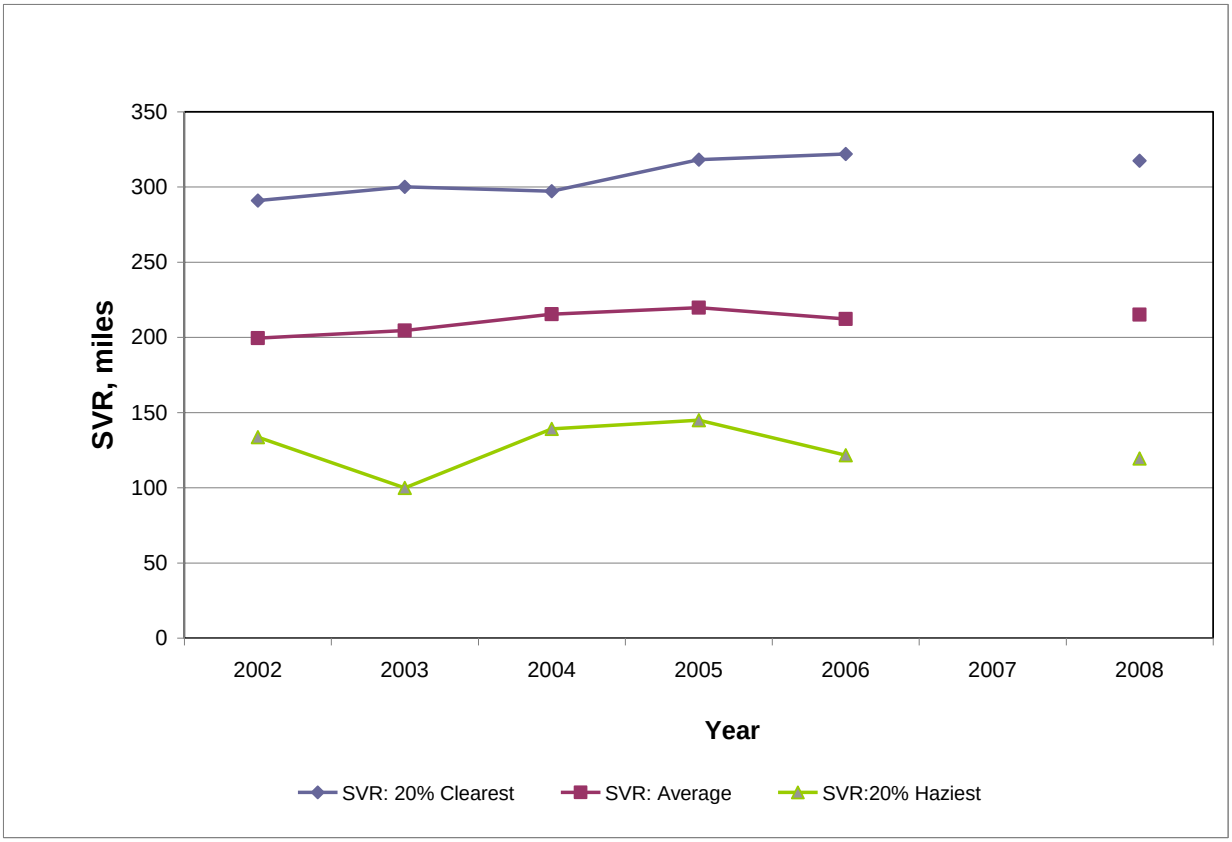
Area Type	Area Name	Closest Distance to the Planning Area (miles)	Direction from the Planning Area	Clean Air Act Status of the Area
National Park	Wind Cave National Park	200	East	Class I
	Yellowstone National Park	Adjacent	West	Class I
Recreation Area	Bighorn Canyon National Recreation Area	In	-	Class II
Wilderness Area	Cloud Peak Wilderness Area	In	-	Class II
	North Absaroka Wilderness Area	In	-	Class I
	Washakie Wilderness Area	In	-	Class I
	Fitzpatrick Wilderness Area	30	Southwest	Class I
	Popo Agie Wilderness Area	50	South	Class II
	Bridger Wilderness Area	35	Southwest	Class I
	Teton Wilderness Area	Adjacent	Southeast	Class II
National Forest	Bighorn National Forest	In	-	Class II
	Thunder Basin National Grassland	75	East	Class II

Source: NPS 2006

As noted above, estimates of visibility in the Planning Area are primarily derived from air quality and meteorological measurements taken at the North Absaroka IMPROVE site. To supplement these measurements, the BLM used recent data collected at the nearby Cloud Peak IMPROVE monitor to assess regional visibility conditions.

Figure 3-12 shows visibility estimates for the North Absaroka site for 2002 through 2008. There are no more recent data available for this monitor. Although missing for 2007, there are no real trends during this limited period. Figure 3-13 shows visibility data for the Cloud Peak IMPROVE site for 2003 through 2010. The data for the Cloud Peak site are quite consistent with the North Absaroka site, and reflect a slight trend of improved visibility for the 2007 to 2010 period.

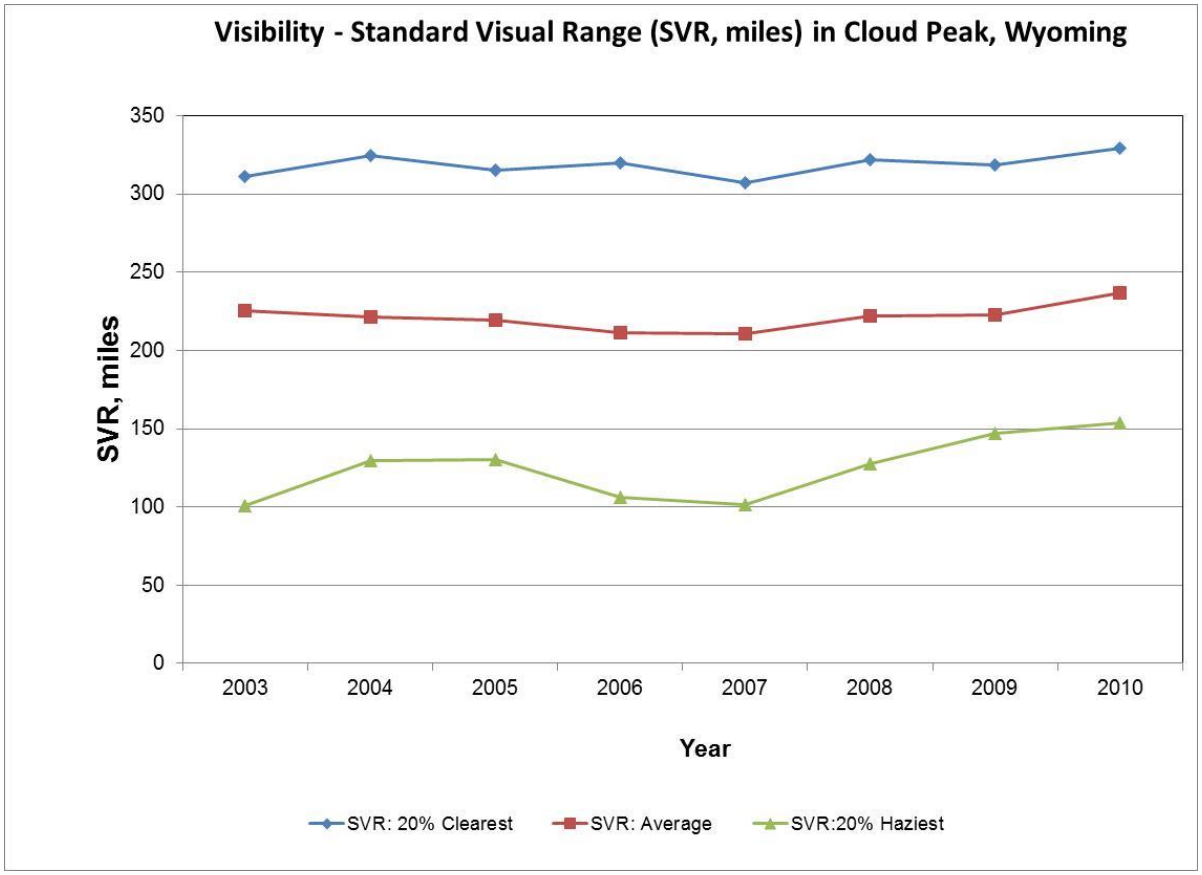
Figure 3-12. Visibility – Standard Visual Range (SVR, miles) for the North Absaroka, Wyoming, IMPROVE Site



Source: IMPROVE 2013

IMPROVE Interagency Monitoring of Protected Visual Environments
SVR standard visual range

Figure 3-13. Visibility – Standard Visual Range (SVR, miles) for the Cloud Peak, Wyoming, IMPROVE Site



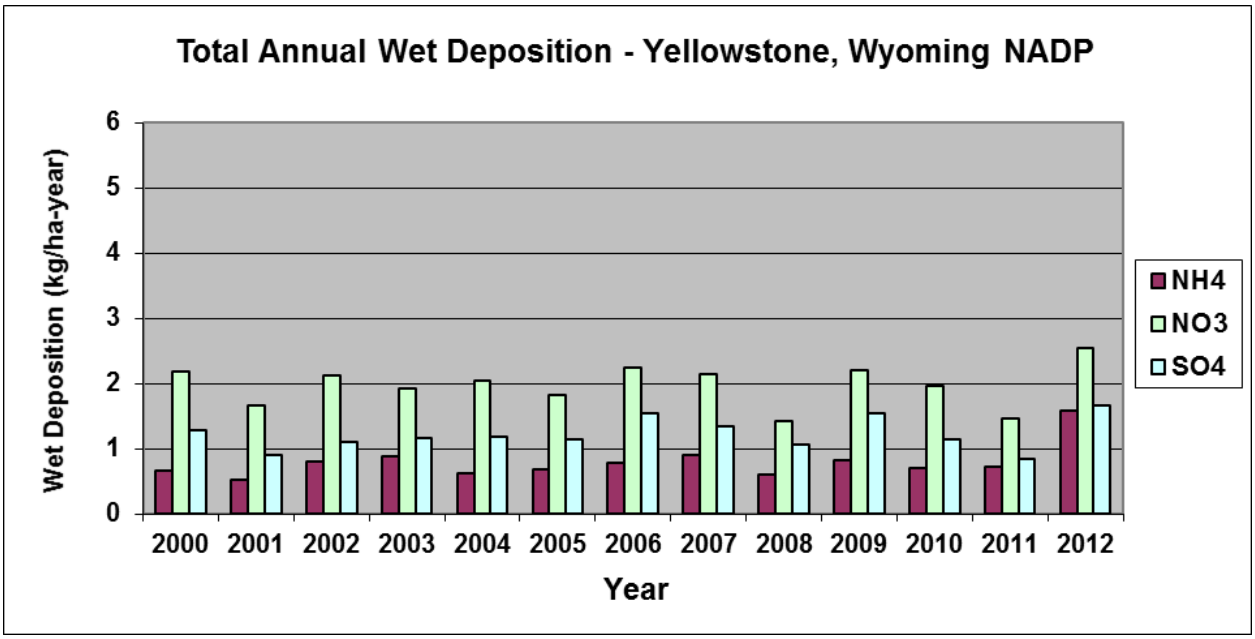
Source: IMPROVE 2013

IMPROVE Interagency Monitoring of Protected Visual Environments
SVR standard visual range

Atmospheric Deposition

There are no NADP monitors located within the Planning Area and no deposition data are available from the recently upgraded Basin CASTNet/WARMS monitor located within the Planning Area. However, wet deposition measurements are available for the nearby Yellowstone, Sinks Canyon, and South Pass City NADP monitors. Figure 3-14 shows total annual wet deposition for NH_4, NO_3, and SO_4 for 2000 through 2012 for Yellowstone. Figure 3-15 and Figure 3-16 show similar wet deposition information for the Sinks Canyon and South Pass sites, respectively. Wet deposition values are slightly higher at these two sites compared to Yellowstone, but the data indicate a general downward trend in deposition at these sites during the 2005 to 2012 period. While there was a spike in the wet nitrogen deposition for 2010 at the South Pass site, this could be considered a localized, outlier event. For all years examined and for all sites, annual wet nitrogen deposition exceeds the LOC of 1.5 kg per ha per year, with the largest values measured at the South Pass site. For annual wet sulfur deposition, the LOC of 3 kg per ha per year is exceeded for only a few years at the South Pass site.

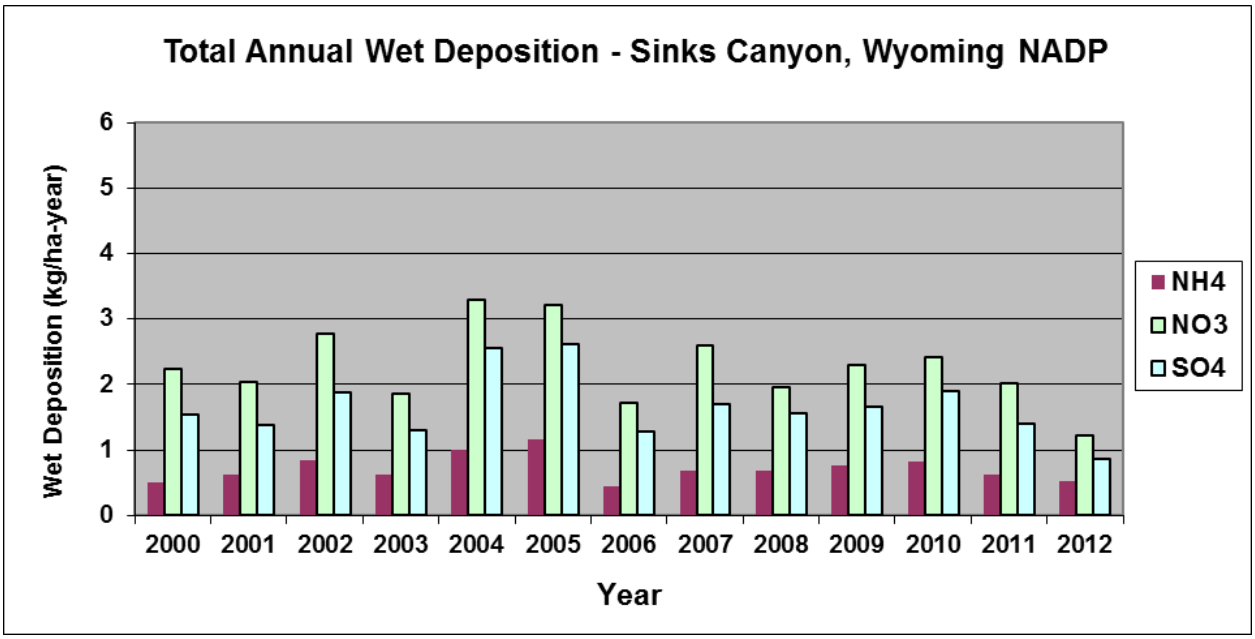
Figure 3-14. Total Annual Wet Deposition (kilograms per hectare per year) Yellowstone Park, Wyoming NADP Site



Source: NADP 2013

ha	hectare
kg	kilogram
NADP	National Atmospheric Deposition Program
NH_4	ammonium
NO_3	nitrate
SO_4	sulfate

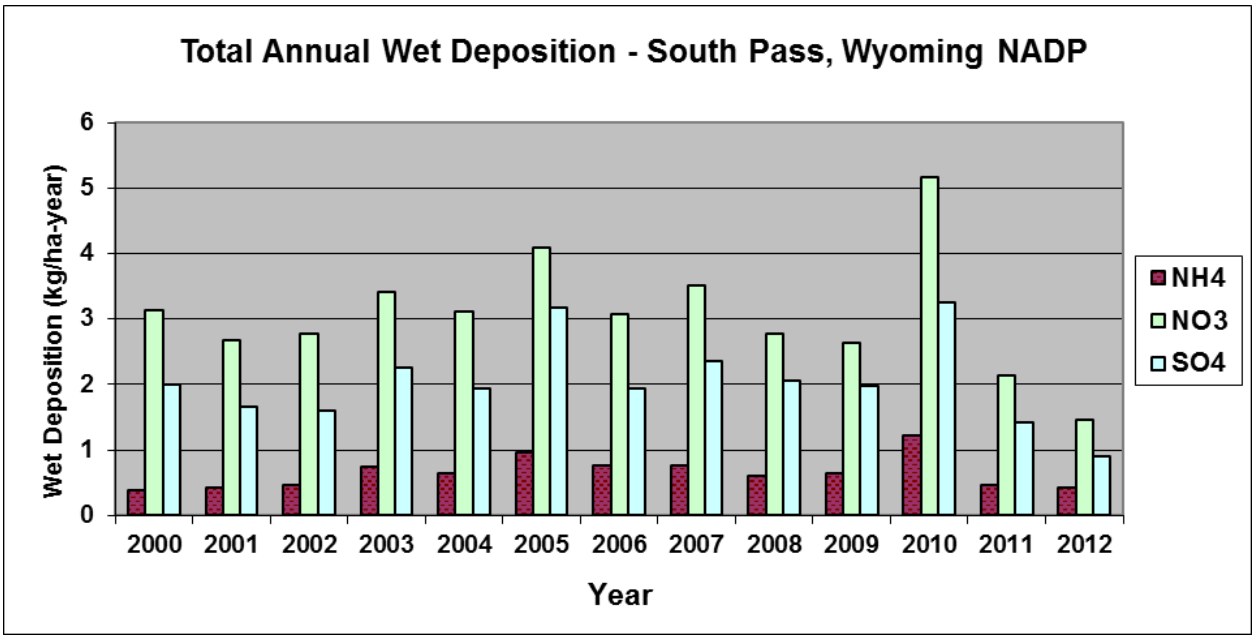
Figure 3-15 Total Annual Wet Deposition (kilograms per hectare per year) Sinks Canyon, Wyoming NADP Site



Source: NADP 2013

ha	hectare
kg	kilogram
NADP	National Acid Deposition Program
NH_4	ammonium
NO_3	nitrate
SO_4	sulfate

Figure 3-16. Total Annual Wet Deposition (kilograms per hectare per year) South Pass City, Wyoming NADP Site



Source: NADP 2013

ha	hectare
kg	kilogram
NADP	National Acid Deposition Program
NH_4	ammonium
NO_3	nitrate
SO_4	sulfate

Hazardous Air Pollutants, Other Criteria Pollutants, and Greenhouse Gases

Existing sources of HAPs, criteria pollutants (other than those discussed above), and GHGs in the Planning Area include fossil fuel combustion that emits HAPs; oil, natural gas, and coal development operations that emit VOCs; NO_X; and hydrogen sulfide (H_2S). In addition, large fires are a source of HAPs emissions. There are no measurements of HAPs or other criteria pollutants (e.g., NOx and VOC) available for analysis within the Planning Area. The lack of historical observations, and the growth in resource development and accompanying increases in emissions from these types of sources will depend on a number of external factors that make it difficult to estimate actual long-term trends in these pollutants.

Summary

Available air quality data for a number of criteria pollutants that were examined at various monitors in and near the Planning Area do not show any significant upward or downward trends over the various periods of record, except for peak 24-hour average $PM_{2.5}$ at the North Absaroka site. Concentrations of peak 24-hour average $PM_{2.5}$ at this site are low, vary from year to year, and show an upward trend during the last four years of the 11-year period examined. The annual average $PM_{2.5}$ data for North Absaroka show low concentrations well within the NAAQS and no discernible long-term trends. The peak 24-hour average $PM_{2.5}$ data for the Lander site show a relatively flat trend during the last 4 years of record (2009 through 2012). The newly installed Basin WARMS/CASTNet monitor has a calculated 8-

hour average ozone design value of 56 ppb, which is well below the NAAQS. No deposition or SO_2 data were available from the Basin monitor for inclusion in this analysis.

Although statistical trends were not explicitly calculated for SO_2, SO_4, NO_3, and NH_4, the data do not indicate any major trends for the 11-year period examined at the Buffalo site, which is adjacent to the Bighorn Basin. As noted above, these data may not be indicative of air quality within the Bighorn Basin, but were presented to illustrate air quality conditions in an adjacent area. The visibility data collected at the North Absaroka and Cloud Peak sites show very good to excellent visibility, even for the 20 percent haziest days, with a very slight degradation observed at the Cloud Peak monitor during the periods of record examined. Wet-deposition data for NH_4, NO_3, and SO_4 for the Yellowstone, Sinks Canyon, and South Pass City sites also show no distinct trend in deposition over the 13-year period of record (2000 through 2012) examined in this analysis.

Management Challenges

Due to limited data, accurately characterizing air quality in the Planning Area is a challenge. However, limited monitoring at two sites in the Planning Area and data collected at monitors in adjacent areas do reflect good to excellent air quality and visibility conditions. Continued maintenance of the federal and state air quality standards could be an issue without a complete understanding of existing air quality. As additional resource development scenarios are considered for the area, it will be important to evaluate the effects that emissions from development sources would have on criteria pollutants, visibility, and atmospheric deposition levels. The BLM will work cooperatively with the Wyoming DEQ Air Quality Division and the EPA and other federal agencies to address these issues.

Other management challenges include identifying the full spectrum of air quality issues in the Bighorn Basin and developing effective management actions aimed at maintaining compliance with standards and improving air quality.

3.1.2 Geologic Resources

Physiographic Regions/Regional Context

The Bighorn Basin is an intermontane basin in the Middle Rocky Mountain Foreland geologic province. It is an asymmetric, northwest-trending topographical and structural basin with an elliptical shape, bounded on the northeast by the Pryor Mountains, on the east by the Big Horn Mountains, on the south by the Owl Creek, Bridger and Washakie Ranges, on the northwest by the Beartooth Mountains, and open to the north into Montana. The basin is also bounded on the west by volcanic rocks of the Absaroka Mountains which were erupted and deposited atop older Laramide uplifts. The north end of the Bighorn Basin is considered to terminate structurally along a low-lying folded and faulted zone known as the Nye-Bowler lineament in Montana (Thomas 1965).

The topography of the Planning Area varies from rolling plains, flat mesas, and badlands to alluvial valleys, benches, foothills, and mountains (BLM 1993). Many pronounced anticlinal and synclinal folds, some of which have considerable structural relief (Pierce and Andrews 1941) occupy the foothills or "flank" areas of the basin. Riparian corridors, badlands, and benches/upland topography dominate the central basin. The paragraphs that follow further address geologic structure in the Bighorn Basin. See the *Solid Mineral Occurrence and Development Potential Report* for further discussion on the geology of the Bighorn Basin (BLM 2009d).

Stratigraphy and Economic Geology

Figure 3-17 provides a generalized stratigraphic and lithologic section for the Bighorn Basin; Map 96 displays a geologic map of the Planning Area.

Stratigraphically, rocks of all the geologic periods, with the exception of the Silurian Period, are represented in the numerous formations found in the Planning Area. The sedimentary rocks were deposited during the repeated advances and retreats of ancient seas and epicontinental seaways (such as the Sundance Seaway and the Cretaceous Seaway) that covered the Planning Area, and during other terrestrial depositional environments, including, fluvial, aeolian, and lacustrine.

Sedimentary rocks in the Planning Area range in age from Cambrian to Holocene, have an aggregate thickness of more than 33,000 feet, and overlie Precambrian metamorphic and granitic basement rock. Within the Bighorn Basin, younger sedimentary formations tend to be exposed toward the center of the basin, while progressively older formations crop out generally toward the eastern, southern, and western edges of the basin. Sedimentary rocks are folded and faulted as a result of uplifts of the mountains that rim the basin.

The geology of the basin is conducive to the accumulation of hydrocarbons (also known as fossil fuels) given the presence of sedimentary formations that act as source rocks, reservoir rocks, and impermeable caps to some of the reservoir rocks. See the *Reasonable Foreseeable Development Scenario (RFD) for Oil and Gas* for a discussion on oil and gas development potential in the Planning Area (BLM 2014a).

Some formations contain coal seams of varying thicknesses and grades. Other formations contain the remains of ancient volcanic ash deposits that were chemically altered into beds of montmorillonite and beidelite clay known as bentonite. Some formations are a source of dimension stone (material quarried as block or slabs that also meets certain size and shape specifications) and construction stone. There are thick sand and gravel deposits along rivers and streams throughout the basin.

Historical and Structural Geology

The Bighorn Basin formed as a result of the Laramide Orogeny, a compressional mountain-building and basin-forming event, which took place from late Cretaceous time (about 80 million years ago [MYA]) to middle Eocene time (about 45 MYA) (Downs 1952). Large blocks of Precambrian-age rock were displaced upward, generally along reverse or ramp faults of varying dips (Fanshawe 1971), with resultant folding and faulting of the overlying sedimentary rock layers. During this time, the Big Horn, Owl Creek, Pryor, Beartooth, and Washakie Ranges were uplifted, as were numerous smaller anticlinal structures along the inner flank or margin of the basin. The central portion of the Bighorn Basin was relatively undeformed during the Laramide Orogeny, and received sediment eroded from surrounding uplifts.

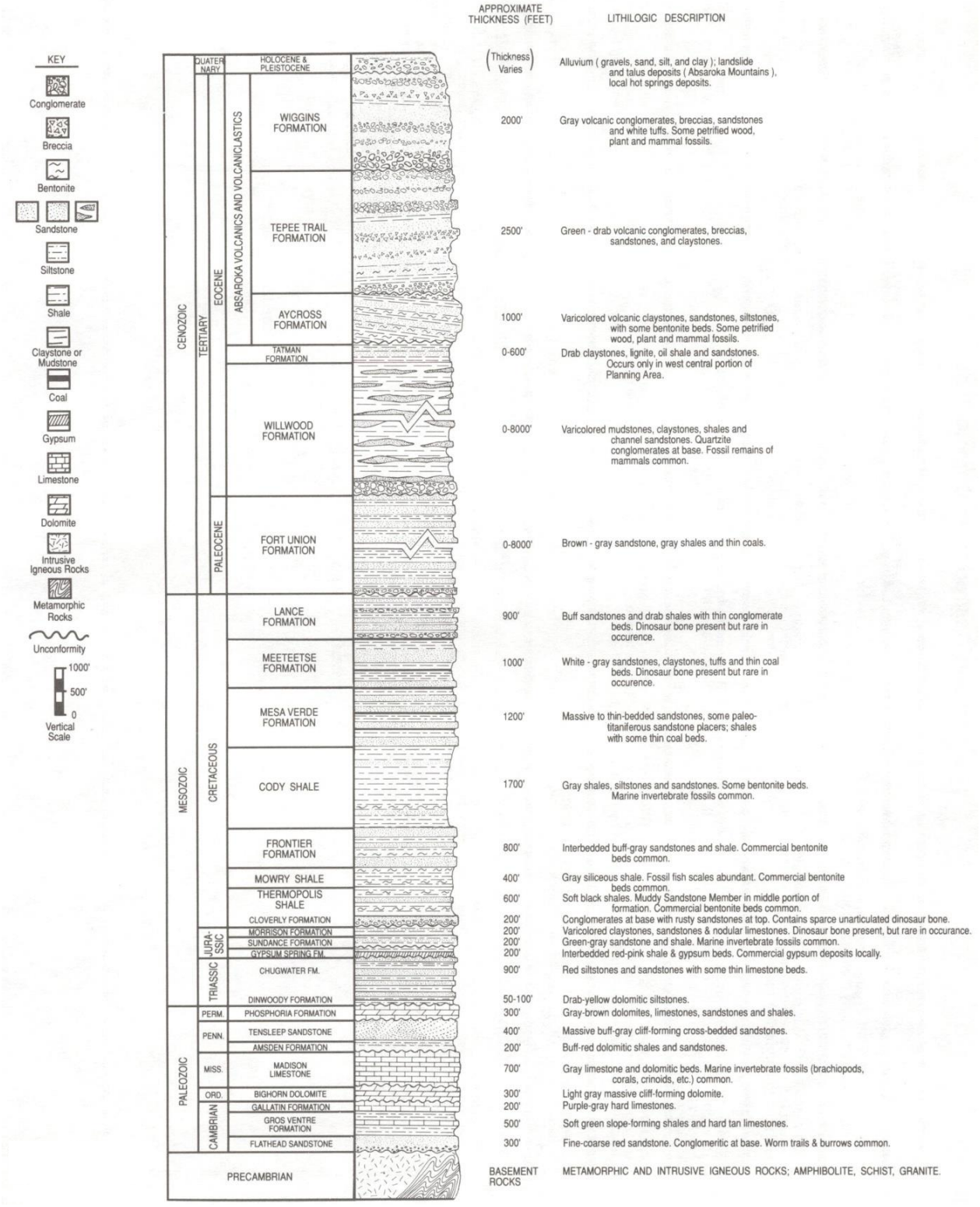
Approximately 10 to 12 MYA, a period of broad regional uplift and extension (epeirogeny) began in Miocene time that has continued into the present (Fanshawe 1971). This broad general uplift triggered increased erosional activities, leading to excavation of deep canyons, (i.e., Cottonwood Canyon, Wind River Canyon, Clarks Fork Canyon, Sheep Mountain Canyon, and Devil's Canyon), and removal of thousands of feet of basin sediment via large rivers and their tributaries. Streams such as the Shoshone River, the Bighorn River, Porcupine Creek, and Cottonwood Creek were rejuvenated during this time of uplift, and began to incise deep canyons into the underlying Paleozoic shales, limestones, and dolomites.

During the Pleistocene Epoch (approximately 2 MYA to 15,000 years ago), the mountain uplifts experienced several episodes of alpine glaciation. Alpine glaciation is responsible for numerous U-shaped glacial valleys, glacial lakes, terminal and lateral moraines, and other glacially derived landforms seen today along the Beartooth front, in the Absaroka Mountains, and in the Big Horn Mountains.

Current Geological Conditions

Currently, the Bighorn Basin is generally experiencing an erosional phase, with deposition of sediment occurring locally in rivers, streams, and lakes, and reservoirs. Erosion of sediment by rivers, streams, wind, gravity, and ice far exceeds sediment deposition in the basin. The consolidated rocks and unconsolidated sediments in the Planning Area are constantly affected by the forces of weathering and erosion. Rocks weather through mechanical processes, chemical processes, or both. Water, wind, ice, and gravity are the principal weathering agents. The mild acidity of rain or snow causes chemical erosion and tends to dissolve carbonate rocks. Water reacts with the calcium carbonate in limestone to form carbonic acid, which dissolves limestone even more aggressively than water alone.

Figure 3-17. Generalized Stratigraphic and Lithologic Section of the Bighorn Basin



Source: BLM 1993

Water weathers rocks by infiltrating pore spaces or fractures in rock, freezing, and then thawing, thereby acting to wedge the rock apart. Water flowing downslope transports sediment of various sizes down gradient. Pebbles and cobbles in channel and terrace deposits along streams and rivers in the Planning Area reveal their various sources in the varying lithologies seen in the deposits.

Bentonite, gypsum, and sand and gravel mining alter the existing geologic resources in the Planning Area, because these activities remove commercial quantities of minerals from the geologic formations. Other surface disturbances change the condition of existing geological resources by disturbing or loosening soil or rock at the surface.

The degree and direction of change to geology due to the weathering process would be imperceptible over the life of a land use plan. Typically, mining activities would tend to change the character of the surface over the short term, but over the long run, disturbed areas would be reclaimed and returned to the extent possible to the preexisting slope and vegetative cover.

3.1.3 Soil

Soils in the Planning Area are diverse and highly variable. Soil characteristics can differ over relatively short distances, reflecting differences in parent material, position on the landscape, elevation, aspect, and climatic variables such as precipitation and temperature. The plant communities supported by such a wide diversity of soils are equally diverse, ranging from sparsely vegetated desert saltbush and sagebrush-bunchgrass communities to forests and alpine meadows. More than 60 ecological sites have been identified in the Planning Area. Low annual precipitation, salinity, alkalinity, and shallow depths have the greatest effect on soil productivity and the plant communities they support.

The Washakie County soil survey is the only published soil survey for the Planning Area (NRCS 1983). Soil data for Hot Springs, Big Horn, and Park counties have been compiled from earlier inventory efforts and are available in digital format. A soil database allows soil data to be applied for use and suitability interpretations. This database is adequate for most soil interpretations.

Soil Characteristics and Regional Context

Soils in the Planning Area formed from a wide variety of geologic material. Variation in parent material, along with variable climate, topography, and vegetation, has resulted in soils with diverse characteristics and textures.

Soils commonly found in the Planning Area include soils with moderately fine to fine textures (clay loam, sandy clay loam, silty clay loam, sandy clay, silty clay, clay) that formed over shale or were influenced by shale parent material. Soils in the Planning Area that formed over sandstone or were influenced by sandstone parent material generally have medium to moderately coarse textures (sandy loam, fine sandy loam, very fine sandy loam, loam). Coarse-textured soils (loamy sand, sand) in the Planning Area are generally associated with windblown soils derived from sandstone parent material. The soils characterized by reddish hues often are referred to as red bed soils. The formation of these highly productive soils was strongly influenced from the red sandstone common to the Chugwater formation. These soils have high gypsum content and generally have medium textures (very fine sandy loam, loam fine sandy loam). As a result, they are highly susceptible to erosion following surface disturbance or vegetation reduction.

Biological soil crusts, often referred to as cryptobiotic, cryptogamic, and microbial soil crusts, are found on all soil types throughout the Planning Area. Biological soil crusts are an intimate association between soil particles and cyanobacteria, mosses, lichens, microfungi, and algae (Rosentreter et al. 2007). The

presence of biological soil crusts increases soil stability and the soil's resistance to wind and water erosion, and by forming stable soil aggregates, allows for increased water infiltration. They also add carbon to the soil surface, convert atmospheric nitrogen to bio-available nitrogen, and increase bio-available phosphorus. The distribution and extent of biological soil crusts have not been well documented in the Planning Area largely due to the age of the soil survey data. Rangeland health surveys are documenting the presence of biological crusts using the 17 indicators of rangeland health. As the soil survey dataset is updated, key data collected will relate to biological crusts.

The Planning Area lies within two MLRAs: the Northern Intermountain Desertic Basins – 32 (5- to 9-inch and 10- to 14-inch precipitation zones) and Central Rocky Mountains – 43B (15- to 19-inch and 20+-inch precipitation zones) (USDA 2008). The following paragraphs provide an overview of Planning Area soils by MLRA.

Northern Intermountain Desertic Basins

The dominant soil orders in the Northern Intermountain Desertic Basins are Entisols and Aridisols. These soils have a mesic temperature regime, an aridic soil moisture regime, and mixed mineralogy. They generally are shallow to very deep, well drained, and loamy and consist of Torriorthents formed in alluvium on alluvial fans and flood plains (Apron and Kishona series) and in residuum and colluvium on hills and piedmonts (Chipeta, Greybull, Persayo, Shingle, and Worland series); Torrifluvents (Lostwells and Youngston series) and Natrargids (Uffens series) formed in alluvium on flood plains, alluvial fans, and stream terraces; and Ustorthents (Spearfish series) formed in residuum and colluvium on hills.

Central Rocky Mountains

The dominant soil orders in this area are Inceptisols, Alfisols, and Mollisols. These soils have a frigid or cryic soil temperature regime and an ustic, udic, or xeric soil moisture regime. Soils on mountain side slopes and ridges are formed in colluvium, residuum, and glacial till and have mixed mineralogy. Areas of rock outcrop and rubble land are on ridges and peaks above timberline. Most of the soils are skeletal and are medium textured to coarse textured.

Current Condition

There has been no comprehensive analysis of the current condition of soils and soil health in the Planning Area. There have been qualitative assessments throughout most of the Planning Area using the 17 indicators of rangeland health found in *Technical Reference 1734-6, Interpreting Indicators of Rangeland Health* (BLM 2005c). Of the 17 indicators of rangeland health, ten are used to assess soil and soil site stability. Qualitative assessments using the ten indicators infer improvement of the overall health of the soil resource. The ability of the watersheds to capture and slowly release water without excessive erosion is expected to continue to progress.

Past land uses in the Planning Area have resulted in a network of incised gullies extending into the uplands, often replacing what are thought to have been broad grass-covered swales. This gully network is not restricted to any particular ecological site or plant community and is present throughout the uplands in the 5- to 9-inch precipitation zone and 10- to 14-inch precipitation zone. As a result, peak runoff discharges are of greater intensity and shorter duration, and water is not being retained on the watersheds as it appears to have been in the past. Based on qualitative rangeland health assessments, most gullies are in the process of healing and stabilizing. However, a few gullies still continue to creep farther into the uplands.

Where native plant communities have retained a healthy stand of perennial grasses and shrubs, the ten indicators of soil and site stability reflect that the soils are relatively intact and stable. There is little

evidence (e.g., water flow patterns, pedestals/terracettes, bare ground, and gullies) of past or current erosion, and water is being captured and safely released. The upward trend in overall soil resource health is most pronounced in these plant communities and is expected to continue. Where incised gullies are present, they are expected to continue to heal and stabilize; however, they will continue to channel runoff from the uplands at an accelerated rate.

In areas where the plant communities have shifted to a blue grama sod plant community or a Gardner's saltbush/bare ground plant community, damage to the soil resource is evident. Bare ground is excessive and often interconnected. Loss of the nutrient-rich A horizon is common in bare areas and runoff and erosion exceed the expected rate for the site. However, these plant communities appear to be static, showing neither improvement nor further degradation. The incised gully network in these more degraded sites is expected to slowly improve or remain static.

In areas where the plant communities have shifted to annual grassland dominated by cheatgrass, there is little evidence of damage to the soil resource and runoff and erosion indicators are almost absent. These areas are often characterized by dense stands of cheatgrass, with excessive litter creating an oxidized layer of thatch. Little change to soil and soil site stability is anticipated in these communities. Ongoing research is revealing that cheatgrass-dominated sites undergo biogeochemical changes that alter soil evolution and plant succession.

Wildland fires are occurring more frequently and are becoming larger, and burn with greater intensity over longer periods. When viewed from a soils and watershed perspective, these larger fires lead to increased soil erosion. In many situations, as in the case of cheatgrass monocultures, entire plant communities are shifted as a result of wildland fire.

Despite some evidence that water is not being retained on the landscape as it once was and that soils are being affected in some areas, the soil resource remains capable of producing forage for wildlife and livestock. It is also proving capable of maintaining a balance between infiltration and runoff, thus protecting watershed condition. The soil resource should be capable of sustaining increased demands without long-term impacts. Surface-disturbing activities are likely to be the greatest demand on the soil resource. In the arid climatic conditions common to the Planning Area, long-term soil loss exceeding 2 tons per acre per year could adversely affect the soil resource.

Erosion

Position on the landscape, slope, physical properties, and most notably, surface texture and structure and chemical properties, contribute to susceptibility of soils to wind and water erosion. Slopes greater than 25 percent have a high water erosion potential, whereas slopes from 10 percent to 25 percent are considered to have a moderate water erosion potential (Map 62). Runoff potential is increased if plant communities are disturbed. Many other soils have naturally high runoff potential (Hydrologic Group D) due to high clay content and their tendency to swell when wet.

Susceptibility to water erosion is a function of slope and soil surface texture. As a rule, slopes greater than 25 percent are considered to be highly susceptible to water erosion, particularly after surface disturbance. Management of slopes of 10 percent or greater requires an emphasis on runoff and erosion control. Map 62 shows the percent slope in the Planning Area. Table 3-5 summarizes the number of acres susceptible to water erosion.

Table 3-5. Soils with High Water Erosion Potential in the Planning Area

BLM-Administered Surface		Federal Mineral Estate		All Land Ownership	
Acres	Percent of BLM-Administered Surface	Acres	Percent of Federal Mineral Estate	Acres	Percent of Lands within Planning Area
465,988	14.6	671,002	16.0	824,254	14.6

Source: BLM 2009a

BLM Bureau of Land Management

Using the USFS web-based Water Erosion Prediction Project (WEPP) erosion model, surface-disturbing activities have the potential to increase annual soil loss to levels far greater than 5 tons per acre (WEPP 2008). Site-specific mitigation measures, including timely reclamation, are needed to minimize soil erosion and protect long-term soil productivity. WEPP erosion predictions consistently show that erosion rates following surface-disturbing activities return to background levels within 3 to 5 years following full reclamation.

Wind erosion is not widespread in the Planning Area. Where high winds occur, the soils with sandy surface textures (sand, loamy sand, fine sandy loam, sandy loam) are highly susceptible to wind erosion. Existing soils data is not adequate to make a realistic determination of acres susceptible to wind erosion or to produce a meaningful map of their locations.

Management Challenges

Management challenges for soil resources in the Planning Area stem largely from surface-disturbing activities. Development of mineral resources, including road building, well pad construction, pipeline installation, and vegetation treatments all impact the soil resource. Other actions that affect soils include a variety of surface uses that loosen topsoil and remove vegetation or other ground cover, such as grazing and browsing by animals, off-highway vehicle (OHV) use, development of trails and campgrounds, rights-of-way (ROWs), fire-suppression activities, and prescribed fires. Soil compaction resulting from surface-disturbing activities and associated development can reduce infiltration, increase runoff, and hamper reclamation.

Other challenges include implementing improved reclamation techniques, control of invasive species, and establishment of native plant communities on disturbed sites. In addition, areas where plant communities have shifted to blue grama sod or Gardner's saltbush/bare ground offer a unique management challenge. The BLM applies restrictions and implements mitigation measures and BMPs to protect soil resources (Refer to Appendix H and Appendix L).

3.1.4 Water

This section characterizes surface water and groundwater resources and describes water use and current water management practices in the Planning Area.

The Bighorn Basin is a semi-arid desert that receives little moisture. Lower elevations of the Basin are some of the driest parts of Wyoming. Mean annual precipitation ranges from less than 5 inches to more than 40 inches at higher elevations of mountain ranges. Most precipitation at lower elevations of the basin comes in the form of periodic rainfall from April through June. During these months, most smaller stock reservoirs in the Planning Area depend on these rainfall events to capture and store surface runoff. Snow is very light, with annual averages of 15 to 20 inches at lower elevations and 36 to 48 inches at 5,000 to 6,000 feet amsl. Large snowfall events at lower elevations in the basin are infrequent, with fewer than 3 days annually receiving 5 or more inches.

Surface Water

Surface water resources in the Planning Area fall within U.S. Geological Survey (USGS) Water Resources Region 10 and are all tributaries of the Missouri River. The Bighorn River, Wind River, Clarks Fork of the Yellowstone River, and their associated tributaries, including the Nowood, Greybull and Shoshone river systems, comprise the main source of surface water in the Bighorn Basin. The Bighorn River begins at the Wedding of the Waters and flows through the center of the Bighorn Basin into Bighorn Lake (also known as Yellowtail Reservoir) on the Wyoming-Montana border. The river upstream of Wedding of the Waters is referred to as Wind River. Wind River and its tributaries flow into Boysen Reservoir, which the U.S. Bureau of Reclamation (BOR) manages. The Clarks Fork of the Yellowstone River, flowing out of the Absaroka Mountains, comprises an important source of surface water along the northwest corner of the Planning Area. The North and South Forks of the Shoshone River meet at Buffalo Bill Reservoir (an important water source for the City of Cody and surrounding communities) and then outflow into the Bighorn River, which flows into Bighorn Lake several miles south of the Wyoming-Montana border. Map 3 shows the locations of major surface water features and watersheds at hydrologic unit level 4 in the Planning Area.

Additional watersheds in the Planning Area include Kirby Creek, Nowater River, East Fork of the Nowater River, Fifteenmile Creek, Shell Creek and its tributary (Trapper Creek), Tenmile Creek, Coal Draw Creek, Sand Draw Creek, Elk Creek, Red Canyon Creek, Whistle Creek, Coon Creek, Dry Creek, and Little Dry Creek. Many of the streams in these watersheds, such as those located at lower elevations, are intermittent to ephemeral and flow only in response to snow melt and storm events.

The effective life (and associated costs) of water development projects, such as stock reservoirs and spring developments, depends on watershed conditions. The development and use of resources requiring surface disturbance, resource uses, motorized-vehicle use, and recreation can impact surface water quality, primarily by increasing sediment loads. Stream bank degradation and erosion, and gully erosion (see Section 3.1.3 *Soil*) due to poor vegetative cover and surface disturbances (e.g., roads and construction activities), are the predominant sources of excessive sediment in streams. Proper management of vegetation and surface-disturbing activities such as road construction, forestry, oil and gas discharges, and mining in the Planning Area can mitigate sediment delivery due to these activities.

Public comments during the scoping process indicated that, in particular, the movement of sediment into Bighorn Lake is an issue of concern. Bighorn Lake was formed in 1965 with completion of the Yellowtail Dam (managed by the BOR) across the Bighorn River. The contributing drainage area to this reservoir is 19,650 square miles and consists of the Planning Area and portions of the Bighorn Basin in

Wyoming (USACE and BOR 2009). A 2009 study by the BOR and U.S. Army Corps of Engineers summarized the major causes of sediment production in the drainage basin as the high gradients of the Bighorn Lake tributaries (ranging from about 50 feet per mile in the foothill zone to about 20 feet per mile in the central portion of the Bighorn Basin), low precipitation, the ease with which the underlying rocks in the Planning Area erode, and the lack of vegetative cover to prevent soil erosion (USACE and BOR 2009). The study noted that these factors lead to greater rates of sediment production relative to other nearby drainages, such as the Wind River Basin to the south.

Waters in Wyoming are classified for water quality protection according to existing and designated uses. There are four major classes of surface water in Wyoming with various subcategories within each class (see "Wyoming Water Quality Rules and Regulations, Chapter 1, Surface Water Quality Standards" [Wyoming DEQ 2013d] for descriptions of all subcategories and "Wyoming Surface Water Classification List" [Wyoming DEQ 2013e] for current classifications). The majority of waters in the Planning Area are Class 2 and Class 3. Except for Class 1 waters, each classification is protected for its designated uses plus all uses contained in each lower classification.

Class 1 waters are those surface waters in which no further water quality degradation by point source discharges other than from dams will be allowed. Nonpoint sources of pollution shall be controlled through implementation of appropriate best management practices. The water quality and physical and biological integrity that existed on the Class 1 water at the time of designation will be maintained and protected. In designating Class 1 waters, the Wyoming Environmental Quality Council considers water quality, aesthetic, scenic, recreational, ecological, agricultural, botanical, zoological, municipal, industrial, historical, geological, cultural, archaeological, fish and wildlife, the presence of significant quantities of developable water and other values of present and future benefit to the people. The only Class 1 water in the Planning Area is the main stem of the Middle Fork of the Powder River through its entire length above the mouth of Buffalo Creek.

Class 2 waters are waters, other than those designated as Class 1, that are known to support fish and/or drinking water supplies or where those uses are attainable. Uses designated on Class 2 waters include game fisheries, drinking water, nongame fisheries, fish consumption, aquatic life other than fish, recreation, wildlife, industry, agriculture, and scenic value. Class 2 waters in the Planning Area include the Clarks Fork of the Yellowstone River and the primary tributaries in the Bighorn River Drainage, including Bighorn River, Shoshone River, Greybull River, Nowood River, Shell Creek, Bear Creek, and Five Springs Creek. The BLM manages some smaller tracts on these waters that provide for habitat and fisheries. Other important Class 2 waters include perennial creeks on the west slope of the Big Horn Mountains and the Absaroka Front, Trapper Creek, Deer Creek, Medicine Lodge Creek, Dry Medicine Lodge Creek, Alkali Creek, Johnny Creek, White Creek, North Beaver Creek, South Beaver Creek, Grass Creek, Cottonwood Creek, Owl Creek, Gooseberry Creek, and others. All provide good-quality water and riparian habitat for wildlife, fisheries, and recreational pursuits.

Class 3 waters are waters, other than those designated as Class 1, that are intermittent, ephemeral, or isolated waters and because of natural habitat conditions, do not support nor have the potential to support fish populations or spawning, or certain perennial waters that lack the natural water quality to support fish (e.g., geothermal areas). Class 3 waters provide support for invertebrates, amphibians, or other flora and fauna that inhabit these waters at some stage of their life cycles. Class 3 waters in the Planning Area include most intermittent and ephemeral tributaries to Class 2 waters such as Sand Creek, Fifteen Mile Creek, and No Water Creek.

Class 4 waters are waters, other than some of those designated as Class 1, where it has been determined that aquatic life uses are not attainable. Uses designated on Class 4 waters include

recreation, wildlife, industry, agriculture, and scenic value. The majority of Class 4 waters in the Planning Area are canals.

The Wyoming DEQ-Water Quality Division (WQD) monitoring program collects scientifically defensible monitoring data using a tiered monitoring approach consisting of core monitoring procedures at all probabilistic and regional reference sites and more intensive, stressor-specific monitoring procedures at a subset of pre-screened sites where designated use support is unknown or at reference sites to meet specific data needs to meet the following objectives: (1) Determine water quality standards attainment, (2) Identify impaired waters, (3) Identify causes and sources of water quality impairments, (4) Assess water quality status and trends at multiple scales, and (5) Respond to complaints and emergencies (Wyoming DEQ 2010).

Wyoming's Integrated Water Quality Assessment Report (305[b] Report) (Wyoming DEQ 2012) summarizes water quality conditions in the state. Streams, rivers, ponds, and lakes that do not support designated uses are considered "impaired." This report includes Wyoming's 2012 303(d) List of Waters Requiring TMDLs (303[d] List), which identifies "impaired" waters that require development of a total maximum daily loads (TMDLs). The state updates this list of streams, rivers, ponds, and lakes every two years and uses the list to develop a TMDL allocation of pollutants. Other "impaired" waters might not require TMDLs, and are identified elsewhere in the 305(b) Report. Table 3-6 lists the streams in the Planning Area that are on the 303(d) List because waters in the stream exceed water quality criteria.

Most streams in the Planning Area are intermittent or ephemeral. When surface water flows occur, these creeks carry large amounts of sediment downstream. The conditions of these watersheds are linked to upland and riparian conditions. Monitoring performed by the BLM, such as proper functioning condition (PFC) assessments (refer to Section 3.4.3 *Vegetation – Riparian/Wetlands Resources*), provide indirect indicators of water quality and watershed health, is commonly tied to specific actions or activities, and is complementary to monitoring and assessments carried out by the Wyoming DEQ-WQD.

The Wyoming DEQ-WQD regulates all surface discharge of water, including water produced from oil and gas development and storm water discharges, through the Wyoming Pollutant Discharge Elimination System (WYPDES) permit process. WYPDES permitted discharges require periodic monitoring, cannot result in a violation of water quality standards in the receiving stream, and must be discharged in a manner that does not cause erosion. Most activities that result in one or more acres of surface disturbance require coverage under a WYPDES storm water permit and require a storm water pollution prevention plan that identifies specific BMPS to prevent or reduce erosion and pollution, prescribes periodic inspection and monitoring, and demonstrates how the proposed plan would prevent a violation of water quality standards in the receiving stream.

All of the waters listed in Table 3-6 have had TMDLs developed for *E. coli,* the current water quality parameter for fecal bacteria, but final approval of the TMDLs has not been granted by the EPA. The *Draft E. coli TMDL for the Bighorn River Watershed* is available online: http://deq.state.wy.us/wqd/watershed/TMDL/Front%20Page%20Misc/Big%20Horn%20TMDL%20Draft%207-5.pdf.

Table 3-6. Wyoming 303(d) Listed Impaired Waters Requiring TMDLs in the Planning Area

Surface Water	Location	Use Support	Cause
Beaver Creek	From Shell Creek upstream an undetermined distance.	Threatened	Fecal Coliform
Big Wash	From Sage Creek upstream to Sidon Canal.	Not Supporting	Fecal Coliform
Bighorn River	Confluence with Nowood River upstream an undetermined distance above the City of Worland.	Not Supporting	*E. coli*
Bighorn River	From Greybull River upstream to Nowood River.	Not Supporting	Fecal Coliform
Bighorn River	From Greybull River downstream an undetermined distance above Bighorn Lake.	Not Supporting	Fecal Coliform
Bitter Creek	From Shoshone River upstream an undetermined distance above Powell.	Not Supporting	Fecal Coliform
Dry Creek	From Bighorn River upstream an undetermined distance.	Threatened	Fecal Coliform
Dry Gulch	From confluence with Shoshone River upstream an undetermined distance.	Not Supporting	*E. coli*
Fifteenmile Creek	From confluence with Bighorn River upstream an undetermined distance.	Not Supporting	Fecal Coliform
Foster Gulch	From confluence with Shoshone River upstream an undetermined distance.	Threatened	Fecal Coliform
Granite Creek	From confluence with Shell Creek upstream to an undetermined point near Antelope Butte Ski Area.	Not Supporting	Fecal Coliform
Greybull River	From confluence with Bighorn River upstream to the Sheets Flat bridge.	Not Supporting	Fecal Coliform
Kirby Creek	From confluence with Bighorn River upstream an undetermined distance above Lake Creek.	Threatened	Fecal Coliform
Nowater Creek	From confluence with Bighorn River upstream an undetermined distance.	Not Supporting	Fecal Coliform
Nowood River	From confluence with Bighorn River upstream an undetermined distance.	Not Supporting	Fecal Coliform
Owl Creek	From confluence with Bighorn River upstream an undetermined distance.	Threatened	Fecal Coliform
Paint Rock Creek	From confluence with Nowood River upstream an undetermined distance.	Threatened	Fecal Coliform
Polecat Creek	From Sage Creek upstream an undetermined distance.	Not Supporting	Fecal Coliform
Sage Creek	From confluence with Bighorn River upstream an undetermined distance.	Not Supporting	Fecal Coliform
Sage Creek	From Shoshone River upstream an undetermined distance above Big Wash.	Not Supporting	Fecal Coliform
Shell Creek	From confluence with Bighorn River upstream an undetermined distance.	Not Supporting	Fecal Coliform
Shoshone River	From confluence with Bighorn Lake upstream an undetermined distance.	Not supporting	Fecal Coliform
Slick Creek	From confluence with Bighorn River upstream an undetermined distance.	Not Supporting	Fecal Coliform
Whistle Creek	From confluence with Shoshone River upstream an undetermined distance.	Not Supporting	Fecal Coliform

Source: Wyoming DEQ 2012

TMDL Total Maximum Daily Load

Groundwater

There are 12 major aquifers in the Planning Area – Quaternary, Fort Union/Lance, Willwood, Mesaverde, Frontier, Muddy, Cloverly, Sundance, Phosphoria, Ten Sleep, Madison, and Flathead. The Madison is the primary aquifer that supplies water for several municipalities in the Planning Area (Wyoming Water Development Commission 2003). A general description of physical characteristics, water availability, and water quality for each of the 12 major aquifers in the Planning Area is presented in Table 3-7. Refer to the *Wind/Bighorn River Basin Water Plan* (Wyoming Water Development Commission 2003) and the *Wind/Bighorn River Basin Water Plan Update Groundwater Study Level 1 (2008-2011)* (Taucher et al. 2012) for additional information on physical and chemical characteristics, water availability, recharge areas, and recharge rates of aquifers underlying the Planning Area.

Table 3-7. Major Aquifers in the Planning Area

Aquifer/Formation	Physical Characteristics	Aquifer Characteristics and Water Quality
Quaternary	Consists primarily of sand and gravel interbedded with finer-grained sediments, such as silt and clay; coarser deposits occur locally. Thickness is dependent on stream or river valley association and ranges between 50 and 200 feet.	Subaquifers in the Quaternary aquifer may have local development potential. Depending on local hydrogeologic conditions, individual wells may yield between 10 gpm to 500 gpm.
Fort Union/Lance	Consists of 4,000 to 6,000 feet of interbedded sandstones, siltstones, and coals.	Reported well yields are typically less than 200 gpm, though yields of more than 1,000 gpm are possible from wells that penetrate more than 1,000 feet of the aquifer. Water quality varies and is typically useful for domestic and livestock use, though sulfate concentrations have exceeded 500 mg/L in some areas.
Willwood	Consists of fine-grained mudstone and shale interbedded with medium grained sandstone and sporadic conglomerates. The Willwood aquifer is nearly indistinguishable from the Fort Union/Lance aquifer in the Bighorn Basin.	Similar to the Fort Union/Lance aquifer.
Mesaverde	Consists of 500 to 2,200 feet of variable sequence of massive lenticular fine- to coarse-grained sandstone, carbonaceous shale, and lesser amounts of coal.	Discharge from the Mesaverde aquifer is both natural and anthropodenic. The primary anthropogenic source of discharge is oil and gas wells. Concentrations of some properties and constituents in the Mesaverde aquifer approached or exceeded applicable EPA or State of Wyoming water-quality standards and could limit suitability for some uses.
Frontier	Consists of 700 to 1,200 feet of alternating sequence of very-fine- to medium-grained sandstone and shale.	Concentrations of some properties and constituents in water from the Frontier aquifer exceeded State of Wyoming standards for agricultural and livestock use.
Muddy	Consists of 20 to 134 feet of sandstone interbedded with mudstone.	The Muddy aquifer is a major oil and gas reservoir. Concentrations of some properties and constituents in the Muddy aquifer approached or exceeded applicable EPA or State of Wyoming water-quality standards and could limit suitability for some uses (i.e., agricultural and livestock use).

Table 3-7. Major Aquifers in the Planning Area (Continued)

Aquifer/Formation	Physical Characteristics	Aquifer Characteristics and Water Quality
Cloverly	Consists of 200 to 300 feet of sandstone interbedded with lenticular cherty pebble conglomerate and thin variegated shale known as the "Dakota Sandstone"; a middle shale unit known as the "Fuson Shale"; and a basal fine- to coarse-grained sandstone known as the "Lakota Sandstone".	Concentrations of some properties and constituents in the Cloverly aquifer approached or exceeded applicable EPA or State of Wyoming water-quality standards and could limit suitability for some uses (i.e., agricultural and livestock use).
Sundance	Consists of 200 to 900 feet of fine- to coarse-grained sandstone with some thin shale and fossiliferous limestone interbeds, and a basal unit that includes siltstone and sandstone grading downward into limestone, dolomite, and cherty pebble conglomerate.	Concentrations of some properties and constituents in the Sundance aquifer exceeded State of Wyoming standards for agricultural and livestock use.
Phosphoria	Consists of 100 to 300 feet of siltstone, mudstone, and silty shale.	Concentrations of some properties and constituents in water from the Phosphoria aquifer and confining unit in the BHB approached or exceeded applicable EPA or State of Wyoming water-quality standards and could limit suitability for some uses (i.e., agricultural and livestock use).
Ten Sleep	Consists of 200 to 600 feet of medium-grained well-sorted sandstone. Present throughout the Planning Area.	Excellent aquifer yielding water under artesian to flowing artesian conditions near range front. Well yield increased quantities where fractured. Water quality decreases away from recharge area (with distance from range front).
Madison	Consists of 300 to 700 feet of massive to thin-bedded limestone, containing some thin beds of chert and shale near the top. Present throughout the area.	Potentially voluminous producer where extensive fracturing and cavities are known to exist. Water quality data are sparse. Completion could be cost prohibitive basin-ward.
Flathead	Cambrian-age Flathead Sandstone consisting of fine- to medium-grained arkosic and quartzitic sandstone.	Might be good source of groundwater where weathered or fractured, yielding high-quality water near outcrops. Depth to completion could be cost prohibitive basin-ward.

Sources: Taucher et al. 2012; Arneson et al. 1998.

EPA Environmental Protection Agency
gpm gallons per minute
mg/L milligrams per liter

Groundwater recharge occurs from direct infiltration of precipitation into the shallower aquifers, from infiltration into the rock outcrop areas of the deeper aquifers, and from leakage between aquifers. Groundwater quality depends primarily on the source geologic formation or aquifer. Groundwater is used to meet the demand of current uses on public land, such as livestock, wildlife, mineral development, and industrial.

Geologic formations aging from Precambrian to the shallow Quaternary deposits produce groundwater throughout the basin. The most reliable and accessible shallow groundwater supplies are from aquifers in unconsolidated deposits along the larger waterbodies such as the Bighorn, Greybull, Nowood, and Shoshone Rivers (Plafcan et al. 1993). The Clarks Fork of the Yellowstone River also provides reliable and accessible supplies of groundwater. Larger producing wells also originate in deep limestone and dolomite aquifers of the Madison Limestone and Bighorn Dolomite formations. These formations crop out along

the flanks of the basin and are found at extensive depths that produce large amounts of water for municipalities and agricultural purposes.

The Madison Aquifer is an important regional water source for the northern plains states (including western South Dakota, Wyoming, and potentially western Montana in the near future) due to increasing populations and development in this area and the limited number of other undeveloped water sources (USGS 2009). Issues related to water levels and the aquifer's recharge rate are some of the primary areas of concern related to this water resource. An important area within the Madison aquifer is the Spanish Point Karst Area of Critical Environmental Concern (ACEC), a specially designated area that protects surface and groundwater recharge areas and sensitive karst watercourses; refer to Section 3.7.1 *Areas of Critical Environmental Concern* for additional information on the Spanish Point Karst ACEC.

Surface Water and Groundwater Quantity and Use

Both surface water and groundwater are sources of water in the Planning Area. Surface water sources typically meet existing uses on public lands, but natural climatic fluctuations, such as drought, can make marginally adequate sources unreliable. Groundwater sources are adequate to meet the demand of all current uses on public land (primarily for agricultural, municipal, industrial, livestock, and wildlife).

Active water wells in the Planning Area are permitted through the Wyoming State Engineer's Office within the four counties of the Planning Area (Wyoming State Engineer's Office 2006). A permittee can apply for water rights on BLM-administered land; if the permittee demonstrates beneficial use, then the Wyoming State Engineer's Office can permit the water right. The issuance of the water right in no way authorizes a permittee to develop water on BLM-administered lands, or any lands that they do not own. This requires independent negotiations between the permittee and the BLM to acquire the appropriate special use permit or ROW. The Wyoming State Engineer's Office does not require that landowner authorization be obtained before it issues the water right. Table 3-8 summarizes water uses in each of the four counties. Approximately 85 percent of the total surface water and groundwater consumptive use in the Planning Area is for agricultural purposes (Table 3-9).

According to the Wyoming Water Development Commission's 2010 Wind/Bighorn River Basin Plan (Wyoming Water Development Commission 2010), there remains approximately 1.8 million acre-feet of unallocated flow for the State of Wyoming to develop. Despite this apparent surplus, many areas in these basins chronically experience water shortages. Groundwater sources are adequate to meet the demand of all current uses on public land (primarily livestock, wildlife, and recreation); however, there has been substantial local water development in recent years, which may result in excessive depletion that could affect current or future demand.

There is an anticipated increase in future demand for surface water for irrigation and other consumptive uses in the Planning Area. The *Wind/Bighorn River Basin Plan Update* (Wyoming Water Development Commission 2010) projected future demand for water in the Bighorn Basin based on three planning scenarios for 2020, 2040, and 2060:

- Low scenario: This scenario represents the minimal likely development, or possible contraction, in the Basin. Although this scenario will not result in any new water demand pressures in the Basin due to socioeconomic activity, it provides a supportable lower limit for water planning purposes.
- Medium scenario: This scenario represents the most likely set of factors that will occur in each of the Basins over the planning horizon. This scenario represents the most probable future conditions in the Basin in the opinion of the study team.

- High scenario: This scenario represents the highest growth that could potentially occur in the Basin over the planning horizon. These conditions will provide an upper boundary for water planning in the Basin.

Table 3-10 lists the total new water requirements in the Bighorn Basin for each scenario discussed above. Due to unappropriated surface water, future reservoirs in the area are possible.

Oil and gas development can result in large volumes of produced water that can have beneficial and adverse effects on surface water and can reduce groundwater availability; however, water users in the Planning Area overwhelmingly view produced water as beneficial. The release of produced water can increase or extend the period of flow in drainages; such releases can provide valuable sources of water and are highly coveted by users in the Planning Area. However, discharges of produced water also can increase the total dissolved solids concentration of surface waters, result in increased survival and spread of invasive species adapted to the conditions created, and substantially increase erosion in ephemeral drainages (BLM, State of Montana DEQ, and MBOGC 2003; BLM 2009g).

Table 3-8. Uses of Active Well Permits by County

County	Use	Number of Active Permits
Big Horn County	Domestic	2
	Industrial, Miscellaneous	2
	Miscellaneous	10
	Miscellaneous, Irrigation	1
	Miscellaneous, Municipal	1
	Stock	106
	Stock, Irrigation	1
	Stock, Municipal	6
	Total	**129**
Hot Springs County	Domestic, Stock	3
	Industrial	2
	Industrial, Miscellaneous	5
	Miscellaneous	12
	Monitoring	5
	Stock	277
	Test Well	3
	Wildlife	1
	Wildlife, Stock	3
	Total	**311**

Table 3-8. Uses of Active Well Permits by County (Continued)

County	Use	Number of Active Permits
Park County	Domestic	2
	Domestic, Stock	7
	Industrial	9
	Industrial, Miscellaneous	1
	Irrigation	2
	Miscellaneous	5
	Stock	82
	Total	**108**
Washakie County	Domestic	1
	Domestic, Stock	2
	Industrial	2
	Irrigation	1
	Miscellaneous	5
	Stock	115
	Total	**126**

Source: Wyoming State Engineer's Office 2006

Table 3-9. Water Use Summary in the Wind/Bighorn River Basin, 2010

Type of Water Usage	Diversion (acre-feet)[1]	Consumptive Use (acre-feet)
Municipal and Domestic	21,324	8,743
Industrial/Mining	91,906	19,163
Agricultural (Irrigation)	3,136,728	1,079,971
Stock Water[2]	6,370	6,370
Reservoir Evaporation	156,157	156,157
Recreation	Non-consumptive	
Environmental	Non-consumptive	
Total	**3,412,485**	**1,270,404**

Source: Wyoming Water Development Commission 2010

[1]Includes both surface water and groundwater use.
[2]Consumptive use not calculated for stock water use.

Table 3-10. Projected New Demand for Water Usage from the Wind/Bighorn River Basin

Year	Water Usage	Projected Growth Scenario (acre-feet)		
		Low	Moderate	High
2020	Municipal and Domestic	-300	500	1,600
	Industrial	22,800	35,300	40,800
	Agricultural	-75,000	100	55,000
	Wind River Indian Reservation	0	0	0
	2020 Total	**-51,900**	**35,900**	**97,400**
2040	Municipal and Domestic	1,000	2,000	4,800
	Industrial	74,200	126,600	152,700
	Agricultural	-200,000	200	153,000
	Wind River Indian Reservation	0	19,000	75,000
	2040 Total	**-124,800**	**147,800**	**385,500**
2060	Municipal and Domestic	1,700	3,500	8,600
	Industrial	148,800	283,600	359,200
	Agricultural	-320,000	500	254,000
	Wind River Indian Reservation	0	19,000	209,000
	2060 Total	**-169,500**	**306,600**	**830,800**

Source: Wyoming Water Development Commission 2010

Management Challenges

There are a number of management challenges for water resources in the Planning Area. Surface water quality must be maintained or improved in compliance with federal standards, while development and other resource use can impact surface water quality by increasing sediment load. Sediment loading into Bighorn Lake is an issue of public concern. Currently, groundwater sources are adequate to meet the demand of all current uses on public land, yet the anticipated increase in future demand for irrigation and other consumptive uses could affect the level and recharge rate of important aquifers. Produced water is also a management challenge. Many residents indicate produced water is beneficial to the users, yet these discharges can also adversely affect surface water quality and increase invasive species prevalence and erosion.

3.1.5 Cave and Karst Resources

A cave is any naturally occurring void, cavity, recess, or system of interconnected passages beneath the surface of the Earth, or within a cliff or ledge large enough to permit an individual to enter, whether or not the entrance was naturally formed or man-made (The Federal Cave Resources Protection Act [FCRPA], Sec. 3[1]). Cave and karst resources are abundant in the Bighorn Basin. Karst topography consists of landforms produced by the dissolution of rock creating a variety of landscape features, including caves, which are common in the Planning Area. Cave and karst resources are fragile because of their association with other resources such as groundwater systems and biological communities. They also might be considered nonrenewable resources because of paleontological and archeological deposits, and speleothems (mineral formations inside caves) they contain.

In the Planning Area, the cave and karst system along the west slope of the Big Horn Mountains in the Medicine Lodge area is important due to mineral features such as speleothems, potential for diverse karst aquatic organisms, cultural and paleontological resources, and recreation opportunities. This area is hydrologically important because of the presence of disappearing surface water streams and its link to regional groundwater aquifers. This system includes rock outcrops of the Madison Limestone, Bighorn Dolomite, and Ten Sleep Sandstone, all of which are primary recharge areas for regional aquifers in the Bighorn Basin. A portion of this area is designated as an ACEC for the protection of cave and karst resources (refer to Section 3.7.1 *Areas of Critical Environmental Concern* for more information).

The FCRPA of 1988 was the first federal legislation to recognize caves and their contents as whole, integrated ecosystems. FCRPA declares significant caves on federal lands as an invaluable and irreplaceable part of the Nation's heritage. U.S. Department of the Interior (DOI) implementation regulations for FCRPA require that federal lands be managed in a manner that, to the extent practical, protects and maintains significant caves and cave resources (43 Code of Federal Regulations [CFR] Part 37.2). BLM policy and guidance for managing cave resources is to protect sensitive, fragile, biological, ecological, hydrological, geological, scientific, recreational, cultural, and other cave values from damage and to ensure they are maintained for public use, both now and in the future (BLM 2008b).

Under FCRPA, a cave is considered significant if it meets one or more of the following six criteria:

Biota – The cave serves as seasonal or yearlong habitat for organisms or animals, or contains species or subspecies of flora or fauna native to caves, or is sensitive to disruption, or contains species found on state or federal sensitive, threatened, or endangered species lists.

Cultural – The cave contains historic or archeological resources included on or eligible for inclusion on the National Register of Historic Places (NRHP) because of its research importance for history or prehistory, its historical association, or other historical or traditional significance.

Geological/Mineralogical/Paleontological – The cave has fragile geologic or mineralogic features, features that exhibit interesting formations, or paleontological resources.

Hydrologic – The cave is part of a hydrologic system or contains water important to humans, biota, or development of cave resources.

Recreational – The cave provides or could provide recreational opportunities or scenic values.

Educational or Scientific – The resource offers opportunities for educational or scientific use or is in a virtually pristine state, lacking evidence of contemporary human disturbance or impact, or the length, height, volume, total depth, or similar measurements are notable (43 CFR Part 37).

There are 32 known caves in the Planning Area, of which 19 are considered significant according to FCRPA criteria (BLM 2009a). Eight caves are gated and locked and three caves are open through the issuance of a key and permit. Recreational use of these caves is minimal, except by local cave enthusiasts. Horsethief, Spirit Mountain, and Great Expectations caves typically experience the highest level of recreational use. The BLM manages all caves in the Planning Area in a wild state; there are no developed caves on public lands in the Planning Area. Bats use several caves in the Planning Area and the BLM lists three of those bat species (Townsend's big-eared bat, spotted bat, and long-eared myotis) as sensitive.

Management Challenges

Management challenges for cave resources include preventing degradation of the resources while allowing for recreational use and scientific research.

3.2 Mineral Resources

Mineral resources in the Planning Area include locatable (bentonite, gypsum), leasable (coal, oil shale, geothermal, oil and gas, other solid leasable minerals), and salable (sand, gravel) minerals. Each section below defines and describes the resource, its current condition, and management challenges. Split-estate lands are where the United States owns the minerals under privately owned surface. Most of the split-estates resulted from patents for the surface issued under homestead laws such as the Stock Raising Homestead Act of 1916. Federal mineral lease holders or persons locating a mining claim may enter onto a privately owned surface to the extent necessary to explore and produce the federal minerals in compliance with relevant statutes and BLM regulations and land use designations. See 43 U.S.C. 299; 43 C.F.R. subpart 3814, and Onshore Oil and Gas Order No. 1, sec. VI (72 Fed. Reg. 10308, 10336). The BLM does not have the authority to regulate a surface owner's use of the surface estate, but does have the authority to regulate various activities of federal mineral lessees and mining claimants. See Appendix Z for additional details regarding split-estate lands and BLM administrative responsibilities for managing the federal minerals.

3.2.1 Locatable Minerals

Locatable minerals (metallic and nonmetallic) are those open to mining claim location under the General Mining Law of 1872, as amended (30 U.S. Code [U.S.C.] 22-54 and 611-615). The primary locatable minerals mined commercially in the Planning Area are bentonite (Map 4) and gypsum (Map 5). Other locatable minerals known to occur in the Planning Area include titaniferous sandstone, placer gold, uranium, and sulfur; however, these minerals are not known to occur in commercially viable quantities in the Planning Area. Silica sand is present in the Bighorn Basin in the John Blue Canyon deposit, and is of sufficient quality for glass, fused silica, metallurgical flux, abrasives, fillers in ceramics, and as an ore for making silicon metal (BLM 2009d). However, the prohibitive quantity of overburden overlying known silica sand resources would make any attempt at commercial production very difficult. Base and precious lode metals such as gold, silver, platinum, and copper are not known to occur in commercial quantities in the Bighorn Basin. Precious and semiprecious stones are not known to occur in the Planning Area. For more information on locatable minerals in the Planning Area, refer to the *Solid Mineral Occurrence and Development Potential Report* (BLM 2009d).

A mining claim is an ownership interest in a particular parcel of federal land that is valued for a specific mineral deposit. Mineral prospecting and claim location can take place only on lands open to mineral entry. Claims may not be staked in areas withdrawn from mineral entry by a special Act of Congress, regulation, or public land order. These areas are withdrawn from the operation of the mining laws.

The right of possession provided by a mining claim is restricted to the extraction and development of a mineral deposit as regulated by the BLM or the USFS. The rights granted by a mining claim are valid against a challenge by the United States and other claimants only after the discovery of a valuable mineral deposit. A mining claim is generally referred to as a "lode claim" if mineralization occurs as a vein of ore in place, or as a "placer claim" if minerals are dispersed among particles of sand or gravel. A millsite claim is one used to process locatable minerals.

The BLM locatable mineral program addresses authorization and permitting of locatable mineral exploration, mining, and reclamation activities on BLM-administered land, and is mandated by section 302(b) of the Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S.C. 1732[b] and 603[c]; 43 CFR 3802 and 43 CFR 3809). All locatable mineral exploration and development activities that disturb the surface of the mining claim (site) require prior BLM acceptance (for a notice) or authorization (for a

plan of operations). Operations obtain necessary authorizations and permits through the BLM field office responsible for administering the land in which the minerals are located.

Operators must obtain all necessary permits before they begin mining, even if they already filed a mining claim. Surface management regulations apply to activities on unpatented mining claims. These regulations are designed to prevent unnecessary or undue degradation of public lands from operations authorized by the mining laws. They require the filing of a notice or a plan of operations for all activity exceeding casual use. Regulations that went into effect on January 20, 2001 (revised 3809 regulations), require that notices include a bond, and will only apply to exploration activities, not to any production operations. Disturbed areas must be reclaimed after exploration and mining activities are completed. All reclaimed areas and reclamation plans will fulfill federal, state, county, and other local agencies requirements in compliance with the BLM Solid Minerals Reclamation Handbook, H-3042-1. The state of Wyoming also has statutes and rules regarding mining and reclamation requirements. To avoid duplication, the BLM and the Wyoming DEQ have entered into a cooperative agreement via a Memorandum of Understanding (MOU). Operators are advised to check with the BLM and the Wyoming DEQ to determine the proper lead agency before submitting a notice or plan of operations.

Bentonite and gypsum are the only locatable minerals currently extracted in commercial quantities in the Planning Area. Bentonite consists of hydrous silicate of alumina, more commonly known as montmorillinite or beidelite. It can swell up to 16 times its original size, and absorb up to 10 times its own weight in water. It is used for absorbents, animal feed, drilling fluids, foundry, iron-ore pelletizing, and sealants. It is increasingly being used for cat litter, and this could become the largest single market for Wyoming bentonite early in the 21st Century. It is used in drilling mud to lubricate oilfield drilling equipment, hold back formation pressure, and to help prevent caving of the drill hole. Used in the foundry industry, it acts as a molding sand binder when added to taconite and for binding iron pellets, which are later fed into a blast furnace for processing. Bentonite is also used to seal reservoirs and landfills. Other uses include crayons, medicines, food thickeners, and cosmetics.

Bentonite deposits in Wyoming make up approximately 70 percent of the world's known supply. In 2010, Wyoming's bentonite industry mined approximately 4.5 million tons of bentonite, of which approximately 2.8 million tons were mined at six operations in the Bighorn Basin. The six mines in the Bighorn Basin employ 108 persons, and another 190 persons are employed at the milling-processing facilities at six different mills (one in the Worland area, two near Greybull, and three near Lovell, Wyoming (Wyoming Water Development Commission 2010). This is a reduction from 116 mine workers and 340 mill workers working in the basin in 2006 (Wyoming Water Development Commission 2010). The number of additional contracted employees performing jobs that service the bentonite industry in the Bighorn Basin, such as equipment operators and truck drivers, is subject to change based on market conditions. The Wyoming DEQ Land Quality Division permits these broad mining areas; the BLM has surface management plan of operation files covering portions of bentonite mine operations on public lands.

Wyoming bentonite production has increased from 1,141 tons in 1927, to more than 500,000 tons in 1950, more than 2 million tons in 1970, almost 3 million tons in 1990, and more than 4.5 million tons in 2005. Production of Wyoming and Bighorn Basin bentonite has been relatively steady since 2005.

Gypsum (hydrated calcium sulfate) is used primarily in the manufacture of plaster. The development of prefabricated wallboard revolutionized the industry again in the 1960s. Approximately two-thirds of the gypsum currently marketed is in the form of prefabricated products. Gypsum is precipitated primarily from seawater, but can be deposited in saline lakes or hot springs. It often occurs as a product of volcanic activity and can occur in metallic mineral veins.

Commercially important gypsum deposits in the Bighorn Basin are found only in the Jurassic Gypsum Spring Formation. Two mines actively mine gypsum in the Planning Area and employ up to 200 persons in their mines and mills. The CertainTeed gypsum mine is south of Cody, Wyoming, and produces from three thick gypsum beds totaling approximately 35 feet. The Georgia Pacific Gypsum, LLC, mine southeast of Lovell, Wyoming, mines nine seams of gypsum, each separated by thin red shale, for a total of approximately 30 to 40 feet of gypsum.

Most of the gypsum from the Bighorn Basin is used to make wallboard, although other related products are also being made. A total of about 1.5 million tons of gypsum have been mined in the Planning Area since commercial mining began.

Table 3-11 lists active mining notices, the number of plans of operation, and production quantities for bentonite and gypsum in the Planning Area. Other locatable mineral commodities such as sulfur, uranium, titaniferous, or silica sand are not expected to be developed in the Planning Area, subject to market conditions that are not easily forecast. For more information on other locatable minerals that are present in the Planning Area, refer to the *Solid Mineral Occurrence and Development Potential Report* (BLM 2009d).

Table 3-11. Mining Notices and Plans of Operations in the Planning Area, as of 2008

Commodity	Number of Notices	Number of Plans of Operation	Produced Amount (tons)
Bentonite	30	21	2,996,858
Gypsum	1	2	296,862

Sources: CertainTeed Gypsum 2008; Georgia Pacific Gypsum, LLC 2008; BLM 2009d; Wyoming Department of Employment, Office Of Mine Inspector 2008.

Management Challenges

Management challenges for locatable minerals in the Planning Area include surface disturbance and impacts to other resources due to mining activities. Approximately 30,000 acres of land has been or is proposed to be disturbed in the Bighorn Basin due to bentonite mining, which includes approximately 4,000 acres of road and haul-road disturbance (BLM 2008a). Between the CYFO and the WFO, another 20,000 acres of additional bentonite mining is a RFD scenario over the next 20 to 30 years (BLM 2008c).

As surface disturbance due to increased amounts of locatable mineral mining continues to grow in the Planning Area, loss of native habitats and resources increases. Sagebrush is very difficult to reestablish once removed, and can take 30 to 50 years to become reestablished in a mined area. Critical thresholds relevant to continued development of locatable minerals in the Planning Area have not been specifically determined under the existing management scenario. However, using the Geographic Information System (GIS), the BLM might be better able to determine threshold levels of disturbance in relation to locatable mineral (primarily bentonite) mining, and be better able to make future decisions because of these capabilities. A major challenge the BLM faces relates to improvement of sagebrush reclamation in mine areas and determination of direct and cumulative effects of locatable minerals mining on sage-grouse and their habitat, and how to mitigate these effects. In particular, the cumulative, ongoing effect of bentonite mining related to loss of sagebrush habitat and reclamation issues, coupled with the increase in focus on protection of the greater sage-grouse, will become a much more important issue for the BLM.

3.2.2 Leasable Minerals – Coal

Coal is a combustible stratified organic sedimentary rock composed of altered or decomposed and reconstituted plant remains of non-marine origin, combined with varying minor amounts of inorganic material. Different types of coals are classified by their degree of metamorphism in accordance with standard specifications of the American Society for Testing Materials. Most Wyoming coals are classified as bituminous or sub-bituminous.

Coal is classified as a leasable solid mineral under the Mineral Leasing Act of 1920. The BLM manages coal leasing and other administrative duties related to coal production from federal coal lands throughout the United States pursuant to the 43 CFR Part 3400, Coal Management.

Wyoming has the largest federal coal program in the BLM. Most Wyoming coal is used for steam generation in the electrical utility industry. Coal production in Wyoming comes from four primary areas – (1) the Powder River Basin in northeastern Wyoming, (2) the Hanna Basin in south central Wyoming, (3) the Rock Springs area, and (4) the Kemmerer area in southwestern Wyoming.

Coal mining in the Bighorn Basin dates back to the 1890s (Glass et al. 1975), when it was primarily mined for use as a domestic fuel and fuel for the railroad industry. Between 1910 and 1929, approximately 500,000 tons per year were mined; between 1920 and 1956 approximately 90,000 to 200,000 tons per year were mined; however, by the mid-1950s, after railroads converted to diesel engines, annual tonnage dropped to less than 10,000 (Glass et al. 1975; BLM 1993). Historically, most coal mined in the Bighorn Basin was extracted from coalbeds within the Mesaverde Formation, which is, therefore, the most important coal-producing formation in the Bighorn Basin (Glass 1981). Most coal produced from the Bighorn Basin has been mined from the Gebo and Grass Creek Coal Fields.

Coal is the only solid leasable mineral currently mined in the Planning Area. There is only one active coal mine in the Planning Area, and it produces about 70,000 to 100,000 tons per year from the Grass Creek Coal Field. This coal mine is on private land, not BLM-administered land (BLM 2008c).

Currently, there are no exploration licenses or leases issued for federally administered coal in the Planning Area (BLM 2008c). However, there are federal coal resources in the Planning Area, primarily in the Cretaceous Mesa Verde, Meeteetse, and Paleocene Fort Union Formations. Several scattered parcels of land have mineral reservations specifically for coal or designated coal classifications. Although there is record of historic mining in the area and the USGS has identified eight important coal fields (DOI 2009), coal production in the Planning Area is generally not considered economically feasible due to the relative thinness of the coalbeds, thickness of the overburden, and low quality of the coal. Map 6 shows known and potential coal-bearing strata in the Planning Area.

Management Challenges

At present, there is no coal leasing or production on BLM-administered land in the Planning Area. Therefore, the BLM has not identified management challenges for this resource. However, if coal leasing and development were to occur in the Planning Area, management challenges could result due to conflicts with other program areas, such as oil and gas activities.

3.2.3 Leasable Minerals – Oil Shale

Oil shale is considered a leasable solid mineral under the Mineral Leasing Act of 1920. The BLM manages oil shale leasing, research and development leasing, and production, and performs other administrative duties related to oil shale production from federal lands in the western United States.

In August 2005, the U.S. Congress enacted the Energy Policy Act of 2005 (Public Law 109-58). In Section 369 of this Act, also known as the "Oil Shale, Tar Sands, and Other Strategic Unconventional Fuels Act of 2005," Congress declared that oil shale and tar sands (and other unconventional fuels) are strategically important domestic energy resources that should be developed to reduce the Nation's growing dependence on oil from politically and economically unstable foreign sources. In 2008, the BLM released a Programmatic EIS for oil shale and tar sands that amended existing RMPs in Wyoming and other states. The only areas of Wyoming addressed in that Programmatic EIS were the Washakie and Green River Basins in the southwestern part of the state. In 2011, the BLM re-reviewed the land allocations analyzed in the 2008 PEIS and subsequently, via a 2013 ROD, closed certain areas in Wyoming that were open for application for future leasing and development of oil shale and tar sands resources under the 2008 Programmatic EIS.

Oil shale has been described as occurring in thin, low-quality beds in the Eocene Tatman Formation in the central Bighorn Basin. Oil shale resources in the Bighorn Basin are not considered economically feasible to produce using mining or in-place production of kerogen, due to the relative thinness of the oil shale beds, thickness of the overburden, and extremely poor quality of any oil shale. There are an estimated 27 million barrels of undiscovered oil in the Bighorn Basin. At present, due to a lack of commercially valuable resources, no oil shale is leased on BLM-administered land in the Planning Area. Based on these resource values, the BLM did not amend existing plans for the Planning Area for oil shale leasing under the Programmatic EIS for Oil Shale and Tar Sands Resources (BLM 2009c), nor did the BLM make lands in the Planning Area available for applications for oil shale leasing.

Management Challenges

Because there is no oil shale leasing in the Planning Area, the BLM has not identified management challenges.

3.2.4 Leasable Minerals – Geothermal

Geothermal resources are underground reservoirs of hot water or steam created by heat from Earth's interior. Geothermal steam and associated geothermal resources include (1) all products of geothermal processes, including indigenous steam, hot water, and hot brines, (2) steam and other gases, hot water, and hot brines resulting from water, gas, or other fluids artificially introduced into geothermal formations, (3) heat or other associated energy found in geothermal formations, and (4) any byproducts (see 43 CFR 3200.1) of the above resources. Geothermal steam and hot water are naturally discharged at Earth's surface in the form of hot springs, geysers, mud pots, and steam vents. As an energy source, geothermal resources of hot water or steam are extracted and supplied to steam turbines that generate electrical energy. Geothermal resources also include subsurface areas of hot, dry rock (BLM and USFS 2008a). The BLM field offices in the Bighorn Basin are responsible for supervising and managing all exploration, development, and production operations on any federal geothermal leases in the Planning Area.

Energy derived from geothermal sources is considered a renewable energy resource. Geothermal energy is classified as a renewable energy source because the water used for geothermal energy is replenished by rainfall and the heat and steam harvested for geothermal energy is continuously produced inside Earth.

There are three geothermal areas in the Planning Area, although none is considered viable for use to generate electricity (with current technology and market conditions), and the BLM has not issued

federal geothermal leases (BLM 2008c). The Cody Hydrothermal System extends from the DeMaris Hot Springs 1 mile west of Cody to the Horse Center anticline 7 miles south of Cody. The Cody Hydrothermal system reaches maximum temperatures of 113°F to 131°F at depths of 853 to 1,640 feet. The Thermopolis Hydrothermal System extends east from the Hamilton Dome oil field area about 15 miles to the Warm Springs oil field area. This area reaches temperatures between 115°F and 176°F and is used by several private residences and commercial entities. Water from this system surfaces naturally at Hot Springs State Park, but is not used for municipal heating purposes in the nearby town of Thermopolis. The Bighorn Basin area produces high-temperature water in some of its aquifers because of the thickness of the overlaying sedimentary rock layer; the highest temperature measured in the basin was 306°F at a recorded depth of 23,081 feet (BLM 2009a).

The USGS has not identified any conventional (hydrothermal) geothermal resources in the Planning Area capable of generating electricity (USGS 2008a). In addition, the USGS reports geothermal resource occurrence as low for the entire Planning Area, with the exception of the thermal springs near Thermopolis, which the USGS ranks as moderately low. It should be noted, however, that at an average depth of 6.5 kilometers (approximately 21,000 feet), all of the lands in the Planning Area have temperatures in excess of 150 degrees Celsius (°C) (approximately 300°F), sufficiently hot for hot- and moderate-temperature hydrothermal systems, but at depths currently uneconomical for development (BLM 2008a). Known geothermal resources being exploited by the public or by individuals are primarily on private or state-owned lands in the Planning Area.

The Final Programmatic EIS for Geothermal Resources in the Western United States (BLM and USFS 2008a) describes the Bighorn Basin as having "potential" for geothermal resource development. The BLM is aware of a low to moderate potential for some level of interest in Bighorn Basin geothermal resources over the next 10 to 20 years.

Due to current policy direction guiding the development of renewable energy resources on public lands, there could be increased interest in geothermal development in the Planning Area. The American Reinvestment and Recovery Act of 2009 provides for $350 million in new investment in geothermal energy for research on technology, exploration, development techniques, and geothermal resource assessments (DOE 2009). Should geothermal leasing begin in the Bighorn Basin at some level, the CYFO and WFO would likely be able to accommodate some geothermal resource development over the next planning cycle (BLM 2009a). The BLM would work carefully to ensure that interests in geothermal development in the Bighorn Basin would not adversely affect the geothermal resource at Thermopolis, which the community holds in high regard.

Readers can find additional information and related studies on geothermal resources and development potential in the *Reasonable Foreseeable Development Scenario for Geothermal, Bighorn Basin Planning Area* (BLM 2009h).

Management Challenges

Management challenges are most apparent near the natural hot springs at Thermopolis. The management challenge would be to ensure that any potential geothermal development did not deplete water or heat from the system and therefore adversely affect the Thermopolis hot springs, the local tourism based economy, or the quality of life of local residents. The BLM would take care to consider the views of local, state, and national communities, and use the best available scientific information, before considering geothermal leasing in this area.

3.2.5 Leasable Minerals – Oil and Gas

Oil and gas resources are often found in the pore spaces of sedimentary reservoir rocks, such as sandstone and limestone. These resources migrated from source rocks rich in organic material, such as marine shales. When rocks containing this organic material are subjected to heat and pressure, the organic compounds break down over time, resulting in the formation of oil and natural gas. Once formed, oil and gas can migrate through pores spaces in the host rock or along fractures until it encounters structural, stratigraphic, or combination traps. Coalbed natural gas (CBNG) is present in areas where gas is trapped in the coalbed where it was generated.

The Planning Area has 4,138,024 acres of BLM-administered oil and gas mineral estate out of 5,644,868 acres in the Planning Area, or about 73 percent of the total Planning Area. State, private, and other entities manage the remaining 1,506,844 Planning Area acres (27 percent). Approximately 879,994 acres of state and private surface lands in the Planning Area are split-estate lands that overlie BLM-administered oil and gas mineral estate (subsurface) (BLM 2014a).

Exploration

The BLM is responsible for authorizing and administering geophysical exploration operations on all public surface lands, and under the rights granted under all federal oil and gas leases unless the USFS administers the surface (whether or not such leases are under non-federal land) in the Planning Area. The Wyoming Oil and Gas Conservation Commission (WOGCC) is responsible for authorizing all operations on state and private surface land in instances where such operations are not covered by rights granted under federal oil and gas leases. The BLM authorizes geophysical exploration under a federal oil and gas lease via Sundry Notice approval if the applicant of the geophysical Notice of Intent (NOI) is the federal oil and gas lessee/operator (43 CFR 3150). At the leasing stage, the BLM applies appropriate stipulations on federal oil and gas leases, including standard oil and gas stipulations (Appendix I), and special stipulations identified in the RMP.

Oil and gas reservoirs can be discovered by direct or indirect exploration methods. Direct methods include mapping of surface geology, observing seeps, and gathering information on hydrocarbon observed in drilling wells. Indirect methods often use geophysical methods such as gravity and magnetic and seismic surveys to delineate subsurface features that might contain oil and gas resources not directly observable. The petroleum industry utilizes 2D and 3D seismic technology to obtain subsurface stratigraphic and structural information useful for exploration of oil and gas reserves. 2D seismic technology uses explosives in drilled shot holes for source points along linear survey lines. 3D seismic techniques generally use source points such as vibroseis or shaker trucks in a grid pattern over a large area that can cover hundreds of square miles.

Several companies have leased BLM-administered lands in the Planning Area, and limited exploratory drilling for natural gas has commenced. Two specific areas include:

Southeastern Beartooth Front – There has been seismic exploration along the eastern Beartooth Front northwest of Clark, Wyoming, and exploratory drilling is anticipated. Initially, this activity was situated on private and state land and mineral estates, but is now expanding onto federal (USFS and BLM) lands.

Deep Basin-Centered Gas – Another area receiving new interest is a northwest-trending structural trend related to the deep Bighorn Basin-center gas play, although there is disagreement to the amount of natural gas in these reserves. The USGS estimates that there are more than 989 billion cubic feet (Bcf) of natural gas in low permeability basin-centered gas accumulations in the Bighorn Basin (USGS 2008b). In addition, an estimated 13 million barrels of undiscovered natural gas liquids are projected to exist in

the Bighorn Basin. The Wyoming State Geological Survey is investigating three major types of natural gas resources in Wyoming – tight-sand gas (basin-center gas or deep basin gas), shale gas, and under-pressured gas (Wyoming State Geological Survey 2008). There could be large amounts of all three types of natural gas in the Bighorn Basin.

The approved number of NOI to conduct geophysical exploration operations has been approximately one or two per year since 1999 (BLM 2009a). There has been an increase in the number of seismic ventures in the state, and this trend is expected to continue based on data from the WOGCC (BLM 2009a).

Oil and Gas Leasing Procedures

Leasing procedures for oil and gas, including CBNG, are the same. Based on the federal Onshore Oil and Gas Leasing Reform Act of 1987, all parcels must first be offered competitively. Lands that do not receive competitive interest are available for noncompetitive leasing for a period not to exceed 2 years. Before making a decision whether to offer lands for leasing, BLM conducts an environmental review and determines what resource conflicts exist on the parcels under consideration. Leases for offered parcels may include stipulations to protect other resource values, including:

- Phased leasing;
- Lease stipulations, including No Surface Occupancy, Timing Limitation, and Controlled Surface Use;
- Planned or required unitization of federal lands;
- Phased development; and
- Caps on new surface disturbance, pending acceptable interim or final reclamation;
- Best management practices, such as:
- Use of existing infrastructure;
- Multiple wells on a single pad;
- Requirements to reduce or capture emissions;
- Liquids gathering systems to centralized offsite production facilities;
- Placement of all linear disturbances in corridors;
- Extensive interim reclamation of roadway disturbance to the road surface and of pads to the wellhead; and
- Final reclamation to restore the landform and native plant community.

The BLM Wyoming State Office holds competitive sales four times a year by oral auction and issues competitive and noncompetitive leases for a term of 10 years. If the lessee establishes hydrocarbon production, the competitive and noncompetitive leases can be held for as long as oil or gas is produced. The federal government receives yearly rental fees on nonproducing leases. The state of Wyoming receives approximately half of all money generated from oil and gas leases. Royalty on production is received on producing leases, approximately one-half of which is allocated to the state of Wyoming. After acquiring an oil and gas lease, and prior to development, an application for permit to drill (APD) must be filed with the WOGCC and the appropriate BLM field office if the well proposes to explore or develop a federal oil and gas lease in the Planning Area. After the BLM approves the permit, the company may proceed with drilling according to the conditions of the permit's approval.

Numerous oil and gas operators depend on the ability to lease federal minerals under the BLM leasing program. Public land/leasable fluid minerals are leased to oil and gas operators through an established process for opening public land and areas nominated and approved for leasing. The BLM field offices are responsible for supervising and managing all exploration, development, and production operations on federal oil and gas leases in the Planning Area.

The general policy and main objectives of the BLM oil and gas program are to foster a fair return to the public for its resources, to ensure activities are environmentally acceptable, and to provide for conservation of the fluid mineral resources without compromising the long-term health and diversity of the land.

Oil and Gas Activity in the Planning Area

Under the existing plans, except for Wilderness Study Areas (WSA), some wild and scenic river (WSR) eligible waterways, and the Spanish Point Karst ACEC, BLM-administered lands in the Planning Area are open to oil and gas leasing and exploration. These specially designated areas represent a total of approximately 154,861 acres that are closed to leasing in the Planning Area. This is almost 5 percent of the BLM-administered surface acres in the Planning Area and 3.7 percent of the total 4,203,213 acres of federal mineral estate in the Planning Area (including split-estate lands).

There are 82 operators actively exploring for or producing oil and gas resources in the Planning Area. As of June 2008, federal oil and gas leases covered approximately 960,000 acres in the Planning Area (BLM 2008a) (Map 7). Table 3-12 lists the number of leases and total number of acres under lease in each county.

Table 3-12. Number of Oil and Gas Leases by County, as of June 2008

County	Number of Leases	Area under Lease (acres)
Big Horn	180	158,565
Hot Springs	304	230,473
Park	156	106,944
Washakie	477	465,281

Source: BLM 2008a

Approximately 547 oil and gas wells were spudded (started) in the Planning Area from January 1, 1999, to December 31, 2008 (BLM 2014a). Each well, including roads, pipelines, and similar infrastructure, is assumed to disturb approximately 2.5 acres for initial drilling operations (accounting for approximately 1,368 acres of new disturbance in the Planning Area). Upon completion of operations, interim reclamation measures are implemented, reducing the disturbance by up to 50 percent, or 684 acres (BLM 2009a). Table 3-13 lists oil and gas well statistics for the Planning Area.

There have been 9,928 surface well locations spudded in the Planning Area through March 3, 2009 (WOGCC 2009). Of the 9,928 wells spudded or drilled in the Planning Area, 6,133 wells, or 61.8 percent, have been on BLM-administered mineral estate. Twenty-five wells (0.25 percent) have been drilled on USFS-managed lands. An additional 3,770 wells (38 percent) have been drilled on private and state-owned oil and gas mineral ownership. At the close of 2008, there were 4,544 active oil and gas wells in the Planning Area (BLM 2009d).

There was an upward trend in Application for Permit to Drill (APD) approvals in the Planning Area between 2002 and 2005, peaking in 2005, when 378 APDs were approved (164 of which were on BLM-administered lands) (WOGCC 2009). APD approvals remained relatively steady from 2006 to 2008, averaging 104 approvals per year, but well below the 2005 peak. The number of APD submissions decreased further in 2009, likely driven by market conditions for oil and natural gas.

Table 3-13. Well Statistics by County for the Planning Area, as of June 2008

Statistic	Federal	Fee or State	Total
Big Horn County			
Number of Plugged and Abandoned Wells	849	842	1,691
Number of Dormant Wells	39	65	104
Number of Completed Wells	287	256	543
Number of Monitoring Wells	0	18	18
Notice of Intent to Abandon	7	11	18
Number of Spuds	5	16	21
Number of Expired Permits	60	35	95
Number of Permits To Drill	3	9	12
Permits Issued	1,250	1,252	2,502
Waiting On Approval	1	0	1
Total Permits (issued and pending)	**1,251**	**1,252**	**2,503**
Hot Springs County			
Number of Plugged and Abandoned Wells	936	537	1,473
Number of Dormant Wells	73	34	107
Number of Completed Wells	459	302	761
Number of Monitoring Wells	0	0	0
Notice of Intent to Abandon	11	1	12
Number of Spuds	33	9	42
Number of Expired Permits	58	51	109
Number of Permits To Drill	6	0	6
Permits Issued	1,576	934	2,510
Waiting On Approval	1	0	1
Total Permits (issued and pending)	**1,577**	**934**	**2,511**

Table 3-13. Well Statistics by County for the Planning Area, as of June 2008 (Continued)

Statistic	Federal	Fee or State	Total
Park County			
Number of Plugged and Abandoned Wells	886	611	1,497
Number of Dormant Wells	145	36	181
Number of Completed Wells	831	442	1,273
Number of Monitoring Wells	3	4	7
Notice of Intent to Abandon	9	6	15
Number of Spuds	77	25	102
Number of Expired Permits	127	75	202
Number of Permits To Drill	37	13	50
Permits Issued	2,115	1,212	3,327
Waiting On Approval	0	1	1
Total Permits (issued and pending)	**2,115**	**1,213**	**3,328**
Washakie County			
Number of Plugged and Abandoned Wells	624	104	728
Number of Dormant Wells	35	5	40
Number of Completed Wells	378	62	440
Number of Monitoring Wells	0	0	0
Notice of Intent to Abandon	12	3	15
Number of Spuds	8	5	13
Number of Expired Permits	74	12	86
Number of Permits To Drill	4	0	4
Permits Issued	1,135	191	1,326
Waiting On Approval	0	0	0
Total Permits (issued and pending)	**1,135**	**191**	**1,326**

Source: WOGCC 2009

Oil and Gas Production in the Planning Area

Oil and gas occurs in the Planning Area in numerous geologic formations, and members of formations that range in age from the oldest producing formation, the Flathead Sandstone (Cambrian age), through the youngest formation, the Fort Union (Tertiary age). Table 3-14 lists oil- and gas-producing formations and zones in the Planning Area through December 2008. In some formations, hydrocarbons are produced from more than one zone. The corresponding formations can be found in the stratigraphic chart (Figure 3-17) in Section 3.1.2 *Geologic Resources*. Cumulative production through 2008 in the Planning Area was approximately 2,168,185,301 thousand cubic feet of gas and 2,869,788,177 barrels of oil. The most prolific oil-producing formations have been the Phosphoria Formation and Ten Sleep Sandstone. The Madison has produced the third largest quantity of oil. A large amount of gas production has also been associated with the Phosphoria Formation, the Ten Sleep Sandstone, and within the Frontier Formation.

Table 3-14. Productive Zones in the Planning Area (through December 2008)

Producing Zone/Formation	Fields	Cumulative Gas (thousand cubic feet)	Cumulative Oil (barrels)	Inactive Wells	Active Wells	Total Wells
Amsden	15	5,446,804	17,239,333	55	47	102
Amsden-Madison	3	63,250	7,704,323	22	9	31
Amsden/Phosphoria	1	0	90	1	0	1
Big Horn	2	328,738	7,887,032	10	4	14
Chugwater	3	111,136,829	208,143	17	52	69
Cloverly	30	37,091,000	1,458,953	50	28	78
Cody	4	417,958	100,119	7	1	8
Coverly/Mowry	1	58,357	39,133	0	1	1
Crow Mountain	1	12,829	287,645	13	0	13
Crow Mountain-Phosphoria-Ten Sleep	1	0	2,081	1	0	1
Darby	3	3,734	30,257	4	1	5
Devonian	1	18,203	119,266	4	0	4
Dinwoody	2	0	628,973	49	0	49
Dinwoody/Phosphoria/Ten Sleep/ Amsden/Madison	1	0	3,220,368	10	33	43
Dinwoody-Phosphoria	3	13,784	2,464,787	16	8	24
Dinwoody-Phosphoria-Ten Sleep	1	0	25,866	2	1	3
Flathead	1	2,464,282	40,192	3	2	5
Fort Union	4	791,051	0	7	1	8
Fort Union-Lance	2	75,379	0	0	2	2
Frontier	88	677,344,620	88,171,606	793	428	1,221
Frontier-Cloverly	1	130,560	11,425	2	0	2
Frontier/Muddy	3	29,561,414	234,612	3	12	15
Gros Venture	1	4,687,895	36,530	1	2	3
Lance	3	452,241	5,658	2	2	4
Lewis/Mesaverde	1	3,250	0	1	0	1
Madison	21	152,110,544	359,644,999	360	392	752
Madison/Amsden	1	0	20,469	0	1	1
Madison/Amsden/Ten Sleep	4	5,036	373,837	1	4	5
Madison/Ten Sleep	4	1,119	1,049,110	7	7	14
Meeteetse	3	1,262,763	1,228	1	9	10
Mesaverde	6	5,089,224	99,028	9	16	25
Morrison	5	955,610	148,735	10	1	11
Mowry	6	1,474,326	276,963	24	15	39
Mowry/Frontier	3	1,626,429	167,008	0	3	3
Muddy	25	118,716,719	1,509,001	52	64	116
Muddy/Cloverly	2	385,731	21,085	1	1	2
Muddy/Frontier	1	133,703	7,805	0	1	1

Table 3-14. Productive Zones in the Planning Area (through December 2008) (Continued)

Producing Zone/Formation	Fields	Cumulative Gas (thousand cubic feet)	Cumulative Oil (barrels)	Inactive Wells	Active Wells	Total Wells
Phosphoria	120	559,517,419	976,280,423	1,443	1,543	2,986
Phosphoria/Ten Sleep	27	19,848,843	260,501,835	248	226	474
Phosphoria/Ten Sleep/Amsden	2	8,335	123,550	1	1	2
Phosphoria/Ten Sleep/ Amsden/Madison	2	36,625	451,433	0	7	7
Phosphoria/Ten Sleep/Madison	1	47,575	232,637	1	2	3
Precambrian	1	31,234	0	1	0	1
Sundance	16	8,341,739	73,371,516	209	62	271
Teapot	1	0	163	1	0	1
Ten Sleep	62	428,077,091	1,063,488,792	1,098	1,307	2,405
Ten Sleep/Amsden	4	14,655	412,160	1	5	6
Ten Sleep/Phosphoria/Dinwoody	1	0	22	1	0	1
Unknown	2	398,403	1,689,986	2	0	2
Totals		**2,168,185,301**	**2,869,788,177**	**4,544**	**4,301**	**8,845**

Source: IHS Energy Group 2009

There are 137 named fields and 1 unnamed field in the Planning Area (Table 3-15) (Map 26). There are eight major producing oil fields in the Planning Area (by volume), with production of 130 to 590 million barrels of cumulative oil production. These fields are, in descending order, the Oregon Basin, Elk Basin, Hamilton Dome, Grass Creek, Garland, Little Buffalo Basin, Frannie, and Byron. There are six major producing gas fields in the Planning Area, with production of 151 to more than 408 Bcf of cumulative gas production. In descending order, they are Worland, Elk Basin, Oregon Basin, Hamilton Dome, Garland, and Little Buffalo Basin.

Table 3-15. Producing Fields within the Planning Area (through December 2008)

Field Name	Producing Zones	Cumulative Gas (thousand cubic feet)	Cumulative Oil (barrels)	Inactive Wells	Active Wells	Total Wells
Adam	2	0	119,588	1	1	2
Alkali Anticline	4	159,893	2,862,004	28	12	40
Aspen Cree	1	0	341,678	4	0	4
Badger Basin	2	7,253,556	3,699,785	12	9	21
Baird Peak	1	0	469,211	1	1	2
Banjo Flats	1	3,808	34,696	1	0	1
Bearcat	7	1,649,457	846,138	4	9	13
Big Polecat	4	16,221,497	6,236,269	18	10	28
Black Mountain	6	104,512	21,925,035	24	52	76
Blue Springs	1	525	1,636	1	0	1
Bonanza	2	0	43,899,199	25	16	41
Boulder Gulch	1	148,987	84,485	4	0	4
Bud	1	0	13,863	1	0	1

Table 3-15. Producing Fields within the Planning Area (through December 2008) (Continued)

Field Name	Producing Zones	Cumulative Gas (thousand cubic feet)	Cumulative Oil (barrels)	Inactive Wells	Active Wells	Total Wells
Buffalo Rim	1	0	3,373	1	0	1
Byron	9	10,004,560	130,898,136	143	115	258
Byron South	1	4,434,390	42,519	1	0	1
Byron Southeast	2	655,689	135,520	4	0	4
Centennial	1	0	84,116	1	4	5
City	1	0	311	1	0	1
Cody	3	279,412	8,626,740	28	29	57
Coon Creek	2	159,840	168,353	3	4	7
Cottonwood Creek	6	66,892,025	60,028,218	109	198	307
Cottonwood Creek South	1	0	14	1	0	1
Coulee	2	279,422	18,329	2	1	3
Cowley	1	0	931,755	3	2	5
Crystal Creek	3	0	20,532	6	1	7
Danker North	5	2,819,760	1,149,009	9	4	13
Deaver North	1	146	1,566,094	3	9	12
Dickie	1	0	36,340	2	0	2
Dobie Creek	3	17,970,481	359,120	6	7	13
Doctor Ditch	2	794,669	49,391	2	0	2
Elk Basin	18	387,899,398	499,334,538	245	283	528
Elk Basin South	9	36,197,273	24,973,266	41	29	70
Emblem	1	542,230	5,651	1	1	2
Enigma	1	0	3,432,292	2	20	22
Enos Creek	4	402,225	289,810	10	1	11
Ferguson Ranch	2	31	5,186,274	5	12	17
Five Mile	7	52,325,845	1,364,026	14	26	40
Flashlight	1	0	98,202	1	0	1
Foster Gulch	2	0	17,315	2	0	2
Fourbear	7	279,989	40,526,593	179	64	243
Fourteen Mile	4	1,581,228	175,767	3	4	7
Franks Fork	1	0	2,081	1	0	1
Frannie	5	1,091,967	136,543,590	136	81	217
Freedom	1	0	27,694	0	1	1
Frisby South	2	5,855,515	7,379,642	22	24	46
Fritz	2	1,522,500	94,090	2	1	3
Garland	26	163,580,431	205,015,262	344	321	665
Garland South	2	1,343,934	6,460,395	4	0	4
Gebo	4	1,018,991	34,426,393	135	49	184
Golden Eagle	9	1,255,225	9,028,188	18	7	25
Goose Egg	1	13,372	131,089	2	4	6

Table 3-15. Producing Fields within the Planning Area (through December 2008) (Continued)

Field Name	Producing Zones	Cumulative Gas (thousand cubic feet)	Cumulative Oil (barrels)	Inactive Wells	Active Wells	Total Wells
Gooseberry	4	215,076	12,927,564	29	33	62
Grass Creek	23	15,503,950	269,309,750	761	370	1,131
Grass Creek South	1	0	10,808	1	0	1
Greybull	2	293	640,359	48	5	53
Greybull West	3	1,237,718	68,543	1	2	3
Half Moon	3	744,477	13,001,587	72	27	99
Hamilton Dome	14	265,434,111	293,140,149	278	307	585
Hand Creek	1	0	181,254	1	2	3
Heart Mountain	2	51,657,553	113,866	5	14	19
Hidden Dome	7	414,718	9,987,965	39	26	65
Homestead	1	30	1,953,450	10	4	14
Hunt	3	0	842,423	6	3	9
King Dome	3	1,274	391,351	9	1	10
Kirby Creek	2	554,782	1,720,414	9	29	38
Kirby Creek East	1	0	1,291	1	0	1
Lake Creek	4	31,282	7,640,419	18	23	41
Lamb	5	521,093	1,221,804	16	3	19
Lite Butte	2	0	465,493	1	3	4
Little Buffalo Basin	8	151,557,087	168,629,557	318	233	551
Little Grass Creek	5	13,092,748	213,499	3	4	7
Little Polecat	4	1,307,425	819,003	8	3	11
Little Sand Draw	5	396,802	12,110,782	41	13	54
Lovell Draw	1	0	860	1	0	1
Manderson	7	47,603,392	4,007,116	82	53	135
Marshall	1	24,779	701,148	4	5	9
McCulloch Peak	2	749,788	1,867	2	0	2
Meeteetse	5	35,109,102	465,097	10	16	26
Middle Dome	2	2,811	389,284	4	2	6
Murphy Dome	3	26,881	38,381,717	28	39	67
Neiber Dome	6	238,073	702,770	7	4	11
No Water Creek	2	481,939	4,162,667	25	10	35
Northline	2	27,768	3,401	2	0	2
Nowood	2	8	999,210	11	3	14
Nowood Southeast	1	7,238	242,836	2	6	8
Oregon Basin	16	304,132,678	590,084,882	362	954	1,316
Oregon Basin South	2	0	0	2	0	2
Oregon Basin Southeast	4	8,808,554	2,814	4	4	8
Oregon Basin West	2	143,610	802,410	2	4	6
Packsaddle	1	260,596	418,158	1	2	3

Table 3-15. Producing Fields within the Planning Area (through December 2008) (Continued)

Field Name	Producing Zones	Cumulative Gas (thousand cubic feet)	Cumulative Oil (barrels)	Inactive Wells	Active Wells	Total Wells
Penney Gulch	1	204	0	1	0	1
Pistol	1	5,918	9,069	2	0	2
Pitchfork	5	2,341,961	54,912,466	39	122	161
Prospect Creek	1	12,829	287,645	13	0	13
Pullium	3	8,372	5,117	3	0	3
Ralston	2	318,404	100,705	3	0	3
Rattlesnake	1	6,490,144	6,897,674	28	24	52
Rawhide	1	0	121,879	0	4	4
Red Springs	3	0	21,185	13	7	20
Rose Creek	2	0	99,624	5	0	5
Sage Creek	2	50	13,526,646	14	24	38
Sage Creek West	1	54,469	1,316,421	8	6	14
Sagebush	1	0	16,517	1	1	2
Sand Creek	2	0	438	2	0	2
Seller Draw	2	3,385,929	1,938	1	1	2
Sheep Point	1	9,846	590,046	3	3	6
Shoshone	4	38,268	4,832,776	30	17	47
Shoshone North	5	6,990	308,553	10	0	10
Siddon	1	0	60,151	3	0	3
Silver Tip	9	32,880,103	5,540,377	30	69	99
Silver Tip South	5	640,245	176,514	11	1	12
Skelton Dome	1	57,850	2,159	1	0	1
Slick Creek	4	9,620,887	6,340,130	41	15	56
South Fork	3	136,626	1,428,697	9	2	11
Spence Dome	2	2,352	1,060,644	27	50	77
Spring Creek	1	959	80,410	0	1	1
Spring Creek South	16	3,535,202	29,872,887	74	96	170
Sunshine North	5	0	4,332,341	16	33	49
Sunshine South	3	0	628,870	6	0	6
T E Ranch	3	1	217,007	5	1	6
Terry	2	766,513	22,180	1	2	3
Torchlight	7	6,412,788	16,474,302	80	32	112
Trench	1	0	40	1	0	1
Tuffy	2	91,168	98,920	2	1	3
Tumbler Ridge	1	0	6,989	4	0	4
Unnamed	10	1,684,786	210,095	10	5	15
Wagonhound	2	9,521	317,490	3	1	4
Walker Dome	5	1,251,818	5,051,159	17	11	28
Warm Springs	1	3,950	4,815,107	89	92	181

Table 3-15. Producing Fields within the Planning Area (through December 2008) (Continued)

Field Name	Producing Zones	Cumulative Gas (thousand cubic feet)	Cumulative Oil (barrels)	Inactive Wells	Active Wells	Total Wells
Water Creek	1	0	210,723	3	0	3
Waugh	1	0	355,393	1	3	4
Whistle Creek	6	3,430,583	4,818,206	25	2	27
Whistle Creek South	2	1,124,597	741	3	0	3
Wildhorse Butte	1	0	508	3	0	3
Wiley	1	153,745	81,127	1	3	4
Willow Draw	4	13,783	2,417,118	18	8	26
Worland	7	408,660,331	5,525,268	39	44	83
Zimmerman Butte	5	3,690	672,742	5	1	6
Totals	**N/A[1]**	**2,168,185,301**	**2,869,788,177**	**4,544**	**4,301**	**8,845**

Source: IHS Energy Group 2009

[1]Not applicable. Producing zones are not additive.

Since a production high during 1978, the rate of oil production in the Planning Area has steadily declined, with only a few short periods when production rates were flat. The rate of gas production declined from 1974 to 1983 and essentially flattened until 1989. The overall rate then increased until 1998, after which there was a decline in production rates. In 2008, oil production was at its lowest rate for the period from 1974 through 2008, and gas production was near its lowest rate for the same period (BLM 2014a).

Increases in production have occurred in some older oil fields within the Planning Area through different types of enhanced oil recovery projects. Enhanced oil recovery involves the injection of fluids (e.g., water, surfactants, polymers, or carbon dioxide) or sources of heat (steam or hot water) to stimulate hydrocarbon flow and move hydrocarbons that were bypassed in earlier recovery phases. Water floods have been the predominate method of increasing oil recovery and fewer floods of different types have been used. As of 2010, there were 46 active secondary recovery projects, 24 inactive projects, and 3 terminated projects in 37 total units/fields (BLM 2014a). Table 3-16 summarizes past and recent oil and gas production rates for counties in the Planning Area.

Table 3-16. Oil and Gas Production Rates for Counties in the Planning Area

County	Oil Production (barrels per month)[1]		Gas Production (thousand cubic feet per month)	
	1997	2007	1997	2007
Big Horn	309,385	169,654	547,594	242,199
Hot Springs	262,357	264,794	44,223	44,113
Park	868,917	707,279	1,105,218	1,211,575
Washakie	199,958	65,578	577,232	237,338

Source: WOGCC 2009

[1]Oil production is reported in barrels of 42 gallons each.

Coalbed Natural Gas

CBNG occurs in coal seams and may remain trapped where it was generated. The Bighorn Basin coalfield contains only minor amounts of coal compared to other Wyoming coal basins and is therefore not considered an important source of CBNG. Perhaps the single most limiting factor reducing the potential for CBNG resources in the Fort Union Formation is the apparent lack of thick, persistent coal in much of the basin (Roberts and Rossi 1999). Most of Wyoming's CBNG is produced from the Powder River Basin of northeastern Wyoming. According to WOGCC, no actual CBNG has been produced from any of the Bighorn Basin coals. In 2006, an attempt was made to produce CBNG from several wells located on private surface and mineral estate; however, only water was produced (WOGCC 2008).

Coals in the Paleocene Fort Union Formation, and the Cretaceous Meeteetse and Mesaverde Formations are classified as sub-bituminous, and are estimated to contain 116 Bcf of CBNG as undiscovered resources (Roberts and Rossi 1999; USGS 2008b).

Fourteen CBNG wells have been drilled in the Planning Area on lands with privately owned surface and minerals; 13 of those have been plugged. The remaining well is currently shut-in (IHS Energy Group 2009). No CBNG has actually been produced from any of the wells drilled in the Planning Area.

Carbon Dioxide Sequestration

Carbon dioxide is produced in association with natural gas production in several oil producing reservoirs in the Planning Area. Oil and gas reservoirs, unminable coal seams, and saline formations, all of which are present in the Planning Area, have been identified as potential carbon dioxide sequestration sites (DOE 2008). These sites could provide underground storage for carbon dioxide from natural gas production and other sources, such as power plants. There are currently no carbon dioxide injection enhanced recovery projects in the Planning Area or a pipeline for carbon dioxide transportation. The uncertain economic and technical aspects associated with carbon sequestration activities make it difficult to forecast future development. See *Reasonable Foreseeable Development Scenario for Oil and Gas, Bighorn Basin Planning Are*a for additional information on carbon sequestration in the Planning Area (BLM 2014a).

Oil and Gas Reserve/Resource Estimates

Oil and gas resources have high potential for occurrence throughout most of the Planning Area, with lower potential around the fringes (BLM 2014a). Table 3-17 lists projections of the amount of oil, gas, and natural gas liquid resources in the Planning Area for conventional and continual assessment units. It is estimated that the Planning Area contains a mean undiscovered volume of approximately 62.05 million barrels of oil, approximately 913.23 Bcf of gas, and 12.05 million barrels of natural gas liquids (in the two assessment units with projected hydrocarbon volumes). The Planning Area's oil resource could range from 16.51 to 124.99 million barrels, the gas resource could range from 293.61 to 1,879.61 Bcf, and natural gas liquids resource could range from 2.63 to 25.95 million barrels. For a more detailed description of the methodology behind these estimates, see the *Reasonable Foreseeable Development Scenario for Oil and Gas, Bighorn Basin Planning Area* (BLM 2014a).

Table 3-17. United States Geological Survey Undiscovered Conventional and Continuous Resources of Assessment Units in the Planning Area

Assessment Unit	Percent of Unit within Planning Area	Oil (mmb)			Gas (Bcf)			Natural Gas Liquids (mmb)		
		95%[1]	*5%*	*Mean*	*95%*	*5%*	*Mean*	*95%*	*5%*	*Mean*
Paleozoic-Mesozoic Conventional Oil and Gas	84.10	10.93	92.51	45.41	46.26	377.61	183.34	0.84	15.14	7.57
Cretaceous-Tertiary Conventional Oil and Gas	89.52	3.58	21.48	11.64	55.10	390.31	197.84	1.79	8.95	4.48
Muddy-Frontier Sandstone and Mowry Fractured Shale Continuous Gas	100.00	-	-	-	119.00	743.00	348.00	0.00	1.00	0.00
Mowry Fractured Shale Continuous Oil	100.00	2.00	11.00	5.00	1.00	6.00	2.00	0.00	0.00	0.00
Cody Sandstone Continuous Gas	100.00	-	-	-	14.00	80.00	38.00	0.00	0.00	0.00
Mesaverde Sandstone Continuous Gas	100.00	-	-	-	13.00	63.00	32.00	0.00	0.00	0.00
Mesaverde-Meeteetse Formation Continuous Coalbed Gas	85.52	-	-	-	62.50	167.62	83.81	0.00	0.86	0.00
Fort Union Formation Continuous Coalbed Gas	88.26	-	-	-	12.36	52.07	28.24	0.00	0.00	0.00
Total Undiscovered Resources	**-**	**16.51**	**124.99**	**62.05**	**323.22**	**1,879.61**	**913.23**	**2.63**	**25.95**	**12.05**

Source: USGS 2008b

[1]Estimates of recoverable resources for each oil and gas assessment unit area within the province and within the Planning Area, are presented as a range of possibilities: a low case having a 95 percent probability of that amount or more occurring, a high case having a 5 percent probability of that amount or more occurring, and a mean case representing an arithmetic average of all possible outcomes.

Bcf billion cubic feet
mmb million barrels

Projected Oil, Gas, and Coalbed Natural Gas Drilling Activity

For a baseline unconstrained RFD projection (limiting factors such as lease stipulations or the possibility that some areas might not be administratively available for leasing are not considered at this stage of analysis), it is estimated that during the 20-year planning cycle of 2008 through 2027, as many as 1,865 wells could be drilled in the Planning Area. Up to 150 of these wells could be CBNG wells. As many as 175 of the conventional wells could be deep wells (defined here as wells more than 15,000 feet deep) in the central portion of the Bighorn Basin (BLM 2014a).

Development potential is defined as high, moderate, low, very low, and none. Note that development potential is evaluated based on a broader range of factors then occurrence potential, which only considers the presence or absence of oil and gas resources regardless of the economic viability of

development. It is estimated that average drilling densities per township (one township is about 36 square miles) during the planning cycle will be:

- High: 100 or more wells
- Moderate: 20 to 100 wells
- Low: 2 to fewer than 20 wells
- Very Low: fewer than 2 wells
- None: no wells

Development potential classifications for oil and gas and coalbed natural gas in the Planning Area are shown in Table 3-18, based on projections in the *Reasonable Foreseeable Development Scenario for Oil and Gas, Bighorn Basin Planning Are*a (BLM 2014a).

Table 3-18. Oil and Gas Development Potential in the Planning Area

Development Potential	Oil and Gas[1]		Coalbed Natural Gas[2]	
	Acres	*Percent of Planning Area*	*Acres*	*Percent of Planning Area*
High	0	0	0	0
Moderate	344,736	8.2	0	0
Low	1,793,204	42.6	578,635	13.7
Very Low	1,819,780	43.3	1,388,845	33
None	106,242	2.5	2,095,570	49.8
Not Assessed	143,587	3.4	143,499	3.4
Total	**4,207,549**	**100**	**4,207,549**	**100**

[1]BLM 2013a
[2]BLM 2014a

Oil and gas drilling activity is projected to be concentrated in several locations in the Planning Area, including:

- In and around the Elk Basin and Garland fields in the northern portion in the Planning Area.
- In, around, and east of Oregon Basin Field near the City of Cody.
- Around Fritz Field in the east-central portion of the Planning Area.
- In and around several smaller, isolated fields around the margins of the basin.
- In additional scattered townships where moderate levels of activity are projected.

Most of these fields are densely drilled. Many new wells in these areas will likely be drilled as infill or fringe wells in existing fields, or as reentries into existing wellbores. Some minor exploratory activity could occur just beyond field boundaries. Well spacing is projected to be variable, in the range of 20 to 160 acres (BLM 2014a).

Future well-drilling activity is likely to occur in association with: (1) enhanced oil recovery projects, which could include the addition of wells in and around existing, mature oil and gas fields or residual oil zones, or (2) the exploration of new oil and gas reserves away from existing, developed areas. Well densities will likely remain similar to current densities, with isolated townships having the potential for an increase in drilling density (BLM 2014a).

Numerous fields in the Planning Area have been identified as candidates for carbon dioxide enhanced oil recovery, including but not limited to Big Polecat, Frannie, and Murphy Dome (Nummedal et al. 2003; Advanced Resources International 2006). Carbon dioxide supply, pipeline infrastructure, technological considerations, and economic factors are major determinants of future enhanced oil recovery using carbon dioxide (BLM 2014a). The USGS has also identified the Mesaverde-Meeteetse Formation and Fort Union Formation coalbed gas assessment units as potentially productive for CBNG in the Planning Area. Only limited exploratory drilling for CBNG has occurred in the Planning Area. Based on available information, there are no current plans for CBNG development in the Planning Area. However, because there has been limited CBNG exploration in the recent past (though unsuccessful) and the Planning Area includes the two previously identified USGS CBNG assessment units, it is possible that limited exploration and development could take place during the life of the plan` (BLM 2014a).

Readers will find additional information on projected oil and gas activity, including potential sites for future enhanced oil recovery projects, in the Planning Area in the *Reasonable Foreseeable Development Scenario for Oil and Gas, Bighorn Basin Planning Are*a (BLM 2014a).

Oil and Gas Master Leasing Plans

The Master Leasing Plan (MLP) concept promotes a proactive approach to planning for oil and gas development. During the final preparation of the Draft RMP and Draft EIS, the BLM issued IM 2010-117 regarding MLPs to address oil and gas leasing in areas with resource values of concern.

RMPs make oil and gas planning decisions, such as areas closed to leasing, open to leasing, or open to leasing with major or moderate constraints (lease stipulations) based on known resource values. However, additional planning and analysis may be necessary prior to oil and gas leasing because of changing circumstances, updated policies, and new information. Criteria for determining whether such additional planning and analysis is warranted are provided in IM 2010-117 and summarized below. When such analysis is warranted, the MLP process is conducted through the National Environmental Policy Act (NEPA) process before lease issuance and may reconsider RMP decisions.

MLP preparation is required when all four of the following criteria are met:

- A substantial portion of the area to be analyzed in the MLP is not currently leased.
- There is a majority federal mineral interest.
- The oil and gas industry has expressed a specific interest in leasing, and there is a moderate or high potential for oil and gas confirmed by the discovery of oil and gas in the general area.
- Additional analysis or information is needed to address likely resource or cumulative impacts if oil and gas development were to occur where there are:
    - Multiple-use or natural/cultural resource conflicts;
    - Impacts to air quality;
    - Impacts on the resources or values of any unit of the National Park System, national wildlife refuge, or National Forest wilderness area, as determined after consultation or coordination with the NPS, the USFWS, or the USFS; or
    - Impacts on other specially designated areas.

An MLP analysis may also be completed under other circumstances at the discretion of the BLM.

In late 2010, several groups nominated areas for MLP analysis. The BLM evaluated the requests and found that none of the nominated areas met the criteria requiring MLP analysis (BLM 2010a). After

State Director review, three areas within the Planning Area were determined to warrant additional analysis; these areas are the Absaroka Front, the Fifteenmile area, and the Big Horn Front.

Oil and gas development potential and resources of concern in Master Leasing Plan areas are identified in Table 3-19.

Table 3-19. Oil and Gas Development Potential and Resources of Concern in Master Leasing Plan Analysis Areas

Topic	Absaroka Front	Fifteenmile	Big Horn Front
Total Acreage	**402,646**	**230,699**	**444,830**
Acres BLM-administered Mineral Estate Minerals	253,112	180,816	379,308
Acres Existing Leases (Map 7)	6,533	43,112	0
Occurrence Potential of Total Acreage (RFD Figure 40)	High – 259,242 Low – 142,720	High – 192,247	High – 361,170 Low – 60,194
Conventional Oil and Gas Development Potential of Total Acreage (RFD Figure 45)	Moderate – 5,380 Low – 102,773 Very Low – 293,768	Moderate – 18,216 Low – 174,031	Low – 277 Very Low – 360,891
Coalbed Natural Gas Development Potential of Total Acreage (RFD Figure 46)	Low – 5,400 Very Low – 8,108	Low – 70 Very Low – 192,177	0
Resources of Concern	Wildlife habitat and recreational settings	Recreational settings, geologic features, and LRP soils	Wildlife habitat and recreational settings

Source: BLM 2010a

BLM Bureau of Land Management
LRP limited reclamation potential
RFD Reasonable Foreseeable Development

Absaroka Front Master Leasing Plan Analysis Area

This area provides crucial habitat, ranges, and migration corridors for a diversity of wildlife. The Master Leasing Plan Analysis Area contains part of one of the longest known elk migration routes in North America. The natural character of the Absaroka Front also attracts a diversity of recreational users (BLM 2010a). The key management concerns in this area are big game habitat, migration corridors, and dispersed recreational opportunities.

Fifteenmile Master Leasing Plan Analysis Area

The Fifteenmile MLP Analysis Area lies in the center of the Bighorn basin, containing scenic qualities and remoteness. The area is a popular recreation destination due to the primitive to semi-primitive setting characteristics. The entire MLP Analysis Area is within the Willwood formation and weathering by wind and water has created a rugged landscape with badland features. These fragile soils create challenges for reclamation. Fragile soils and recreational opportunities are the key management concerns in the area (BLM 2010a).

Big Horn Front Master Leasing Plan Analysis Area

Big game species rely on lands along Big Horn Front for winter habitat. Recreational opportunities attract visitors from the surrounding communities and from outside the region due to the spectacular scenery, abundant wildlife, and exposed geologic formations (BLM 2010a). Big game habitat, migration corridors, and dispersed recreational uses are the key management concerns in this area.

Management Challenges

A variety of management challenges for oil and gas exploration and development are associated with both public and internal BLM issues. Oil and gas development has a variety of beneficial and adverse impacts, which create a host of management challenges. Due to the breadth and depth of these management challenges, this section provides only a summary. The following is a partial list of known and potential management challenges for oil and gas exploration and development in the Planning Area:

- Processing timeframes for APDs and notices to perform seismic exploration.
- Timing restrictions on oil and gas leases, NOI to perform geophysical exploration, and APDs.
- Potential Endangered Species Act (ESA) listing of wildlife species such as the greater sage-grouse and how such listing would affect oil and gas development.
- Processing timeframes for ROW applications.
- Road design requirements.
- Lessee's/operator's surface-use rights.
- Impacts to wildlife and threatened and endangered species from oil and gas development and seismic exploration activities.
- Impacts to grazing permittees and lessees from oil and gas development and seismic exploration activities.
- Impacts to visual resources and cultural resources from oil and gas development and seismic exploration activities.
- Impacts to air and water quality from oil and gas development and seismic exploration activities.
- Impacts to soils and vegetation from oil and gas development and seismic exploration activities.
- Impacts to climate change from levels of CO_2 in the atmosphere from oil and gas development.
- Multiple-use conflicts resulting in restricted access to oil and gas resources.
- Economic impacts to local, state and federal governments from oil and gas production in the Planning Area.
- Split-estate issues.
- Staffing and priority to complete oil and gas workload.

3.2.6 Leasable Minerals – Other Solid Leasable Minerals

Other solid leasable minerals are those solid minerals, other than coal and oil shale, leased under the Mineral Leasing Act of 1920 and not related to energy production. Examples of other solid leasable minerals are phosphate, chloride minerals, SO_4 minerals, carbonate minerals, silicate minerals, borate minerals, and other "hardrock minerals." Hardrock (locatable) minerals on acquired public lands open to mineral leasing can be developed only under a leasing system. Access to other solid leasable minerals on federal estate is at BLM discretion.

No other solid leasable minerals are being leased or produced in the Planning Area. Other solid leasable minerals found in the Bighorn Basin are not currently considered economically viable to produce. Future demand for other solid leasable minerals will likely increase over time in parts of Wyoming and the west, but this is not anticipated to result in any new leasing or production in the Planning Area.

Management Challenges

The BLM has not identified management challenges for other solid leasable minerals.

3.2.7 Salable Minerals

Salable minerals, also known as mineral materials, include common varieties of sand, stone (such as decorative stone), gravel, pumice, clay, rock and petrified wood. These non-energy-related materials are typically used in construction, agriculture, and decorative applications. Under the BLM mineral materials program (43 CFR 3600), the BLM manages exploration, development, and disposal of salable minerals by sale (disposal) or free use. Recreational collection of this material is allowed, but large-volume removal requires a mineral sale. The BLM does not sell salable minerals at less than fair market value. Salable minerals in the Planning Area are an important component of the regional economy.

The Planning Area contains a variety of geological features and landforms that give rise to a diverse assortment of salable minerals. The primary salable minerals found in commercial quantities in the Planning Area are sand and gravel (aggregate), limestone, and decorative/construction stone (sandstone or limestone). Other salable minerals known to occur in the Planning Area in lesser quantities include flagstone and petrified wood.

Sand and gravel deposits consist of durable rock fragments (pebbles, cobbles) and particles. They are the result of bedrock that has been weathered and broken down into fragments that have been subsequently transported and deposited. Alluvial sand and gravel, terrace sand and gravel, and conglomeratic sand and gravel deposits are all found in the Bighorn Basin (Map 29).

As of April 2008, the CYFO and WFO had authorized a total of approximately 5 million cubic yards of sand and gravel disposals and 550,000 tons of rock disposals. The estimated annual production of salable minerals for the Planning Area is approximately 220,000 cubic yards per year (BLM 2008c). Map 8 shows the mineral materials sites in the Planning Area. Table 3-20 lists active community pits (16), free use permits (51), and contract sales (16) authorized in the Planning Area (by field office) as of January 1, 2009.

Table 3-20. Mineral Material Sites in the Planning Area

Operator/Permittee/ Pit Name	BLM Serial Number	Salable Mineral	Location
Cody Field Office Mineral Material Contracts			
Nicholls & Lewis/BLM	WYW-111944	Limestone Quarry	Quarry on west side of Little Sheep Mountain southeast of Lovell, Wyoming; S2SE Sec 28, T56N R95W
Nicholson Dirt Contracting	WYW-160176	Sand and Gravel	Pit on Eagle Pass east of Cody, Wyoming
Mountain Construction	WYW-165827	Sand and Gravel	Pit north of the Shoshone River east of Lovell, Wyoming
Frank Heiser	WYW-164329	Flagstone	Small sale southeast of Lovell, Wyoming
Frank Heiser	WYW-165847	Sand and Gravel	Small sale east of Lovell, Wyoming
L&M Excavation	WYW-165843	Sand and Gravel	Mineral material contract west of Cody, Wyoming
Cody Field Office Community Pits			
Windy Flats	WYW-084627	Sand and Gravel	NE Sec. 28, T52N 101W
Cowley	WYW-070870	Sand and Gravel	SESW Sec. 34, T58N R96W
Greybull	WYW-084713	Sand and Gravel	NWNE Sec. 7, T52N R93W
Northfork	WYW-123832	Sand and Gravel	NESW, N2SE Sec. 11, NWSE Sec. 12 T52N R104W
Frannie	WYW-089729	Sand and Gravel	N2SWNW Sec. 26, T58N R98W
Elk Basin	WYW-084714	Sand and Gravel	S2SE Sec. 20, T57N R99W
Eagle Pass	WYW-112058	Sand and Gravel	SENE Sec. 11, T52N R100W
Elk Basin Community Pit Expansion	WYW-165835	Sand and Gravel	S2SE Sec. 20, T57N R99W
Cody Field Office Free Use Permits			
Big Horn County	WYW-165887	Sand and Gravel	Crystal Creek Pit
Big Horn County	WYW-165888	Sand and Gravel	Greybull River Pit
Big Horn County	WYW-165889	Sand and Gravel	Table Mountain Southeast Pit
Big Horn County	WYW-165890	Sand and Gravel	Cody Pit
Big Horn County	WYW-165891	Sand and Gravel	Spence Pit
Big Horn County	WYW-165892	Sand and Gravel	Table Mountain Northwest Pit
Big Horn County	WYW-165893	Sand and Gravel	Greybull Cemetery Pit
Big Horn County	WYW-165894	Sand and Gravel	Yellowtail Causeway Pit
Big Horn County	WYW-165833	Sand and Gravel	Table Mountain Northwest expansion
Park County	WYW-165760	Sand and Gravel	Sheep Mountain Pit
Park County	WYW-165761	Sand and Gravel	New YU Bench Pit
Park County	WYW-165762	Sand and Gravel	Canyon Road Pit
Park County	WYW-119009	Sand and Gravel	Eagle Pass Pit – in reclamation
Park County	WYW-165763	Sand and Gravel	Lower Greybull Pit
Park County	WYW-165764	Sand and Gravel	Polecat Bench Pit

Table 3-20. Mineral Material Sites in the Planning Area (Continued)

Operator/Permittee/ Pit Name	BLM Serial Number	Salable Mineral	Location
Deaver Irrigation District	WYW-162990	Sand and Gravel	Issued from Park County FUP WYW-165764
Korean War Veterans Assn.	WYW-165844	Sand and Gravel	Issued from Windy Flats Community Pit
BLM CYFO	WYW-165828	Red Fill Material	Triassic Chugwater Formation Red Fill
BLM CYFO	WYW-165838	Sand and Gravel	Issued from Eagle Pass Community Pit
Town of Byron	WYW-165739	Sand and Gravel	N/A
Town of Byron	WYW-165740	Sand and Gravel	N/A
Town of Cowley	WYW-160170	Sand and Gravel	N/A
Town of Greybull	WYW-160162	Sand and Gravel	N/A
Sidon Canal Co.	WYW-119015	Sand and Gravel	N/A
Sidon Canal Co.	WYW-120878	Sand and Gravel	N/A
WYDOT	WYW-137818	Sand and Gravel	N/A
WYDOT	WYW-148687	Sand and Gravel	Exclusive pit on Eagle Pass east of Cody
WYDOT	WYW-157415	Sand and Gravel	Issued from Windy Flats Community Pit
WYDOT	WYW-142437	Sand and Gravel	N/A
WYDOT	WYW-165834	Sand and Gravel	Issued from Windy Flats Community Pit
Worland Field Office Mineral Material Contracts			
Dan Madden	WYW-159550	Sand and Gravel	SWSE Sec. 27, T46N R93W
Jerry Brown Constr.	WYW-159551	Sand and Gravel	NWSW Sec. 14, T47N R93W
McGarvin-Moberly	WYW-156317	Sand and Gravel	SWSE Sec. 11 and N2 Sec. 14, T47N R93W
Hunt Oil Co.	WYW-159559	Sand and Gravel	N/A
Big Horn RediMix	WYW-162887	Sand and Gravel	N/A
McGarvin-Moberly	WYW-165045	Sand and Gravel	NWSW Sec. 14, T47N R93W
Worland Field Office Community Pits			
Kirby	WYW-069560	Specialty Stone	NWSE Sec. 35, T45N R95W
Manderson	WYW-084781	Sand and Gravel	SWSE Sec. 28, T50N R89W
Worland	WYW-094069	Sand and Gravel	N2 Lot 2 Sec. 23, T47N R93W
Fox Mountain	WYW-094110	Moss Rock	SESW SWSE Sec. 11, T52N R92W
Sulphur Tract	WYW-123834	Sand and Gravel	N/A
Thermopolis	WYW-136132	Flagstone	E2NW W2NE Sec. 8, T42N R96W
Six-mile	WYW-137821	Sand and Gravel	N/A
Rome Hill	WYW-142389	Specialty Stone	Portions of Sec.'s 19, 20, 29, 30, 32, T47N R87W

Table 3-20. Mineral Material Sites in the Planning Area (Continued)

Operator/Permittee/ Pit Name	BLM Serial Number	Salable Mineral	Location
Worland Field Office Free Use Permits			
Hanover Canal Co.	WYW-138717	Sand and Gravel	N/A
Washakie County	WYW-142435	Sand and Gravel	N/A
Washakie County	WYW-142436	Sand and Gravel	N/A
Big Horn County	WYW-144844	Sand and Gravel	N/A
Washakie County	WYW-144861	Sand and Gravel	N/A
Washakie County	WYW-148812	Sand and Gravel	N/A
Washakie County	WYW-148813	Sand and Gravel	N/A
Washakie County	WYW-148814	Sand and Gravel	N/A
Washakie County	WYW-148815	Sand and Gravel	N/A
Washakie County	WYW-150999	Sand and Gravel	N/A
Big Horn County	WYW-153881	Sand and Gravel	N/A
Hot Springs County	WYW-153882	Sand and Gravel	N/A
Hot Springs County	WYW-153883	Sand and Gravel	N/A
Washakie County	WYW-153916	Sand and Gravel	N/A
Washakie County	WYW-153918	Sand and Gravel	N/A
Washakie County	WYW-156315	Sand and Gravel	N/A
Hot Springs County	WYW-159540	Sand and Gravel	N/A
Big Horn County	WYW-159558	Sand and Gravel	N/A
Big Horn County	WYW-162889	Sand and Gravel	N/A

Source: BLM 2009d

BLM	Bureau of Land Management	N	north	Sec	section
Co.	Company	NE	northeast	SW	southwest
CYFO	Cody Field Office	NW	northwest	T	Township
E	East	R	Range	W	west
FUP	free use permit	S	south	WYDOT	Wyoming Department of Transportation
N/A	not applicable	SE	southeast		

As of June 2008, disturbances related to various types of salable mineral disposals in the Planning Area totaled 3,760 acres (BLM 2008a). This includes disturbances from free use permits totaling approximately 1,780 acres, from community pits totaling 1,630 acres, and from noncompetitive contract sales totaling 345 acres (Map 8). Review of 2013 data indicated that disturbances from free use permits totaled approximately 1,719 acres, while community pits totaled 1,937 acres and noncompetitive contract sales totaled 154 acres (BLM 2013a).

With an increase in construction and general growth, nationwide demand for salable minerals is increasing, particularly in western states. Matching this trend, the Planning Area has seen an increase in the amount of salable minerals sold and in the number of contracts and requests for contracts for salable minerals. The Planning Area has seen an increase in the amount of inquiries related to obtaining decorative stone, "moss rock," and field stone or boulders. These types of salable minerals are common

throughout Wyoming and the Planning Area, and are typically composed of sandstone, granite or limestone partially covered with colorful lichens (not moss), or not covered.

Large estimated quantities of salable mineral reserves are present in the Planning Area; therefore, a sustainable level of mineral resources is available to meet demand. The salable minerals industry working in the Planning Area has been able to sustain or increase its production in response to increasing demand for their product, despite fluctuating gas prices and occasional equipment and labor shortages.

Readers can find additional information about salable minerals in the Planning Area in the *Solid Mineral Occurrence and Development Potential Report* (BLM 2009d).

Management Challenges

Management challenges associated with disposal of salable minerals result from salable mineral mining activities. Salable mineral mining activities in areas close to housing create noise associated with equipment, odors associated with hot mix plants, and air quality concerns related to processing of salable minerals (chiefly involving dust or PM). Additional management challenges associated with salable mineral mining activities include impacts from surface disturbance; proximity of existing and potential mineral materials sites to important wildlife and their habitat, such as sagebrush and greater sage-grouse; and the impacts to sensitive species.

Construction/dimension stone or flat slabs of flagstone are not widely available in the Planning Area. One negotiated sale has been processed for a small quantity of thin lime flagstone from the Sundance Formation north of Greybull, Wyoming. However, demand for this material is up due to the increase in residential and commercial construction in Big Horn and Park counties. The BLM will likely need to identify additional sites on public lands during the next planning cycle to help meet this demand.

Illegal (unpermitted) trespass removal of mineral materials, including decorative stone, is an additional management challenge associated with salable minerals in the Planning Area. Another management challenge involves handling the demand, availability, and location of salable minerals in response to anticipated demand, both locally and nationally.

3.3 Fire and Fuels Management

Fire is an integral part of the ecological process of many plant communities in the Bighorn Basin. Several vegetation types in the basin have developed under a regime of intermittent fire and have adapted to the effects of fire in some way. Fire behavior within each vegetation type varies with many factors, including topography and site productivity. Highly productive sites, such as north slopes, generally have more biomass and, therefore, can carry fires better than less productive sites.

The BLM fire management program focuses on two categories of wildland fire – wildfires (previously referred to as unplanned ignitions) and prescribed fires (previously referred to as planned ignitions). The *Guidance for Implementation of the Federal Wildland Fire Policy* (USFS et al. 2009) directs BLM field offices to have a Fire Management Plan (FMP) for all areas with burnable vegetation that provides for firefighter and public safety; includes fire management strategies, tactics and alternatives; addresses values to be protected and public health issues; and is consistent with resource management objectives, activities of the area, and environmental laws and regulations. Within the Planning Area, the BLM manages wildfires and prescribed fires in accordance with the Northern Zone FMP (BLM 2004b).

The Planning Area is in the Big Horn Basin Fire Planning Unit. The Big Horn Basin Fire Planning Unit consists of the Bighorn National Forest, Shoshone National Forest, Wind River Indian Reservation, and the Bighorn Canyon National Recreation Area (BLM 2004b). The BLM has interagency cooperative agreements with the agencies responsible for managing these areas. The Cody Interagency Dispatch Center coordinates fire suppression operations (BLM 2004b).

In accordance with *Guidance for Implementation of Federal Wildland Fire Management Policy* (USFS et al. 2009), the BLM will continue interagency and local cooperation to set priorities for fire management planning, preparedness, prevention, suppression, use of wildland fire, restoration and rehabilitation, monitoring, research, and education. Interagency cooperation ensures accountability by instituting meaningful performance measures and monitoring results.

Table 3-21 lists the annual average number of acres of wildfires, prescribed fires, and mechanical and chemical treatments in the Planning Area. The acreage burned has been calculated as an annual average from 1981 to 2009 for both prescribed fires and wildfires. The BLM also modifies fuels with mechanical and chemical treatments in the Planning Area. The BLM did not use mechanical and chemical treatments to reduce fuel loads in the Planning Area until 2002, when the National Fire Plan began making funds available for these kinds of projects.

Table 3-21. Wildfires, Prescribed Fires, and Mechanical and Chemical Treatments in the Planning Area

	Wildfire	Prescribed Fire	Mechanical Treatment	Chemical Treatment
Average Acres Per Year	5,881	3,294	1,408	250

Source: BLM 2009i

The Fire Regime Condition Classification System (FRCC) classifies existing ecosystem conditions to determine priority areas for treatment (Table 3-22). The FRCC measures the vegetation's degree of departure from reference conditions, or how different the current vegetation condition is from a particular reference condition. This could result in changes to key ecosystem components such as vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated

disturbances (e.g., insect- or disease-related mortality). FRCC involves two pieces of information – (1) the historic fire regime and (2) the condition class. Fire regime is the inferred historic fire return interval and severity on a given landscape; condition class is the departure of the given area from the historic fire interval. Fire regimes in the Planning Area, by vegetation type, appear in the Northern Zone FMP (BLM 2004b). Information on fire regimes and the Northern Zone FMP is available at: http://www.blm.gov/wy/st/en/programs/Fire/planning.html.

Table 3-22. Fire Regimes

Group	Percent of Planning Area[1]	Frequency	Severity	Severity Description
I	2%	0 to 35 years	Low/mixed	Generally low-severity fires replacing less than 75% of the dominant overstory vegetation; can include mixed-severity fires that replace up to 75% of the overstory.
II	4%	0 to 35 years	Replacement	High-severity fires replacing greater than 75% of the dominant overstory vegetation.
III	9%	35 to 100 years	Mixed/low	Mixed-severity with less than 75% of the overstory vegetation replaced.
IV	45%	35 to 200 years	Replacement	High stand replacement-severity fires with greater than 75% of the dominant overstory vegetation replaced.
V	41%	200+ years	Replacement/any severity	High (stand replacement) severity.

Source: DOI and the Nature Conservancy 2008

[1]The percentages presented in this table are estimates only and due to rounding add up to more than 100 percent.

Condition class describes ecosystem health as follows:

- ***Condition Class 1***. For the most part, fire regimes in this Fire Condition Class are within historical ranges. Vegetation composition and structure are intact. Therefore, the risk of losing key ecosystem components from the occurrence of fire remains relatively low.
- ***Condition Class 2***. Fire regimes on these lands have been moderately altered from their historical range by increased or decreased fire frequency. A moderate risk of losing key ecosystem components has been identified on these lands.
- ***Condition Class 3***. Fire regimes on these lands have been substantially altered from their historical return interval. The risk of losing key ecosystem components from fire is high. Fire frequencies have departed from historical ranges by multiple return intervals. Vegetation composition, structure, and diversity have been substantially altered. Consequently, these lands have the greatest risk of ecological collapse.

The Planning Area is broken up into five Fire Management Units (FMUs) – Absaroka Front, Basin Bottom, Foothills Sagebrush, Nowater, and West Slope Bighorn. An FMU is a geographic area with similar plant communities and resource and fire management objectives. Detailed descriptions of the five FMUs appear in the Northern Zone FMP (BLM 2004b). For example, portions of the Nowater, Foothills Sagebrush, and the lower elevations of the West Slope Bighorn FMUs have extensive areas of cheatgrass invasion in burned and unburned areas that are important greater sage-grouse habitat. BLM fire managers have learned that wildland fires in these FMUs often experience extreme rates of spread and can be difficult to control. Thousands of acres that burned in the 1996 wildfires in these FMUs are now occupied by cheatgrass with little or no sagebrush present. In an effort to protect the remaining

sagebrush/bunchgrass plant communities, the management prescription for these FMUs calls for aggressive fire suppression and rehabilitation of burned areas. In contrast, higher-elevation areas in the West Slope Bighorn FMU employ less aggressive suppression techniques because of inaccessible rugged terrain and the largely beneficial effects of fire on plant communities and overall watershed condition. General management guidelines for fire suppression are found in the Northern Zone FMP (BLM 2004b).

Table 3-23 provides a coarse-scale landscape-level assessment of fire regime condition classes for the area covered by the Northern Zone FMP based on University of Wyoming GAP Analysis Program Data (University of Wyoming 1994), ground-truthing, Risk Assessment Mitigation Strategy (RAMS) data, and expert input. The Northern Zone FMP and maps are available at: http://www.blm.gov/wy/st/en/programs/Fire/planning.html. Based on this assessment, it was estimated that nearly 35 percent of the Planning Area is in FRCC Classes 2 and 3.

Table 3-23. Acreages of Fire Regime Condition Classes in the Planning Area, 2007

Condition Class 1		Condition Class 2		Condition Class 3		Total Acres
Acres	*%*	*Acres*	*%*	*Acres*	*%*	
4,074,067	65	1,379,116	22	821,052	13	6,274,235

Source: BLM 2008a

Management Challenges

The challenges of fire and fuels management center on preventing wildfires and adequately addressing stabilization and rehabilitation efforts after wildfires. Fire size and frequency is likely to increase, due primarily to the spread of cheatgrass, but also due to mixed conifer forests affected by bark beetles and blister rust. The spread of cheatgrass, and the associated increase in wildfires, threatens greater sage-grouse and other sagebrush habitat-dependent species. Despite treatment efforts, cheatgrass has recently become more widespread and has extirpated native vegetation in some areas (BLM 2009a).

3.3.1 Wildfires (Unplanned Ignitions)

Between 1981 and 2009, lightning caused most of the wildfires in the Planning Area (118). The remaining fires were human caused (71) or, in a few cases, the cause of the fire was unknown (BLM 2004b).

Wildfires are unplanned ignitions and include fires that burn outside the parameters defined in land use plans and FMPs for that location under current and expected conditions, such as fires burning in areas where fire is specifically excluded; fires that exhibit burning characteristics (intensity, frequency, and seasonality) outside prescribed ranges, including fires expected to produce severe fire effects; and fires that occur during periods of high fire danger. Wildfires are typically caused by lightning, unauthorized and accidental human-caused action (e.g., arson, escaped camp fires, and equipment fires), or escaped prescribed fires.

However, a lightning-caused wildfire could still be used to meet fuels and ecosystem management objectives if:

- that type of fire is expected within the parameters of an approved plan;
- the fire is burning within the parameters for the area;
- the fire is not causing, or does not have the potential to cause, unacceptable effects; and,
- funding and resources to manage the fire are available.

A diversity of fuel types occur in the Planning Area, primarily because of its location in three physiographic areas (the Northern Shortgrass Prairie to the north and east, the Central Rocky Mountains on the west, and the Wyoming Basin south of and including the Planning Area). The Bighorn Basin is bounded by mountains on all sides; thus, there is a rain shadow effect in the basin bottom. This effect generally limits both wildfires and prescribed fires, except in river bottoms due to denser vegetation growth, by limiting the growth of vegetation to fuel wildland fires. Upslope from the basin bottom, fuel types and fire regimes are similar to those found in the Northern Shortgrass Prairie and Central Rocky Mountain physiographic areas, and nearly all wildfires and prescribed fires occur in these areas.

Table 3-24 lists the burned acres in the Planning Area from 1981 through 2009 for fires larger than 10 acres. During the same period, more than 4,000 acres in the Planning Area burned twice. It is noteworthy that these areas, which experienced no major fires since European settlement, have now burned twice since 1996; this is largely a result of an increase in vegetative ground cover, including cheatgrass, in these areas.

It is expected that the average number and size of wildfires will increase compared to the period from 1981 through 2009 in most of the Planning Area (BLM 2009a). It has been documented that cheatgrass is more widespread, especially in the Nowater FMU, than it was 25 years ago (BLM 2009a). In all likelihood, fire size and frequency will increase in areas affected by cheatgrass. Another area of concern is the mixed conifer forest with health issues caused by bark beetles and blister rust. The Northern Zone FMP provides a more in-depth history of wildfire occurrence in each FMU from 1981 through 2003, the years reviewed for that plan (BLM 2004b).

Table 3-24. Acres Burned and Ignitions for Fires Larger than 10 Acres in the Planning Area, 1981-2009

Year	Acres Burned	Total Number of Fires
1981	85	3
1982	513	5
1983	1,471	6
1984	134	2
1985	3,425	2
1986	0	0
1987	0	0
1988	3,800	7
1989	466	1
1990	213	2
1991	576	4
1992	780	3
1993	299	3
1994	2,494	14
1995	408	8
1996	110,016	25
1997	0	0
1998	401	3
1999	407	1
2000	18,266	9
2001	4,113	7
2002	1,396	8
2003	2,795	3
2004	482	8
2005	1,567	1
2006	5,003	9
2007	7,213	8
2008	558	7
2009	186	2
Total	**167,067**	**151**

Sources: BLM 2008d; Neighbors 2010.

Note: Fires have occurred in the Planning Area since 2009; however, the total burned acreage has not changed appreciably.

Changes in temperature and precipitation can lead to fluctuations in wildfire occurrence. A series of years with below normal temperatures and above normal precipitation usually leads to a decrease in the number and size of wildfires. However, seasonal and yearly variations in temperature and precipitation have different effects on different fuel types. For example, above normal spring precipitation can increase fire danger in areas dominated by cheatgrass and at the same time decrease fire danger in timber types. Higher temperatures could increase the size and intensity of fires in timber and woodland types. Below normal precipitation leading to sustained drought can actually decrease fire danger on some rangeland types due to lack of grass or fine-fuel production.

3.3.2 Prescribed Fires (Planned Ignitions)

Prescribed fire is used in a controlled manner for specific purposes, such as improving habitat and plant community health, and reducing hazardous fuels. The BLM manages the fire program in the Planning Area to protect public safety, life, and property, and uses both wildland fire and fuels treatments. Fire and fuels treatments are management tools to maintain or increase age-class diversity within plant communities (e.g., big sagebrush/grassland); rejuvenate fire-dependent plant communities (e.g., aspen and ponderosa pine); maintain or increase vegetation productivity, nutrient content, and palatability; and maintain or improve wildlife habitat, rangeland, and watershed condition. Fire is also a management tool for disposing of timber slash, preparing seedbeds, reducing hazardous fuels, controlling disease or insects, improving rangeland health, managing livestock grazing, thinning, or manipulating species in support of forest management objectives.

Though treated acres vary widely by year, fire-treated acres have generally declined in recent years in relation to peaks in the mid to late 1990s (prescribed fires) and early 2000s (mechanical treatments) (BLM 2009a).

Concerns about cheatgrass and greater sage-grouse habitat have decreased the feasibility of using prescribed fire in some areas. However, advances in mechanical and chemical vegetation treatment options are making those types of vegetation treatments more feasible.

3.3.3 Stabilization and Rehabilitation

The BLM implements long-term rehabilitation measures to repair land damaged by wildfire that is unlikely to recover naturally according to BLM Emergency Stabilization and Rehabilitation standards in the *BLM Burned Area Emergency Stabilization and Rehabilitation Handbook* (BLM 2007a). The BLM will implement rehabilitation measures for reasons such as preventing impacts to crucial fisheries habitat from erosion and sediment, preventing mass wasting onto private property, preventing the invasion of noxious weeds, and restoring a municipal watershed. Each FMU in the Northern Zone FMP has stated general objectives for stabilization and rehabilitation (BLM 2004b).

Emergency stabilization and burned-area rehabilitation are part of a holistic approach to addressing post wildland fire issues, which also includes repairing damage from suppression activities and long-term (more than 3 years) restoration. The incident management team begins the process by repairing damage from suppression activities. Emergency stabilization refers to Burned Area Emergency Response Team planned actions implemented within 1 year of wildfire containment to stabilize and prevent unacceptable degradation to natural and cultural resources; to minimize threats to life or property resulting from the effects of a fire; or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources. Burned-area rehabilitation refers to efforts undertaken within 3 years of wildfire containment to repair or improve fire-damaged lands unlikely to

recover naturally to management-approved conditions, or to repair or replace minor facilities damaged by fire. The process concludes with long-term restoration.

From 1993 through 2009, wildfires burned 164,717 acres in the Planning Area. Of the burned acres, treatments, as stabilization or rehabilitation, include 9,726 acres of seeding, 331 acres of sagebrush seedling plantings, 182 acres of mechanical manipulation, and 19,131 acres of chemical application to decrease noxious and invasive weed distribution and density (BLM 2009a; Neighbors 2010). At present, despite chemical and seeding treatment, 57,000 acres of wildfire-burned areas have invasive, exotic cheatgrass present, some to the extent that native vegetation is extirpated (BLM 2009a).

3.4 Biological Resources

This section describes biological resources in the Planning Area. It describes the current condition of vegetation, invasive species and pest management, fish, wildlife, special status species, and wild horses. Because biological resources are complex and the Planning Area is large, this section does not attempt to provide an encyclopedic description of all vegetation, fish, wildlife, and special status species in the Planning Area. This section and the remainder of this document use common names for species. Appendix K provides a complete list of scientific names for species referenced in this document.

Information in this section is based on plant communities and cover types identified through the Wyoming Gap Analysis performed as part of the National Gap Analysis program between 1991 and 2012. The Wyoming Gap Analysis is the basis for vegetation types that will be used throughout this analysis. The Wyoming Gap Analysis is a product of the University of Wyoming. This data set contains land cover for the entire state of Wyoming at a 1:100,000 scale. This data is useful for providing a broad overview of vegetation resources in the Planning Area, and is suitable for planning purposes at the RMP level of analysis. Each vegetation type consists of several ecological sites.

Habitat Fragmentation

As large contiguous blocks of habitat are bisected into smaller blocks, they become isolated from one another by dissimilar habitats and land uses. For example, a contiguous 100,000-acre block of sagebrush habitat is considered fragmented when a major highway is constructed within the habitat, thereby bisecting the block. If, in this example, the highway bisects the 100,000-acre block in half, the result of this fragmentation is two 50,000-acre blocks of sagebrush habitat bisected by a highway. As blocks of habitat are repeatedly bisected into smaller blocks, there can be adverse impacts, including isolation, to individual plant and animal species and communities occupying the habitat (Freddy et al. 1986; WGFD 2000). Impacts to biological resources from habitat fragmentation can occur on multiple scales.

Actions that result in habitat loss are exacerbated when fragmentation reduces the size and/or isolates remaining habitat patches below size thresholds necessary to support particular species. For example, some large birds in the Planning Area have large territorial requirements, while some smaller birds in the Planning Area favor habitat areas larger than their territory. These species are area-sensitive, and habitat loss and fragmentation that reduces or isolates their area thresholds likely affects their distribution and abundance in the Planning Area.

With the passage of the Homestead Acts in the 19th Century, early European American settlement of Wyoming introduced people, trails, livestock, agriculture, irrigation, and energy development to the Planning Area, all of which contributed to changes in land management and habitat fragmentation. Subsequent development of the region in the early to mid1900s included the railroad and a road network to connect population centers. In the late 1900s, ever-increasing rural development of homes and recreational properties further fragmented habitats in the Planning Area. Animal/vehicle collisions resulting from increased traffic in these areas and the risk to private property from wildfire are both consequences and reminders of existing habitat fragmentation conditions within the Planning Area.

Linear features, including roads, railroads, trails, irrigation systems, and ROWs, fragment Planning Area habitat. The network of state highways, county roads, local roads on private and public lands, and railroads dissect much of the Planning Area. The development of irrigation reservoirs and districts with their associated water-distribution systems also has contributed to habitat fragmentation in the Planning Area. Irrigation water also has supported the conversion of native plant communities to

hayfields, pasture, and cropland, thereby further fragmenting habitats. Fences can block migration routes for some wildlife species, such as pronghorn, consequently fragmenting their habitats. The conversion of large acreages of sagebrush to predominately grassland communities can fragment habitat for sagebrush-dependent species such as the greater sage-grouse.

Habitat fragmentation in the Planning Area is most prevalent along the linear features identified in the previous discussion; however, fragmentation also occurs at population centers, reservoirs, and other developments where humans live, recreate, and work. For example, the development of private parcels bordering BLM-administered lands has, in some cases, contributed to habitat fragmentation by the conversion to subdivisions or smaller ranchettes. This type of land conversion and habitat fragmentation primarily occurs near the wildland-urban interface. Buildings, roads, fences, and utility corridors associated with residential and commercial developments have all contributed to habitat fragmentation in the Planning Area.

In addition to the linear features and other types of development, conditions on BLM-administered land continue to be influenced by the management of resources and resource uses, including mineral resources; fire and fuels management; forests, woodlands, and forest products; and land resources. Refer to the appropriate sections in this document for additional details regarding existing conditions of these resources and resource uses.

In general, development and the associated construction and maintenance of roads, railroads, well pads, pipelines, and powerlines has fragmented habitat in the Planning Area. In addition, prescribed fires and wildfires have sometimes contributed to temporary habitat fragmentation. Intense and large area burns can temporarily isolate individual species and communities of plants and less mobile species of animals. A frequent fire return interval often associated with invasive species can effectively fragment habitat over the long run. Similar to fire, the habitat fragmenting effects of mechanical vegetative treatments have generally been temporary. Motorized-vehicle use also can contribute to habitat fragmentation through the transportation of invasive species seeds.

Biological Diversity

The Keystone Center defines four elements of biological diversity related to scale (Keystone Center 1991):

- Genetic diversity
- Species diversity
- Community or ecosystem diversity
- Landscape or regional diversity

Biological diversity is complex, and makes the measurement of existing conditions difficult. Species diversity is the most recognizable and easily understood element of biological diversity and for this RMP revision is defined as the variety of species found in the Planning Area. In other words, species diversity includes the numbers and distribution of all species. This includes common and plentiful species (e.g., mule deer, elk, and pronghorn) and other less common or rare species (e.g., burrowing owl, mountain plover, and bald eagle). Classifying rare species as sensitive, threatened, or endangered is one way of conserving biological diversity because these classifications heighten awareness and ensure consideration in management actions for conservation of rare species.

Spatial and temporal scales also are important considerations for conserving biological diversity. For example, nonmigratory populations of mammals are sometimes temporarily diminished following a harsh winter and limited food supply. In addition, migratory birds might return to breeding grounds

with diminished populations due to the stress factors associated with migration. In these cases, the lower number of individuals of wildlife populations does not necessarily equate to a reduction in biological diversity because the number of individuals ultimately (all else being equal) return to pre-winter levels. For purposes of this RMP and EIS, the BLM considers permanent reductions in the four elements of diversity listed above to be adverse impacts to biological diversity.

Counting the number and relative frequency of species occupying an area over time is one means of identifying reductions in species diversity; however, this approach can be overly simplistic and does not necessarily address the other three elements of diversity. At present, there is no single commonly accepted scientific protocol for measuring biological diversity. Nevertheless, it is generally accepted that "… reducing the number of biological entities in a system or making some of them less abundant reduces diversity" (Langner and Flather 1994).

Climatic factors (e.g., drought) and disease, fire regime, predation, competition, and population cycles all have contributed to the current natural variability in number and relative frequency of individuals, species, and communities of plants and animals in the Planning Area. Other factors include surface-disturbing activities (e.g., road and well pad construction), the physical and chemical environment (e.g., soil nutrients and water), adjacent area vegetation (e.g., croplands), historic vegetation, invasive species, herbivory (e.g., native ungulates and livestock), and the Planning Area's existing vegetation.

Existing conditions for biological diversity in the Planning Area are a function of physical factors (e.g., soils, geology, air, water, geography, and elevation), natural factors (e.g., climate, fire, drought, disease, and evolution), and human actions. In the context of these physical and natural factors, biological diversity evolved over time to produce the diversity present in the Planning Area prior to European-American settlement. Human actions during the subsequent 150 years changed the pattern, composition, structure, and function of plant and animal communities in the Planning Area. Management challenges for biological diversity include competing resources and resource uses. Management actions to address these challenges are incorporated in the alternatives for physical and biological resources and for fire and fuels management (see Chapter 2).

Vegetation Resources

Climate, geology, soils, elevations, precipitation patterns, and other physical and biological features associated with ecological setting influence the types and mixes of vegetation in the Planning Area. The types and mixes of vegetation in the area form the base for ecosystem processes and functions, such as water cycling, energy capture and cycling, and nutrient cycling, that produce the products and services local, regional, national, and international communities desire. Some of the desirable products and services vegetation supports include clean water, fish and wildlife habitat, livestock forage, recreation, carbon sequestration, and scenery.

As described in Section 3.1.3 *Soil*, the Planning Area lies within two MLRAs: the Northern Intermountain Desertic Basins – 32, (5- to 9-inch and 10- to 14-inch precipitation zones) and Central Rocky Mountains – 43B, (15- to 19-inch and 20+ inch precipitation zones) (USDA 2008). The following paragraphs described the land use, elevation and topography, climate, and water characteristics of these MLRAs.

Northern Intermountain Desertic Basins

Land use: More than half of this area is federal land; the remainder is a mixture of farms and ranches. Most of the land is used for livestock grazing. The range consists of desert shrubs and short grasses. About 5 percent of the area is irrigated. Most of the acreage is planted for alfalfa and other feed crops, but dry beans, malt barleys, sugar beets, and corn are also grown.

Elevation and topography: The elevation of the area ranges from 3,600 to 7,500 feet amsl. Piedmont plains and pediments slope from the mountains to the stream terraces of the Wind-Bighorn River system. In some places, the plains are eroded to the clay shale bedrock, and areas of badland.

Climate: Average annual precipitation in this area is 5 to 14 inches, with maximum precipitation in spring and fall. Average annual temperature is about 45°F and average freeze-free period is between 112 and 184 days per year.

Water: Low and erratic precipitation provides only a small amount of water to the area. The Wind-Bighorn River and its tributaries bring irrigation water into the area from the bordering mountains. Deep artesian wells provide water for irrigation on the eastern side of the Bighorn Basin.

Central Rocky Mountains

Land use: Almost all this area is federal land administered by the USFS, USDA, and the BLM. Forested areas are used as wildlife habitat, for recreation and watershed management, and for timber production. Meadows on the upper mountain slopes and crests above timberline provide summer grazing for livestock and big game animals. Less than 2 percent of the area is used for agriculture. Forage, grain, peas, and a few other crops are grown in some valleys.

Elevation and topography: The general elevation of the area ranges from 6,000 to 11,000 feet amsl. High mountains having steep slopes and sharp crests are cut by narrow valleys, most of which have steep gradients.

Climate: Average annual precipitation ranges from 15 to 20+ inches per year. Wide fluctuations may occur in yearly precipitation and result in more dry years than years with more than normal precipitation. Temperatures vary widely between summer and winter and between daily maximums and minimums. This is predominantly due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Average annual temperature is 39°F. The average freeze-free period is 42 to 100 days.

Water: Moderate precipitation in the area and many perennial streams and lakes provide water. Streams and reservoirs supply water to adjoining MLRAs for irrigation and other uses. Springs and shallow wells in the valleys provide water for domestic use and for livestock. Elsewhere, groundwater supplies are small and mostly untapped (USDA 2008).

Table 3-25 summarizes the Wyoming Gap Analysis project of plant communities in the Planning Area. Map 36 shows these plant communities.

Table 3-25. Wyoming Gap Analysis Project Plant Communities within the Planning Area

Vegetation and Land Cover Type	BLM Surface (acres)	BLM Mineral Estate (acres)	Total (acres)[1]
Badlands/Rock Outcrop	71,333	75,693	86,079
Forest/Woodlands	298,390	470,123	603,046
Nonnative Annual Bromes	37,509	46,878	50,670
Open Water	684	2,934	16,119
Riparian/Wetlands	23,957	36,916	139,037
Grasslands and Sagebrush Shrublands	1,429,537	2,059,100	2,651,628
Salt Desert Shrub/Salt Bottom Shrub	1,297,954	1,406,645	1,568,051
Settlements/Agriculture	28,450	104,923	530,213

Source: USGS 2008c

[1]Total surface acres in the Planning Area, regardless of ownership.

BLM Bureau of Land Management

3.4.1 Vegetation – Forests, Woodlands, and Forest Products

Table 3-25 identifies forest and woodland acreages in the Planning Area. Approximately 9 percent of BLM-administered surface in the Planning Area is dominated by a combination forest and woodlands, which are comprised of juniper, limber pine, mixed conifer with aspen, and ponderosa pine.

The BLM is responsible for implementing management to achieve desired goals for forests and woodlands. The existing plans for the Planning Area are designed to restore and maintain forest health, and forest management activities are directed in accordance with sound silvicultural and multiple-use practices.

Forests in the Planning Area provide important habitat for flora and fauna, including several threatened or endangered species, such as Canada lynx, and species currently considered to be candidate or BLM-sensitive species. Forests also play an important role in the ecological processes and functions of ecosystems, such as energy flow, water, and nutrient cycling.

Forests and woodland communities in the Planning Area include aspen woodlands, Douglas-fir, juniper woodlands, lodgepole pine, limber pine, spruce-fir, whitebark pine, and ponderosa pine. Forestland is land capable of producing 20 cubic feet of wood fiber from commercial species per acre per year. Commercial forestland is land that has not been withdrawn from forest product harvest by law or statute. Woodlands are areas that are not capable of producing 20 cubic feet of wood fiber from commercial species per acre per year and have at least ten percent canopy cover. Woodlands range

from small uniform stands to larger mixed stands of aspen, limber pine, and Rocky Mountain juniper. Woodlands are ecologically important, especially as wildlife habitat.

The western slope of the Big Horn Mountains in the WFO includes substantial mixed-age stands of ponderosa pine. These stands are generally confined to dryer, poorer quality sites. Douglas-fir, Engelmann spruce, sub-alpine fir, and lodgepole pine grow on north-facing slopes in both the Big Horn and Absaroka Mountains. Forestlands also are found on Rattlesnake Mountain, the West Slope of the Big Horn Mountains, Carter Mountain, and on isolated public land parcels adjacent to Shoshone National Forest in the South and North Fork Shoshone River, and Wood River watersheds. Most forestland management occurs on Rattlesnake Mountain.

Forest and woodland areas in the Planning Area provide seasonal habitat for numerous songbirds, small mammals, predators, and big game, with concentrations of elk in winter (refer to Section 3.4.6 *Fish and Wildlife Resources – Wildlife* for additional information).

Stand productivity and vigor can be measured by the stand site index at a determined age, usually 100 years. Stand vigor is a general term that refers to the current growth and health of the stand; live crown ratio is a measure of stand vigor. For example, most stands with an average live crown ratio of 50 percent or more have vigorous growth; most stands with an average of less than 20 percent live crown ratio have poor vigor. Stand productivity can be measured by comparison to site index. If the site index is 75 feet at 100 years, but the stand averages 65 feet at 100 years, a factor such as high basal area or mistletoe might be decreasing stand productivity. Stocking can be measured by basal area for mature stands, and stems per acre for regeneration.

Indicators for forest and woodland health include endemic levels of native insects, disease, pathogens, and the levels of nonnative insects and disease. Numerous parts of the Planning Area have been affected by disease, insects, and pathogens. Bark beetle activity in the region generally increased from 2002 to 2011, with numerous incidences occurring across the Planning Area, but has since declined (USFS 2012). Approximately 320,015 acres of BLM-administered land in the Planning Area have been surveyed, with spruce beetle and mountain pine beetle identified as the primary damage causing agents (USFS 2014). A Douglas-fir bark beetle epidemic has affected several thousand forest acres on mixed ownership land in the Shell Canyon area; the spruce beetle has affected several thousand forest acres on mixed ownership land in the Carter Mountain area (BLM 2009a). Smaller outbreaks and infestations also are affecting conifers in the Absaroka and Big Horn Fronts, and on Rattlesnake Mountain. Most areas identified by the USFS as being at-risk for future back beetle infestations are located on the forested fringes of the Planning Area (USFS 2012).

Dwarf mistletoe, a parasitic seed plant commonly occurring in lodgepole pine, ponderosa pine, and Douglas-fir stands, can be found in forestlands throughout the Planning Area. Mistletoe causes growth loss, reduces vigor in trees, leaving them more susceptible to attack by insects, and can be difficult to treat due to inaccessible terrain in some parts of the Planning Area.

Prolonged drought in the Planning Area has weakened conifers and made them more susceptible to bark beetles, blister rust, and other stresses (BLM 2009a). Winters have been mild, exacerbating many of these biological stressors. Many of the mature conifer trees on public land have died or are dying. Many of the aspen woodlands, willow, and cottonwood forests found at mid to high elevations are declining as succession from deciduous to conifer (typically juniper/ponderosa pine) dominance proceeds. Conifer species are replacing cottonwood-dominated and some willow-dominated riparian areas. The loss of deciduous forestland vegetation is affecting watershed, riparian, and wetland function and stability and diversity of habitat. This loss is human influenced due to fire suppression and the introduction of nonnative invasive species. Throughout the interior west, aspen are declining

(Bartos 2001; Bartos and Campbell 1998; Rogers 2001). Older aspen stands are more susceptible to cankers, conks, and decays in the bole. Conifer succession is occurring in most aspen stands, which will likely result in further reductions in aspen presence. Barring any major surface disturbance (e.g., fire and mechanical treatment), conifers will eventually replace most of the aspen stands (Wyoming State Division of Forestry 2001).

Forest Communities

Douglas-fir

Douglas-fir stands vary in size from seedling-sapling stage to mature stands. Mixed and mature Douglas-fir stands vary in size from 1 to 20 inches in diameter at breast height (dbh), and from 1 to 120 feet in height. Trees with a dbh greater than 20 inches are an exception. Stand age ranges from 1 to 250 years. The Douglas-fir forest type ranges from healthy stands to those declining in vigor and productivity. Current age-class distribution is unbalanced toward mature stands, and there is a lack of late-successional Douglas-fir forests (BLM 2009b). Any future wildland fire disturbance in mature overstocked stands poses the risk of returning the entire forest type to an early-succession stage.

Spruce-fir

Spruce-fir stands vary in size from seedling-sapling stage to mature stands. Mixed and mature sub-alpine fir–Douglas-fir–Engelmann spruce stands vary in size from 1 to 20 inches in dbh, and from 1 to 140 feet in height. Trees with a dbh of more than 25 inches are an exception. Stand age ranges from 1 to 250 years. The spruce-fir forest type ranges from healthy stands to those declining in vigor and productivity. Current age-class distribution is unbalanced toward mature stands; there is a lack of late-successional spruce-fir forests (BLM 2009a). Any future wildland fire disturbance in mature overstocked stands poses the risk of returning the entire forest type to an early-succession stage.

Lodgepole Pine

Mixed and mature lodgepole stands vary in size from 1 to 20 inches in dbh. Trees with a dbh of more than 20 inches are an exception. Stand age ranges from 1 to 150 years. The lodgepole pine forest type ranges from healthy stands to those declining in vigor and productivity. Current age-class distribution is unbalanced toward mature stands, and there is a lack of late-successional lodgepole pine forests (BLM 2009a). Any future wildland fire disturbance in mature overstocked stands poses the risk of returning the entire forest type to an early-succession stage.

Woodland Communities

Limber Pine

Although not considered a commercial species, limber pine is an important food and cover source for birds and other wildlife. Blister rust has affected limber pine in the Planning Area. Blister rust can infect all five needle pines, of which limber pine is an example, and can kill both mature and sapling trees. Limber pine has experienced mortality throughout the Planning Area, especially in Ten Sleep Canyon and Grass Creek (BLM 2009a). There do appear to be some mature and sapling stage trees in these areas that are not infected, which might suggest some natural genetic resistance to the disease. These are apparently resistant trees in large infection zones.

Aspen Woodland

Aspen occupies a variety of sites ranging from steep, rocky slopes to lower, moister areas. Aspen reproduces rapidly after fire, regenerating primarily by suckering from underground rootstock. Fire control has led to a substantial drop in aspen regeneration and overall clone health. There are pure and mixed stands in and adjacent to the Big Horn and Absaroka Mountains, where conditions satisfy ecologic requirements for aspen. Aspen stands typically exhibit a diversity of understory vegetation, are used by wildlife and livestock, can serve as a natural fire break, and often occur as part of an important riparian/wetland component in the forest system. Due to past and present management practices, natural disturbances such as wildfire have not occurred in their historically cyclic way. As a result, most aspen stands in the Planning Area are remnant stands encroached upon by conifers (BLM 2009a). Aspen stands are generally overtaken by mixed conifer stands with a fire return interval of more than 100 years in this area. Most aspen stands have decreased in size and vigor over the past decades.

Juniper Woodland

Juniper woodlands are typically comprised of Utah juniper stands, sometimes mixed with Rocky Mountain juniper and limber pine, on steep slopes and ridge tops. After long periods without fire, juniper species encroach into and dominate sagebrush communities. The fire return interval in juniper woodlands depends on the terrain. In shallow, rocky soils, the fire return interval is more than 200 years (BLM 2009a). Juniper woodlands have increased in size over the past decades (BLM 2009a). Juniper invasion into rangeland sites in deeper soils is partly the result of a departure from the historic fire return interval. There are past studies and historic photos of Enos and Grass Creeks that quantify encroachment. Most juniper woodlands have vigorous growth and few insect pests or diseases limiting their growth.

Forest Products

Forest resources harvested in the Planning Area consist of small stands of ponderosa pine, Douglas-fir, lodgepole pine, aspen, and aspen/conifer mix. Wood products harvested in the Planning Area include saw timber, firewood, Christmas trees, posts and poles, and biomass used for fuel, paper, compost, and insulation. Juniper and limber pine species not traditionally used in commercial wood product markets dominate woodland areas.

Existing plans set forest management levels for the Planning Area. The annual allowable harvest level was set at 1,000 thousand board feet (mbf) for the WFO and 500 mbf for the CYFO (BLM 1988a; BLM 1990). The annual allowable harvest level is not specified for the Grass Creek planning area (BLM 1998a).

Most mature stands are on terrain inaccessible or too steep for equipment, not economically feasible to harvest, or are in areas administratively excluded from active forest management, such as WSAs or isolated tracts of BLM-administered land that have no legal access.

There is one commercial sawmill company presently operating near the Planning Area in Livingston, Montana. The sawmill in Cody, Wyoming, closed in 2006. There also are small, family operated businesses that engage in small, local sales for specialized products when available. There is a local market for firewood and post and poles.

Although there is regional demand for timber products from BLM-administered lands in the Planning Area, at present, forest productions from BLM-administered lands play a small role in the wood product industry. Engineered-wood product and biomass industries are currently insignificant in the region due

to lack of regional industry infrastructure, and the high costs of transporting products to distant manufacturing plants.

The combined sawlog volume for the Planning Area offered from 1993 through 2002 averaged 518 mbf per year. The sawlog volume offered from 2003 through 2009 increased to an average of 1,040 mbf per year (BLM 2009a; Neighbors 2010). The increase in volume offered was the result of aggressively treating and preventing the spread of bark beetles.

From 2003 through 2009, approximately 1,150 acres of noncommercial mechanical forest treatments were completed via combinations of service contracts, stewardship contracts, and seasonal fire and fuels crew labor (BLM 2009a; Neighbors 2010). These forest management treatments included precommercial thinning, ponderosa pine ladder fuels reduction, and aspen treatments. Many aspen treatments involve cutting conifers within aspen clones, lopping and scattering conifer slash to create a fuel bed, and prescribed burning. This is followed by monitoring the suckering response and constructing a temporary solar-powered electric fence if excessive browsing exceeds new growth.

Management Challenges

Management challenges for forests, woodlands, and forest products in the Planning Area include the lack of a natural fire interval and fuels management (see Section 3.3 *Fire and Fuels Management*); management of fragmented and isolated stands; encroachment of woodland species into other vegetation types; lack of a current forest inventory; declining or over-mature stands; and management of native and nonnative disease, insects, pathogens, and invasive species. The Healthy Forest Restoration Act of 2003 (102[e]) directs BLM field offices to identify management to protect old-growth trees and their equivalent associated with hazardous fuel reduction projects.

There are several insect and disease concerns that could compromise future forest health. Despite regional declines in bark beetle infestations, infestations could continue in areas where susceptible host trees remain, requiring further management. Often, infestations occur on isolated tracts that are inaccessible and are not documented unless they show up on aerial flights or adjacent landowners inform the BLM of the problem.

The wood product industry has diversified, and forest products from public lands could be used to fill niches such as chips, shavings for animal bedding, house logs, biomass for rehabilitating disturbed areas, bulk for landscaping, compost, possibly alternative fuels such as pellets, and the traditional logs, firewood, posts and poles. These industries are not present in the local area, but could enter the area in the future. The mill in Saratoga could resume operations in the future. However, the cost required for road construction, traditionally appraised in the stumpage value of the sale, could result in administrative costs more than proceeds from the forest.

Climate change could be playing a role in recently observed changes in forest health. Forest communities are resilient in responding to normal variations in weather and climate to which they are adapted. However, increases in forest insect infestations and tree mortality throughout the Planning Area might be partly due to climatic factors such as warmer and drier summer conditions and warmer winters, acting in combination with other variables such as long-term fire suppression, particularly in areas where stands are overstocked.

3.4.2 Vegetation – Grassland and Shrubland Communities

Approximately 86 percent of BLM-administered surface in the Planning Area is characterized as sagebrush shrublands and salt desert shrub/salt bottom shrub. Sagebrush shrublands in the Planning Area contain grassland components that are generally not large or contiguous enough to form distinct grassland communities at the landscape level; however, these grassland components increase habitat heterogeneity within localized areas.

Livestock grazing, fire, fire suppression, and to a lesser extent surface-disturbing activities, have influenced many grassland/shrub vegetative types in the Planning Area. Invasive species have encroached into many plant communities. Refer to Section 3.6.7 *Livestock Grazing Management*, Section 3.3 *Fire and Fuels Management*, and Section 3.4.4 *Invasive Species and Pest Management* for additional information.

The broad scale Wyoming GAP analysis data are used in this analysis, as this data is appropriate for regional and large area planning efforts. Actual on-the-ground management is conducted using ecological site descriptions developed by the Natural Resources Conservation Service (NRCS), of which there are more than 60 for the Planning Area.

Grasslands

Grassland components in the Planning Area are generally located in valley bottoms, uppermost south-facing slopes, and scattered patches on windswept ridges. Grasslands are split into four plant communities – mixed grass prairie, Great Basin foothills grassland, meadow tundra, and subalpine meadow – as described below. As stated above, on-the-ground habitat conditions suggest that grasslands are not present as distinct vegetation communities in the Planning Area, but do occur as components within shrubland communities that influence overall habitat character.

Mixed Grass Prairie

Mixed grass prairie contains a mixture of short grass and tall grass prairie species. Vegetation can contain or be dominated by silver sagebrush; trees and shrubs cannot occupy more than 25 percent of the total cover. Mixed grass prairie provides habitat for sensitive species such as the mountain plover, Baird's sparrow, long-billed curlew, black-footed ferret, white-tailed prairie dog, and various bat species. Typical ecological sites found in the mixed grass prairie plant community include Overland Flow 10- to 14-inch precipitation zone and Overland Flow 15- to 19-inch precipitation zone.

Great Basin Foothills Grassland

Great Basin foothills grassland is a mesic grass-forb mixture found in the foothills of northwestern Wyoming. There may be an important lupine or arrowleaf balsamroot component found in this type of grassland. This community provides habitat for sensitive species such as the mountain plover, Baird's sparrow, long-billed curlew, black-footed ferret, white-tailed prairie dog, and various bat species. Typical ecological sites found in the Great Basin foothill grassland plant community include Loamy 15- to 19-inch precipitation zone and Shallow Loamy 15- to 19-inch precipitation zone.

Meadow Tundra

Meadow tundra includes graminoid- and forb-dominated vegetation that occurs above the upper tree line (approximately 9,800 feet amsl) in the alpine zone. Common species in this vegetation type include bent grasses, sheep fescue, icegrass, and alpine mosses. This community provides habitat for sensitive species such as the greater sage-grouse and various species of migratory birds. Typical ecological sites in

the meadow tundra plant community include Course Upland 15- to 19-inch precipitation zone and Very Shallow 20+-inch precipitation zone.

Subalpine Meadow

Subalpine meadow occurs between an elevation of about 4,700 feet and 9,800 feet amsl. It is characterized and dominated by graminoids and forbs. Typical ecological sites in the subalpine meadow tundra plant community include Wetland 10- to 14-inch precipitation zone and Wetland 15- to 19-inch precipitation zone. This community provides habitat for sensitive species such as the greater sage-grouse and various species of migratory birds.

Shrublands

Shrublands dominate the Planning Area, representing approximately 2,727,491 acres of BLM-administered land and 3,465,745 acres of federal mineral estate (86 percent of all BLM-administered surface land or 83 percent of all federal mineral estate). These communities are generally diverse in plant composition and provide important forage and cover for wildlife and livestock. Shrublands are split into seven plant communities – mesic upland shrub, xeric upland shrub, mountain big sagebrush, Wyoming big sagebrush, desert shrub, saltbush fans and flats, and greasewood fans and flats – as described below.

Mesic Upland Shrub

This vegetation type includes a variety of shrub communities that grow in relatively mesic sites (often snow catchments or in ravines). Most often, Rocky Mountain maple, bigtooth maples, snowberry, wax currant, or chokecherry are the dominant shrub species. Typical ecological sites in the mesic upland shrub plant community include Course Upland 20+-inch precipitation zone.

Xeric Upland Shrub

Xeric upland shrub is a shrub cover dominated by species of curlleaf mountain mahogany. This community provides habitat for many species, including various bat, raptor, and mammal species. Typical ecological sites in the xeric upland shrub plant community include Steep Loamy 20+-inch precipitation zone.

Mountain Big Sagebrush

This shrub type is dominated by mountain big sagebrush often found mixed with grasses. This community provides habitat for sensitive species, including the greater sage-grouse and other sagebrush obligate species. Typical ecological sites in the mountain big sagebrush plant community include Loamy 10- to 14-inch precipitation zone, Shallow Loamy 10- to 14-inch precipitation zone, Sandy 10- to 14-inch precipitation zone, Shallow Sandy 10- to 14-inch precipitation zone, Clayey 10- to 14-inch precipitation zone, and Shallow Clayey 10- to 14-inch precipitation zone.

Wyoming Big Sagebrush

This vegetation type is a shrub steppe type dominated by Wyoming big sagebrush. This vegetation type can vary from dense, homogeneous Wyoming big sagebrush to sparsely vegetated arid areas where Wyoming big sagebrush is the dominant shrub. This community provides habitat for sensitive species, including the Brewer's sparrow, loggerhead shrike, sage thrasher, ferruginous hawk, and the greater sage-grouse. Typical ecological sites in the Wyoming big sagebrush plant community include Loamy 5- to 9-inch precipitation zone, Shallow Loamy 5- to 9-inch precipitation zone, Sandy 5- to 9-inch

precipitation zone, Shallow Sandy 5- to 9-inch precipitation zone, Clayey 5- to 9-inch precipitation zone, and Gravelly 5- to 9-inch precipitation zone.

Desert Shrub

This vegetation type consists of a mixture of shrubs occurring in dry, saline habitats. Shrubs in this vegetation type are often dominated by shadscale saltbush, but can also be a mixture of Gardner's saltbush, black greasewood, and desert cushion plants. This community provides habitat for sensitive species, including the greater sage-grouse, Brewer's sparrow, loggerhead shrike, sage thrasher, and ferruginous hawk. Typical ecological sites in the desert shrub plant community include Saline Upland 5- to 9-inch precipitation zone, Saline Upland 10- to 14-inch precipitation zone, Shale 5- to 9-inch precipitation zone, and Shale 10- to 14-inch precipitation zone.

Saltbush Fans and Flats

This vegetation type consists of areas where Gardner's saltbush comprise more than 75 percent of the vegetative cover. These relatively pure saltbush stands are often sparsely vegetated, with bare soil constituting most of the land surface. This community provides habitat for sensitive species, including mountain plover, greater sage-grouse, long-billed curlew, ferruginous hawk, loggerhead shrike, Brewer's sparrow, and burrowing owl. Typical ecological sites in the saltbush fans and flats community include Saline Upland 5- to 9-inch precipitation zone and Saline Upland 10- to 14-inch precipitation zone.

Greasewood Fans and Flats

This vegetation type consists of areas where greasewood comprises more than 75 percent of the total shrub cover and shrubs comprise more than 25 percent of the total vegetative cover. This community provides habitat for sensitive species, including Brewer's sparrow, loggerhead shrike, sage thrasher, and ferruginous hawk. Typical ecological sites in the greasewood fans and flats plant community include Saline Lowland 5- to 9-inch precipitation zone and Saline Lowland 10- to 14-inch precipitation zone.

Resource Condition

Common indicators of rangeland health include organic ground cover (live and dead), plant species composition and diversity, bare ground, litter, and the presence and density of noxious weed species. These indicators are associated with Standards 1, 3, and 4 of the *Wyoming Standards for Healthy Rangelands* (Appendix N).

The presence of noxious weeds and other invasive species might indicate a disturbance to the native plant community. Denser populations of invasive species are generally associated with areas that have been affected by surface-disturbing activities, wildfire, changes in water regime, or other major events. The presence and accelerating rate of spread of undesirable plants is a threat that could reduce the ability of vegetation to continue providing desired levels of products and services.

Indicators of rangeland health described in *Technical Reference 1734-6, Interpreting Indicators of Rangeland Health* include soil surface resistance to erosion and soil loss or degradation (including soil compaction); plant community composition and distribution in relation to infiltration and runoff; functional/structural groups; ratio of plant mortality/decadence to young or mature individuals in the community; amount of litter; annual production; invasive plants; and reproductive capability of perennial plants (BLM 2005c).

Fire suppression, historic livestock grazing practices, and road development have disrupted fire return intervals in the sagebrush/grassland plant communities. As a result, there has been an increase in juniper density with a corresponding decrease in perennial bunch grasses and forbs, and in some areas a

loss of age class and structural diversity. In recent years, invasive species, particularly nonnative bromes, have increased greatly in the Planning Area. Many areas in the sagebrush/grassland community that have experienced multiple wildfires have been converted to cheatgrass monocultures.

Since the completion of the Cody, Grass Creek, and Washakie RMPs, approximately 423 projects and 82,314 acres of vegetation treatments have been initiated in the Planning Area (see Section 3.6.7 *Livestock Grazing Management*) to address changes in vegetative condition (BLM 2009a). Vegetation treatments are currently implemented under the principles and methodology in Instruction Memorandum (IM) 2008-030 (BLM 2007c), which gives guidance to BLM field offices on implementing the Record of Decision (ROD) for the National Vegetation Treatments Final Programmatic EIS (BLM 2007b) and Programmatic Environmental Report.

Grassland and shrubland vegetative communities are subject to the influences of wildfire and prescribed fire. See Section 3.3 *Fire and Fuels Management* for more discussion on FRCC as it relates to vegetation.

In the Planning Area, the BLM is implementing the Wyoming Reclamation Policy (BLM 2012b), which identifies ten reclamation requirements, of which restoring a disturbed site to sound ecological health and controlling invasive species are priorities.

Management Challenges

Invasive plant species can dramatically affect native plant communities and disrupt the functions of native ecosystems. Nonnative bromes continue to expand their range throughout the Planning Area. If they are allowed to proliferate, invasive plant species and noxious weeds have the potential to negate any existing or future improvement in vegetation resources. If future circumstances result in a net loss of productive vegetation, the present supply of vegetation and kinds of goods and services vegetation provides society will not be sustainable (refer to Section 3.4.4 *Invasive Species and Pest Management*).

The loss of soil through wind and water erosion can remove valuable nutrients and organic matter from the ecosystem. When the rate of loss exceeds the rate of soil formation there is a net loss of soil. There is a threshold when the amount of soil loss starts to affect plant communities. This threshold varies with soil type. Once a threshold has been crossed, the plant community that could be supported on a site could change. See Section 3.1.3 *Soil* for more information.

3.4.3 Vegetation – Riparian/Wetland Resources

Riparian ecosystems occupy the transition between upland and water ecosystems and include flood plains, stream banks, lake shores, and wetlands. They are some of the most productive resources found on public or private lands. They comprise less than 2 percent of the western landscape, yet are prized by communities for their recreational, fish and wildlife, water supply, cultural, and historic values, and for their economic values, which stem from use in livestock production and forest management (Cooperative Riparian Restoration Montana 2006).

Riparian/wetland sites in the Planning Area are described as lentic or lotic. Lentic refers to standing water such as in lakes, springs, and bogs. Lotic refers to flowing water such as rivers and streams.

Documented riparian/wetland areas in the Planning Area range from cottonwood galleries along major rivers, to wet meadows and seeps and narrow ribbons of willow/water birch, sedge, rush, and/or grass that run along small streams. Some of the surface water features that support riparian/wetland areas can be dry for long periods and experience wide variations in the frequency and magnitude of flood events. Native cottonwood galleries along riparian corridors provide habitat for migratory birds and

owls and for white-tailed and mule deer. Many terrestrial wildlife species use more than one riparian habitat type, although some use only one or two.

Riparian/wetland areas in the Planning Area perform important ecological processes and functions such as water, energy, and nutrient cycling. Healthy riparian/wetland areas support stable banks and shorelines; flood plain maintenance; clean and stable water supplies; aquifer recharge; flood-energy dissipation and moderation; fish and wildlife habitat; livestock and wildlife forage; opportunities for recreation; carbon sequestration; and scenic values.

Riparian/Wetland Communities

Riparian/wetland communities in the Planning Area include forest-dominated riparian areas, shrub-dominated riparian areas, and graminoid/forb-dominated wetlands, as described below.

Forest-dominated Riparian Areas

Forest-dominated riparian areas are dominated by tree species. In the Planning Area, these are usually cottonwood species, but also can be aspen, boxelder, a variety of conifer species, and Russian olive (an introduced nonnative species considered to be a noxious weed). Trees must occupy more than 25 percent of the vegetative cover within a riparian zone to be classified as forest-dominated riparian. Diagnostic plant species include eastern cottonwood, narrowleaf cottonwood, quaking aspen, boxelder, and conifer species.

Shrub-dominated Riparian Areas

These riparian areas are characterized by areas where shrubs comprise more than 25 percent of the vegetative cover and where trees occupy less than 25 percent of the total vegetative cover. Shrubs often include willow species, sagebrush species, and greasewood. Other shrubs, including hawthorn, wild plum, birch, alder, shrubby cinquefoil, and Tamarisk (an introduced nonnative species considered to be a noxious weed) might also be present. Alpine riparian zones are generally dominated by willows or other shrubs.

Graminoid-/Forb-dominated Wetland Areas

These areas are characterized by grasses or forbs; trees or shrubs cannot occupy more than 25 percent of the total vegetative cover. This wetland type includes communities such as wet and moist meadow grasslands, marsh and swamp wetlands, cattail, bulrush- and sedge-dominated wetlands, and inland saltgrass/alkali sacaton-dominated wetlands, including both low- and high-salinity wetlands. Low-salinity wetlands are characterized by cattails, Baltic rush, sedges and rushes, and prairie cordgrass. High-salinity wetlands are characterized by alkali sacaton, alkali cordgrass, saltgrass, sea blight, and riparian wheatgrass.

Riparian/Wetland Inventory

Riparian/wetland areas in the Planning Area are inventoried to estimate their functional status using PFC assessment methodologies developed by the BLM, USFS, NRCS, and others (BLM 1998b; BLM 1999). These methodologies employ an interdisciplinary team that inspects and analyzes the attributes and processes associated with a riparian/wetland area's hydrology, vegetation, and soils to estimate its relative health. In the Planning Area, inventoried riparian/wetland areas include approximately 1,617 acres of lentic and 1,205 miles of lotic riparian/wetlands (BLM 2009j). Table 3-26 provides the results of the riparian/wetland PFC inventories for the Planning Area.

Table 3-26. Wetland Inventory Data

Functional Status	Wetlands (lentic features) (acres)	Riparian (lotic features) (miles)
Proper Functioning Condition	136	417
Functioning-at-Risk Upward Trend	155	225
Functioning-at-Risk Downward Trend	355	213
Functioning-at-Risk No apparent Trend	963	182
Non-Functioning	8	99
Unknown	0	69
Total	**1,617**	**1,205**

Sources: USFWS 2008; BLM 2009j.

PFC assessments seem to indicate that many riparian/wetland areas in the Planning Area have improved over the last 15 to 20 years in response to implemented changes in grazing and other management actions. During this time, livestock grazing schedules have been modified to reduce or eliminate growing and/or hot-season use and increase dormant and cool-season use and/or rest periods to provide plants with recovery time.

Vegetation in riparian areas is the first of the functional components to respond to changes in management. The establishment of species, such as sedges and rushes that capture sediment and stabilize stream banks, indicates an upward trend in functional status. The physical attributes of the streams (sinuosity and width to depth ratio, erosion and deposition, lateral and vertical stability) respond slower than vegetation, because their development and stability depends on healthy, vigorous riparian/wetland vegetation.

There are a number of indicators used to evaluate the condition of riparian/wetland areas, as described below.

Obligate Plant Species and Facultative Wetland Plant Species – Obligate plant species (plants that occur more than 99 percent of the time in wetlands) and Facultative Wetland plant species (plants that occur 67 to 99 percent of the time in wetlands) are used as riparian indicator plants. Some of the more common indicator plants in the Planning Area include, but are not limited to, Baltic rush, Nebraska sedge, common threesquare, willows, cottonwood, cattails, spikerush, and alkali bulrush.

Proper Functioning Condition – PFC is a riparian health assessment and communication tool that focuses on the attributes and processes associated with a riparian/wetland area's hydrology, vegetation, and soils instead of its values or uses. Indicators considered when assessing the functional state of lotic riparian/wetland areas include:

- Hydrologic Indicators
  - Flood plain above bankfull is inundated in "relatively frequent" events.
  - Where beaver dams are present, they are active and stable.
  - Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (landform, geology, and bioclimate region).
  - Riparian/wetland area is widening or has achieved potential extent.
  - Upland watershed is not contributing to riparian/wetland degradation.

- Vegetation Indicators
  - There is diverse age-class distribution of riparian/wetland vegetation (recruitment for maintenance/recovery).
  - There is a diverse composition of riparian/wetland vegetation (for maintenance/recovery).
  - Plant species present indicate maintenance of riparian/wetland soil moisture characteristics.
  - Stream bank vegetation is comprised of plants or plant communities with root masses capable of withstanding high streamflow events.
  - Riparian/wetland plants exhibit high vigor.
  - Adequate riparian/wetland vegetation is present to protect banks and dissipate energy during high flows.
  - Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery).
  - Erosion/Deposition (Soil) Indicators.
  - Flood plain and channel characteristics (rocks, overflow channels, coarse and/or large woody material) are adequate to dissipate energy.
  - Point bars are revegetating with riparian/wetland vegetation.
  - Lateral stream movement is associated with natural sinuosity.
  - The system is vertically stable.
  - The stream is in balance, with the water and sediment being supplied by the watershed (no excessive erosion or deposition).

Indicators considered when assessing lentic riparian/wetland areas are similar to those used for flowing riparian/wetland areas, but they have been modified to address wave, wind, and/or overland flow energies instead of the high water flow energies experienced by flowing water systems.

Invasive Species – Invasive plant species displace native riparian/wetland plant species and can disrupt or degrade riparian/wetland areas to the point that they no longer function properly or provide habitat for riparian-dependent native flora and fauna. In the Planning Area, riparian invasive species include nonnative bromes, Russian olive, Tamarisk, and Russian knapweed.

Management Challenges

Although 2009 was an above-average precipitation year, precipitation has been below normal in 6 of the 9 years since 2000. Small streams and portions of larger streams have experienced minimal or no flows. The reduced amount of available water has resulted in lower flows in unregulated streams, and lower outflows from reservoirs in and around the Bighorn Basin. Reduced amounts of water due to drought have had an adverse impact on riparian/wetland habitat improvement. In general, the most common adverse impacts include a slowing in the rate of improvement in those areas where appropriate management has been implemented and an increase in the rate of decline where appropriate management has not yet been implemented. This has had a greater impact on fisheries than on riparian conditions. Thus, riparian conditions continue to improve while some fisheries appear to be declining (BLM 2009a).

Sixty-seven of the 252 livestock grazing allotments that have been evaluated for conformance with the *Wyoming Standards for Healthy Rangelands* failed riparian/wetland area standard #2 (Appendix N). Standard #2 states that "riparian and wetland vegetation has structural, age and species diversity characteristic of the stage of channel succession and is resilient and capable of recovering from natural

and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide for groundwater recharge." Allotments can fail standard #2 for many reasons. If failure to meet the standard is attributable to existing livestock grazing management or utilization level, then the BLM must make management changes to correct the issue. If failure to meet the standard is attributable to other factors (e.g., encroaching juniper, recent wildfire, discontinued historic grazing patterns, or the presence of noxious weeds), then the BLM is not required to make changes to livestock grazing.

Proactive management practices such as prescribed fire, brush mowing/beating, successful reclamation of surface disturbance, applying BMPs and standard surface-disturbing guidelines, travel management, and implementing riparian/wetland compatible livestock grazing management can have a beneficial influence on associated riparian/wetland areas and their watersheds.

3.4.4 Invasive Species and Pest Management

Invasive and noxious plant species are common impediments to management objectives in the Planning Area. Invasive species are, for the most part, nonnative species whose introduction into an environment where they did not evolve causes, or is likely to cause, economic or ecological harm. These species make efficient use of local natural resources difficult and often interfere with achieving management objectives for the site. Noxious species are species designated by federal, state (State of Wyoming Noxious Weed List), or county government (Weed Control Districts) as injurious to public health (Tables 3-27 and 3-28). Although noxious weeds are almost always nonnative, this RMP and EIS makes a distinction because noxious weeds can include undesirable native plants. A pest can be any biological life form that poses a threat to human or ecological health and welfare.

Table 3-27. Wyoming Weed and Pest Control Act Designated List

Common Name	Common Name	Common Name	Common Name
Canada thistle	Field bindweed	Perennial sowthistle	Skeletonleaf bursage
Common burdock	Hoary cress (whitetop)	Plumeless thistle	Spotted knapweed
Common St. Johnswort	Houndstongue	Purple loosestrife	Tamarisk saltcedar
Common tansy	Leafy spurge	Quackgrass	Yellow toadflax
Diffuse knapweed	Musk thistle	Russian knapweed	-
Dalmatian toadflax	Oxeye daisy	Russian olive	-
Dyers woad	Perennial pepperweed (giant whitetop)	Scotch thistle	-

Source: Wyoming Weed and Pest Council 2012a

Table 3-28. Declared List of Weeds and Pests by Planning Area County, 2008

Common Name	Common Name	Common Name	Common Name
Big Horn County			
Baby's breath	Italian thistle	Redstem filaree	Tansy ragwort
Black henbane	Japanese knotweed	Rush skeletonweed	Teasel
Common crupina	Meadow knapweed	Scentless chamomile	Venice mallow
Distaff thistle	Medusahead	Scotch broom	Viper's bugloss
Field dodder	Orange hawkweed	Squarrose knapweed	Yellow hawkweed
Goatsrue	Poison hemlock	Swainsonpea	Yellow starthistle
Gorse	Puncturevine	Sulfur cinquefoil	-
Iberian starthistle	Purple starthistle	Syrian beancaper	-
Hot Springs County			
Puncturevine	Wild oats	-	-
Park County			
Black henbane	Chicory	Flixweed	Showy milkweed
Blue mustard	Common mullein	Lanceleaf sage	Wild four o'clock
Bull thistle	Dames rocket	Redstem filaree	-
Washakie County			
Absinth wormwood	Meadow knapweed	Scentless chamomile	Teasel
Black henbane	Medusahead	Scotch broom	Venice mallow
Common crupina	Orange hawkweed	Squarrose knapweed	Wild licorice
Common mullein	Puncturevine	Sulfur cinquefoil	Yellow hawkweed
Distaff thistle	Purple starthistle	Swainsonpea	Yellow starthistle
Iberian starthistle	Rush skeletonweed	Tansy ragwort	-
Italian thistle	Sandbur	Tall mountain larkspur	-

Source: Wyoming Weed and Pest Council 2012b

The CYFO and WFO control invasive species on BLM-administered lands through cooperative agreements with the Big Horn County, Hot Springs County, Park County, and Washakie County Weed and Pest Control Districts. In addition to the county weed and pest control districts, both field offices work in cooperation with the Wyoming Game and Fish Department (WGFD), State Lands Division, State Parks, local NRCS offices, and private landowners. Invasive species are an increasing problem in the Planning Area and are affecting water and other resources.

In 2004, there was an invasive species inventory of 40 percent of the Bighorn Basin. Based on the results of this inventory, it was estimated that there were approximately 60,000 acres infested with invasive species (BLM 2008a). There are an ever-expanding number of acres infested, especially with Russian knapweed, leafy spurge, perennial pepperweed, Russian olive, and Tamarisk along the Bighorn River and its tributaries. Additional new weed species such as cheatgrass are beginning to appear in other locations in the Bighorn Basin.

There has been an increase in weed occurrences in developed oil and gas fields, along roads and pipelines, and on public lands with increasing recreational use. The shrub component of the plant community often takes decades or more to establish, and even longer to reestablish after disturbance. Many reclamation efforts performed 20 or more years ago still do not have shrubs established and have not achieved reestablishment of wildlife habitat comparable to that before disturbances.

Two invasive species of special concern are Russian olive and Tamarisk, which deplete water and are replacing cottonwood and willow. Work has begun on controlling the two species; however, observations indicate that these invasive species are spreading within the boundaries of the Planning Area (BLM 2009a).

In 2009, the WFO estimated that approximately 57,000 acres in the field office were infested with nonnative annual bromes (primarily cheatgrass and Japanese brome) (BLM 2009a). These bromes appear to be invading grassland, sagebrush grassland, mixed grass prairie, desert shrub, and mountain shrub community types. Inventory information is available for only about 10 percent of the Bighorn Basin, so actual infested acreage might vary.

Both the CYFO and WFO are targeting plants that are designated on the State of Wyoming Noxious Weed List or declared on the county noxious weed lists (refer to Tables 3-27 and 3-28). The primary species targeted on public lands include cheatgrass, Russian knapweed, spotted knapweed, diffuse knapweed, leafy spurge, Dalmatian toadflax, Canada thistle, scotch thistle, musk thistle, houndstongue, hoary cress (whitetop), field bindweed, puncture vine, Russian olive, and Tamarisk. These plants are typically found in sagebrush/grassland, desert shrub, and riparian/wetland community types. The present goal is to contain and reduce densities of invasive species populations. Table 3-29 lists the number of acres of each species the BLM treats in the Planning Area.

The CYFO and WFO treat approximately 2,500 acres of invasive-species-infested areas annually. The BLM endeavors to acquire more inventory and monitoring data, but there still is not enough available data to determine the actual trends in invasive species establishment. Based on observations and reports from Weed and Pest Control Districts, treatment efforts appear to be keeping invasive plant species populations from continued rapid spread, but are not necessarily reducing existing populations.

Cooperative Management in Invasive Species and Pest Control

The BLM manages noxious and invasive weeds in the Planning Area pursuant to BLM goals described in *Partners Against Weeds, An Action Plan for the Bureau of Land Management* (BLM 1996). These goals include prevention and detection; education and awareness; inventory; planning; integrated weed management; coordination; and monitoring, evaluation, research and technology transfer.

Table 3-29. Treatment of Invasive Plant Species in the Planning Area

Species Treated	Acres of Treatment per year	Species Treated	Acres of Treatment per year
Absinth wormwood	0.20	Musk thistle	37
Black henbane	1.20	Oxeye daisy	1.80
Bull thistle	3.30	Perennial pepperweed	16.50
Canada thistle	630	Perennial sowthistle	1.80
Cheatgrass	1,000	Puncturevine	1
Common burdock	2.50	Purple loosestrife	3.80
Common mullein	1.18	Russian olive	76
Common tansy	0.62	Russian knapweed	535
Dalmatian toadflax	32.50	Scotch thistle	0.34
Diffuse knapweed	0.20	Spotted knapweed	25
Field bindweed	365	Sulphur cinquefoil	0.10
Houndstongue	27.50	Swainsonpea	3
Japanese knotweed	0.01	Tamarisk	50
Leafy spurge	10	Whitetop	300

Source: BLM 2007b

The BLM adheres to the concept of integrated pest management, or the use of a wide range of available tools and techniques to meet management objectives in site-specific situations. Vegetation treatments, including those for noxious weeds on public lands, are currently implemented under the principles and methodology outlined in IM No. 2008-030 (BLM 2007c), and instruction for implementing the ROD for the National Vegetation Treatments Final Programmatic EIS (BLM 2007b). In addition, IM WY-2012-032, Wyoming BLM Reclamation Policy (BLM 2012b), identifies 10 reclamation requirements, of which managing invasive plants is one, which must be addressed when developing reclamation proposals for all surface-disturbing activities.

The BLM manages invasive species in the Planning Area in nine weed management areas and two Coordinated Resource Management areas for weeds. Most of the species the BLM targets for management have not invaded BLM-administered lands in the Planning Area; however, invasive species that have invaded BLM-administered lands are expanding their range (BLM 2009a). The goal is to contain and reduce densities of known invasive species populations, though only limited portions of the Planning Area have been inventoried for invasive species.

Pest Management

In February 2003, the USDA Animal and Plant Health Inspection Service (APHIS) and the BLM signed an MOU detailing cooperative efforts to suppress grasshoppers and Mormon crickets on BLM-administered lands (APHIS AND BLM 2003). This MOU clarifies that APHIS will prepare and issue to the public site-specific environmental documents that evaluate potential impacts associated with proposed measures to suppress economically damaging grasshopper and Mormon cricket populations. The BLM must also

approve a Pesticide Use Proposal (Form FS-2100-2) for APHIS to treat infestations. APHIS would begin treatments after environmental review and BLM approval of the Pesticide Use Proposal.

Wyoming-designated pests under Wyoming Statute 11-5-102(a) (xii) include grasshoppers, Mormon crickets, prairie dogs, ground squirrels, mountain bark beetle, and beet leafhopper. The preferred method for treating grasshoppers and Mormon crickets is by Reduced Agent Area Treatments (RAAT). RAATs are a grasshopper suppression method in which the rate of insecticide is reduced from conventional levels, and treated swaths are alternated with swaths that are not directly treated. The RAAT strategy relies on the effects of an insecticide to suppress grasshoppers within treated areas while conserving grasshopper predators and parasites in areas not directly treated.

Fish and Wildlife Resources

The BLM is responsible for managing fisheries and wildlife habitats, and state and federal wildlife management agencies oversee BLM management activities. Fisheries habitat includes perennial and intermittent streams, lakes, and reservoirs that support fish through at least a portion of the year. See Section 3.1.4 *Water* for a description of drainages in the Planning Area that provide fisheries habitat, including the Bighorn River, Wind River, Clarks Fork of the Yellowstone River, and their associated tributaries, including the Nowood, Greybull and Shoshone rivers systems (Map 3). Aquatic habitat varies by vegetation type, water quality and quantity, land use, and landscape setting within these drainages and their tributaries. The U.S. Fish and Wildlife Service (USFWS) provides regulatory oversight for all species listed, proposed for listing, or candidates for listing under the ESA (see the *Special Status Species* section in this chapter). The USFWS also administers the Migratory Bird Treaty Act, which protects migratory bird species whether they are hunted (as with waterfowl) or not (as with songbirds).

3.4.5 Fish and Wildlife Resources – Fish

The BLM manages fish habitats according to laws, regulations, BLM policies, and principles of fisheries management within the BLM multiple-use mandate. State and federal game management agencies oversee aquatic species, to the extent they are directly managed. The WGFD is responsible for regulating the sport and commercial take of all fish in the Planning Area. The USFWS has oversight over federally threatened or endangered species. There are no federally listed fish species in the Bighorn Basin (refer to Section 3.4.8 *Special Status Species – Fish* for more detailed information). However, the BLM directly manages habitat that supports game and nongame fish species where there is such habitat on BLM-administered lands, and BLM management indirectly affects all aquatic species upstream and downstream of BLM-administered lands. The BLM manages wildlife habitat in the Planning Area according to a number of habitat management plans (HMP) (refer to Section 3.4.6 *Fish and Wildlife Resources – Wildlife*). Although there are no specific HMPs for fish species, actions in existing HMPs that improve riparian habitat often improve habitat for fish species.

Within the Planning Area, BLM-administered lands contain fisheries resources that include cold-water streams draining the Big Horn Mountains to the east and the Absaroka Range to the west; the tail-water trout fishery at Thermopolis; the cool-water fishery of the lower Bighorn, Shoshone, Greybull, and Nowood rivers; and the warm-water fisheries of several small lakes or ponds. There are no natural lakes or ponds in the Bighorn Basin that support fisheries.

Fisheries in the Bighorn Basin occur in the Bighorn River and Clarks Fork of the Yellowstone watersheds and include several major perennial tributaries – Owl Creek, Cottonwood Creek, Grass Creek, Gooseberry Creek, Greybull River, Wood River, Shoshone River, Kirby Creek, Nowater Creek, Nowood River, Shell Creek, Porcupine Creek, and Dry Creek. Most fish populations occur in the larger rivers and their tributaries, although there are several WGFD-stocked reservoirs and ponds.

Fish are typically classified as game or nongame; cold, cool, or warm water, and as native or nonnative. Species are adapted to a variety of stream habitats, from cold, rapid waters in higher elevations to slow, turbid waters of the high desert. According to the WGFD database, of the approximately 1,170 miles of streams on BLM-administered public lands in the Planning Area, approximately 395 miles support fisheries. The rest of the streams have no fish present or populations too low to adequately sample.

Fishing is an important component to the Bighorn Basin culture. The WGFD manages most cold-water streams for brook, brown, cutthroat, and rainbow trout. In addition, management on some streams is focused on mountain whitefish, and Yellowstone cutthroat trout. Many lower-elevation waters in the

Planning Area are managed for cool- and warm-water native game fish, such as sauger and channel catfish, along with the native nongame species, such as numerous minnow and sucker species that provide forage for sport-fish species. There are four nongame species on WGFD list of Species of Greatest Conservation Need in the Planning Area – sturgeon chub, mountain sucker, and plains and western silvery minnow. Habitat for these species is being diminished by anthropogenic factors such as alteration to stream channel morphology, and changes due to dam construction and increased sedimentation in the Shoshone and lower Bighorn River systems. There are approximately 40 fish species in the Planning Area (Table 3-30).

Table 3-30. Fish Species in the Planning Area

Common Name	Native to Wyoming	Native to the Planning Area	Game/ Nongame	Habitat
Black bullhead	Yes	No	Game	Warm/Lentic
Black crappie	No	No	Game	Warm/Lentic
Bonneville cutthroat trout	Yes	No	Game	Cold/Lentic and Lotic
Brook stickleback	No	No	Nongame	Cool-Warm
Brook trout	No	No	Game	Cold/Lentic and Lotic
Brown trout	No	No	Game	Cold/Lentic and Lotic
Burbot	Yes	Bighorn Drainage	Game	Cool-Warm/Lentic and Lotic
Carp	No	No	Nongame	Cool-Warm
Channel catfish	Yes	Bighorn Drainage	Game	Cool-Warm/Lentic and Lotic
Emerald shiner	No	No	Nongame	Cool-Warm
Fathead minnow	Yes	Bighorn Drainage	Nongame	Cool-Warm
Flathead chub	Yes	Bighorn Drainage	Nongame	Cool-Warm
Golden shiner	No	No	Nongame	Cool-Warm
Grayling	Yes	No	Game	Cold/Lentic and Lotic
Green sunfish	No	No	Game	Warm/Lentic
Lake chub	Yes	Bighorn Drainage	Nongame	Cool-Warm
Lake trout	No	No	Game	Cold/Lentic and Lotic
Largemouth bass	No	No	Game	Warm/Mostly Lentic
Longnose dace	Yes	Bighorn and Clarksfork Drainages	Nongame	Cool-Warm
Longnose sucker	Yes	Bighorn and Clarksfork Drainages	Nongame	Cool-Warm
Mountain sucker	Yes	Bighorn and Clarksfork Drainages	Nongame	Cool-Warm
Mountain whitefish	Yes	Bighorn and Clarksfork Drainages	Game	Cold/Lotic
Plains killifish	Yes	No	Nongame	Cool-Warm
Plains minnow	Yes	Bighorn Drainage	Nongame	Cool-Warm
Rainbow trout	No	No	Game	Cold/Lentic and Lotic
River carpsucker	Yes	Bighorn Drainage	Nongame	Cool-Warm
Sand shiner	Yes	Bighorn Drainage	Nongame	Cool-Warm
Sauger	Yes	Bighorn Drainage	Game	Cool-Warm/Lentic and Lotic

Table 3-30. Fish Species in the Planning Area (Continued)

Common Name	Native to Wyoming	Native to the Planning Area	Game/ Nongame	Habitat
Shorthead redhorse	Yes	Bighorn Drainage	Nongame	Cool-Warm
Shovelnose sturgeon	Yes	Bighorn Drainage	Game	Cool-Warm/Lentic and Lotic
Smallmouth bass	No	No	Game	Cool-Warm/Lotic and Lentic
Snake river cutthroat trout	Yes	No	Game	Cold/Lentic and Lotic
Stonecat	Yes	Bighorn Drainage	Game	Cool-Warm/Lentic and Lotic
Sturgeon chub	Yes	Bighorn Drainage	Nongame	Cool-Warm
Walleye	No	No	Game	Cool-Warm/Lentic and Lotic
Western silvery minnow	Yes	Bighorn Drainage	Nongame	Cool-Warm
White sucker	Yes	Bighorn Drainage	Nongame	Cool-Warm
Yellow perch	No	No	Game	Cool-Warm/Mostly Lentic
Yellowstone cutthroat trout	Yes	Bighorn and Clarksfork Drainages	Game	Cold/Lentic and Lotic

Source: WGFD 2008

Fishery habitat conditions are closely tied to riparian and watershed conditions and water quality. Riparian vegetation moderates water temperatures, increases bank stability, supports insects used as important food source, filters sediment, provides in stream habitat for fish, and provides organic material for aquatic insects. Indicators of the overall health of fish species include population numbers, water quality, water quantity, bank cover, insect/macroinvertebrate populations, habitat quality, gain or loss of important habitats, rangeland health standards, riparian PFC ratings, disease, and presence of aquatic invasive species including zebra mussels, New Zealand mud snails, Asian clams, Didymo, and Quagga mussels.

Historically, agriculture, vegetation management, fire management, development, surface-disturbing activities, motorized vehicle use, and recreation have influenced fisheries habitat in the Planning Area. With the long-term drought, the total amount of fisheries habitat has declined in some streams. Stream segments that previously had perennial flows have been dewatered for various periods (for example, the upper reaches of Kirby Creek and Nowater Creek). Most of these segments are small streams that supported nongame fish. Some streams that contained trout, such as Grass Creek or Enos Creek, have lost some or all of their trout populations.

Due to the recent drought conditions and increased demands for water in the Planning Area, rivers, streams, and reservoirs have experienced low flows and drawdowns. This directly affects fisheries habitat, spawning success, and survival of fish in both streams and reservoirs. Low streamflows have resulted in the siltation of pools in streams that are needed for fish to survive. Pools that have filled with sediment have not received the spring flushing flows necessary to remove it. These same high flows are also necessary to clean sediment-laden spawning gravels; therefore, fish recruitment rates have decreased. The effects of drought can be quickly reversed in streams with a return to more normal weather patterns; however, although higher streamflows may improve stream pool habitat, they will not remedy the continued siltation of reservoirs. If the drought continues and in turn causes an increase in plant mortality or wildfires, the present sedimentation rate of the reservoirs could increase.

Some activities in the Planning Area are improving fisheries habitat. The Conservation Districts in the Planning Area have had some success in improving water quality through programs encouraging

sprinkler irrigation systems over ditch irrigation systems, relocating corrals and feedlots away from rivers, and replacing septic systems. The net result has been a decrease in sediment from irrigation return flows and coliform bacteria contamination.

Management Challenges

Management challenges for fishery habitats include water depletion, drought, sedimentation, isolated populations, and barriers to migration. Water depletions, through consumptive uses and evaporative loss, are expected to continue to increase and could affect water quality and availability for fish, resulting in decreased population densities and a reduction in recreational fishing opportunities. Habitat improvements and enhancements could offset some of the decline in fisheries habitat, but such opportunities on BLM-administered lands are somewhat limited due to irregular land ownership patterns and an inability to influence water diversions and in-streamflows. The state of Wyoming is administratively responsible for issuing water rights and the maintenance and enforcement of water quality standards in the Planning Area (see Section 3.1.4 *Water*).

Improperly designed or installed culverts can prevent fish migration, disrupt habitat, and decrease spawning success. BLM Manual 9112 and Handbook H-9112, Bridges and Major Culverts, provide guidance on policies and procedures related to the design, construction, and maintenance of bridges and major culverts (BLM 2011e). BLM policy requires that all bridges and major culverts allow fish passage and that installations be coordinated with a BLM fisheries biologist. In designing bridges and culverts, primary consideration is given to the effect the structure would have on the passage of resident or anadromous fish, and in some cases may provide an opportunity to assist in stream management. The BLM designs culverts to promote fish passage on intermittent and ephemeral streams, with priority given to Wyoming DEQ streams that support a Class 1, 2A, 2B, 2AB, and 2C surface waters with designated uses as fisheries (Blue Ribbon and Red Ribbon streams). Lower priority is generally given to Class 3, 3B, and 4 surface waters that support other aquatic life.

Both climate change and short-term variation in weather patterns can contribute to changes in stream systems such as flow, temperature, and turbidity. Aquatic systems are never static, but constantly change in response to environmental variations such as summer heat and winter ice, droughts and floods, and longer-term climatic changes. Lotic systems depend on high-water events to create fish habitat such as scour pools for winter or low-water habitat, large woody debris and undercut banks to create overhead cover, and to clean sediment out of spawning gravels. Living in a dynamic environment, fish tolerate and even need such periodic disruptions to their stream habitats. Such disruptions, if they are too extreme or occur too frequently, can adversely affect fish habitat and can permanently reduce or eliminate fish populations from some stream reaches or stream systems. Many climate-change predictions include increased duration and frequency of droughts and an increase in extreme precipitation events (see Section 3.1.1 *Air Quality*).

In the Planning Area, many of the lotic fish populations survive in isolated systems. Such systems have limited or no ability to be repopulated from other systems if the present population is extirpated. These populations have survived many periodic droughts, but if climate change in the Planning Area results in droughts that are longer and more severe than historic patterns, fish populations and species numbers could be adversely affected.

3.4.6 Fish and Wildlife Resources – Wildlife

The BLM has grouped the wildlife species described in this RMP and EIS according to Wyoming Statutory Wildlife Categories. This section describes existing conditions and management challenges for habitat types and statutory wildlife groups in the Planning Area. Management actions are incorporated in the alternatives and described in more detail in Chapter 2. It is important to note that the management actions are based on wildlife seasonal ranges that change overtime, and the spatial habitat designations will be reviewed and modified as necessary. For purposes of this discussion, the terms habitat and vegetative types are used interchangeably.

Wildlife and Habitats in the Planning Area

There is a diversity of wildlife habitats in the Planning Area, primarily because of its location between three physiographic areas – the Northern Shortgrass Prairie to the north and east, the Central Rocky Mountains to the west, and the Wyoming Basin to the south of and including the Planning Area. Also, the Bighorn Basin is a basin bounded by mountains that affect floral and faunal distribution, which also defines the diversity of habitats and species in the Bighorn Basin.

Lands in the Planning Area contain a variety of habitats that possess the biological and physical attributes important in the life-cycles of many wildlife species. The diversity of habitats and landscapes provide important areas for breeding, birthing, foraging, wintering, and migration. Wildlife and their habitats are representative of Great Basin fauna and flora. Wildlife habitat is best characterized by vegetation types, water resources, geology, and topography. Vegetation types are characterized as successional stages, commonly influenced by disturbance regimes like fire, grazing, and drought. Just as a diversity of vegetation types is important to wildlife, so are these successional stages within types. Habitats in the Planning Area include sagebrush-steppe shrublands, coniferous forests, juniper woodlands, aspen stands, mountain shrub, canyons and rim rock, badlands, grasslands, and riparian/wetland areas. See the Vegetation sections in this chapter for more information about these habitat types in the Planning Area.

Factors such as fire, forestry, ROWs, livestock grazing management, motorized vehicle use, and OHV use and other types of recreation also influence the quality of habitat, as do management actions applied throughout BLM-administered lands. It also is noteworthy that many wildlife populations spend considerable time on non BLM-administered lands and these populations often depend to a great extent on, and are therefore affected by, management of these non BLM-administered lands. Most wildlife species utilize vegetation on the basis of its structure (height and spacing) and the growth form (gross morphology and growth aspect) of the predominant species. Therefore, mapping vegetation zones and successional stages characterizes wildlife habitat in general terms. The BLM manages wildlife habitat in the Planning Area according to a number of HMPs and habitat management recommendations provided through the WGFD *Strategic Habitat Plan* (WGFD 2009a); Table 3-31 lists these HMPs.

Table 3-31. Habitat Management Plans Applicable to the Planning Area

Plan	Year
Absaroka Front Habitat Management Plan (BLM 1986a)	1986
Bighorn River Habitat and Recreation Management Plan (BLM 1987)	1978 (updated 1986)
Grass Creek Resource Area Reservoir Habitat Management Plan (BLM 1983a)	1983
Grass Creek Resource Area Streams Habitat Management Plan (BLM 1984a)	1984
Washakie Resource Area Reservoir Habitat Management Plan (BLM 1994b)	1994
West Slope Habitat Management Plan (BLM 1984b)	1984

Source: BLM 2009a

Habitat in the Planning Area ranges from montane areas in the Absaroka, Owl Creek, and Big Horn Mountains to salt desert shrublands with extensive grassland and shrublands in between. See the *Vegetation* section in this chapter and Section 3.4.3 *Riparian/Wetland Resources* for descriptions of plant communities in the Bighorn Basin.

The Planning Area contains important crucial winter range for a variety of animals. Crucial winter range is often the determining factor in maintaining big game populations at objective levels.

Terrestrial vertebrate wildlife species present in the Bighorn Basin represent all major vertebrate classes–reptiles, amphibians, birds, and mammals. Management emphasis is primarily placed on birds and mammals because of interest in them by the hunting and recreating public. The following paragraphs describe terrestrial wildlife species in the Planning Area. The descriptions are based on WGFD statutory wildlife categories to facilitate discussion regarding these species. The *Special Status Species* section in this chapter addresses species of special concern (threatened, endangered, and sensitive species).

Big Game

Big game species in the Planning Area include pronghorn, deer (mule deer and white-tailed deer), elk, moose, bighorn sheep, and mountain goat. Boundaries of the herd unit areas are established to encompass all the seasonal ranges and habitats or special life-function areas (e.g., calving and lambing areas) utilized by a more or less discreet population or herd. Because there will always be some interchange of animals between adjacent populations, and portions of populations change important use patterns over time, these boundaries are well defined, but not permanent. They do, however, represent the best available data and identify population units consistent with the most recent biological and climatic conditions. Table 3-32 provides information about the relative size and amount of BLM-administered lands in Planning Area big game herd units.

Table 3-32. Relative Size and Amount of BLM-administered Lands Occupied by Big Game Herd Units

Big Game Species	Herd Unit Name	Total Herd Unit Acreage in Wyoming	Herd Unit Acreage in the Planning Area	Herd Unit Percentage in the Planning Area	Herd Unit Acreage on BLM-Administered Lands	Herd Unit Percentage on BLM-Administered Lands
Pronghorn	Badger Basin	885,696	745,721	84	239,812	27
	Big Horn	799,601	798,529	100	576,533	72
	Copper Mountain	1,456,204	1,336,902	92	764,453	53
	Fifteenmile	2,018,619	1,538,985	76	969,576	48
	Carter Mountain	1,342,601	1,158,807	86	625,025	47
	Upper Powder River	525,128	9,832	2	717	0
	Middle Fork	400,009	10,788	3	6,359	2
	Badwater	589,514	38,604	6	1,505	0
	Project	1,947,004	13	0	1	0
	North Natrona	926,307	531	0	302	0
	Total	**10,890,683**	**5,638,712**	**52**	**3,184,283**	**29**
Mule Deer	Paintrock	916,220	679,834	74	470,838	52
	Southwest Bighorns	1,885,331	1,220,337	65	652,523	35
	Basin	779,131	779,131	100	635,668	82
	Greybull River	533,765	533,765	100	362,687	68
	Clarks Fork	969,665	457,903	47	155,121	16
	Upper Shoshone	1,256,363	264,105	21	58,208	5
	Shoshone River	658,972	654,652	99	341,953	52
	Owl Creek/Meeteetse	1,298,422	724,587	56	280,195	22
	North Bighorn	1,583,972	305,456	19	220,830	14
	Upper Powder River	884,217	19,932	2	6,821	1
	North Natrona	926,307	531	0	302	0
	Total	**11,692,365**	**5,640,233**	**48**	**3,185,146**	**27**
White-Tailed Deer	Bighorn Basin	8,163,337	5,591,452	68	3,177,146	39
	Powder River	6,780,256	19,932	0	6,821	0
	Central	8,928,515	531	0	302	0
	Total	**23,872,108**	**5,611,915**	23	**3,184,269**	**13**

Table 3-32. Relative Size and Amount of BLM-administered Lands Occupied by Big Game Herd Units (Continued)

Big Game Species	Herd Unit Name	Total Herd Unit Acreage in Wyoming	Herd Unit Acreage in the Planning Area	Herd Unit Percentage in the Planning Area	Herd Unit Acreage on BLM-Administered Lands	Herd Unit Percentage on BLM-Administered Lands
Elk	Medicine Lodge	923,578	653,690	71	469,709	51
	Gooseberry	1,051,437	577,296	55	238,006	23
	Cody	2,650,742	1,604,469	61	984,440	37
	North Bighorn	1,537,061	305,456	20	220,830	14
	Clark's Fork	1,825,765	1,262,765	69	612,525	34
	South Bighorn	3,654,429	1,236,557	34	659,636	18
	Total	**11,643,012**	**5,640,233**	**48**	**3,185,146**	**27**
Moose	Bighorn Moose	2,661,310	841,547	32	582,891	22
	Absaroka	3,227,185	1,149,359	35	387,397	12
	Total	**5,888,495**	**1,990,906**	**34**	**970,288**	**16**
Bighorn Sheep	Absaroka	4,033,291	1,139,215	28	385,971	10
	Devils Canyon	145,387	94,347	65	70,865	49
	Total	**4,178,678**	**1,233,562**	**29**	**456,836**	**11**
Mountain Goat	Beartooth	956,057	194,644	20	63,799	7
	Total	**956,057**	**194,644**	**20**	**63,799**	**7**

Sources: BLM 1990; BLM 2013a; WGFD 2014.

BLM Bureau of Land Management

The Planning Area contains 2,484,330 acres of crucial winter range for big game, 1,324,371 acres of which is on BLM-administered lands (BLM 2013a) (Map 44). Winter is a crucial and stressful time for big game; therefore, crucial winter range is often the focus of management and a criterion for analyzing the impacts to big game from resource management. There are no feed grounds on BLM-administered lands in the Planning Area. The Planning Area contains all or part of 35 herd units (10 pronghorn, 11 mule deer, 3 white-tailed deer, 6 elk, 2 moose, 2 bighorn sheep, and 1 mountain goat). Appendix K shows the location of WGFD herd units. Specific information about population trends is available through the WGFD via the agency's Job Completion Reports (http://gf.state.wy.us/wildlife/index.asp).

Pronghorn

Pronghorn are a unique animal of the western plains and are the only living species in their taxonomic family (*Antilocapridae*). Wyoming is the center of the pronghorn's range. Pronghorn inhabit a wide variety of open rangeland habitat types throughout the Planning Area and forage primarily on shrubs, especially sage species.

Population projections for pronghorn generally have been below objectives for several years. This is partly due to adverse effects on the quality of the shrub component of their pronghorn habitat in many ranges. Habitat condition of many of the Wyoming big sagebrush communities associated with pronghorn winter ranges is declining due to poor productivity, plant recruitment, old age, and

cheatgrass invasion that has out-competed native herbaceous and sagebrush species. Declines in habitat quality also have affected the reproduction and survival rates for pronghorn. Lower reproduction and lower recruitment of young into populations has inhibited the ability of herd populations to recover from declining numbers.

Deer

Both mule deer and white-tailed deer occur in the Planning Area, although mule deer are by far the more abundant species. Mule deer generally prefer habitat types in the early to mid-stages of plant succession with numerous shrubs. They use the woody riparian, shrublands, juniper woodland, and aspen woodland habitat types extensively during spring, summer, and fall. These habitat types provide adequate forage areas with succulent vegetation for lactating females and adequate cover for security and fawning. During winter, mule deer move to lower elevations to avoid deep snow that covers their forage. They are often found in juniper and limber pine woodlands, big sagebrush/rabbitbrush, sagebrush steppe, and riparian habitat types. Mule deer success is linked to the amount and quality of habitat required to meet their needs to reproduce successfully and to survive. Habitats used by deer are changing (Gill 1999). Mule deer are generally declining in numbers due to a decline in habitat quality and quantity. Mule deer populations are generally below WGFD-objective numbers throughout the Planning Area (see link above to WGFD Job Completion Reports).

White-tailed deer use woody riparian habitats (willow and cottonwood) along major creeks and rivers for both forage and cover. They are found mainly on private lands in the Planning Area. White-tailed deer are expanding into new areas, but it is not clear if the population is actually increasing or whether it is spreading into expanded habitat types. White-tailed deer have been affected by periodic disease outbreaks that have caused short-term, localized population declines, but overall have shown population increases.

Elk

Elk are distributed throughout the Planning Area, especially adjacent to and in areas of higher elevation that have forest or woodland cover. In summer, elk use aspen and conifer woodlands for security and thermal cover, ranging out into upland meadows, sagebrush/mixed grass, and mountain shrub habitat types to forage. In winter, elk move to lower elevations, foraging especially in sagebrush/mixed grass, and mountain shrub habitat types, and in windswept areas where snow is less deep. Elk depend on these habitats in designated crucial winter ranges to maintain populations at objective levels. For calving, elk move into areas that provide particularly good hiding cover and succulent forage.

Elk numbers have been generally at or over objective for most herd units in the Bighorn Basin for the past two decades. Elk have possibly fared better because they are more generalist feeders than species like deer and pronghorn.

Moose

Moose are distributed in low densities throughout the Absaroka, Owl Creek, and Big Horn Mountains in the Planning Area, especially along the river and stream corridors adjacent to these mountains and in areas of higher elevation that have forest or woodland cover. In summer and fall, moose use willow, aspen, and mixed conifer forests for forage and security. Moose are primarily browsers and feed on woody species like willow, aspen, and some young conifer species. In winter, moose in the Big Horn Mountains seem to concentrate primarily in riparian corridors and mixed conifer habitats, while in the Absaroka Mountains they tend to move up in elevation to forage in mixed conifer and spruce/fir forest habitat types. Occasionally, severe winter snows push moose to lower elevations. Moose populations are generally below WGFD-objective numbers.

Bighorn Sheep

Bighorn sheep are present predominantly in the Absaroka Mountains, Owl Creek Mountains, and the Devil's Canyon and Shell Canyon areas of the Big Horn Mountains. Populations in the Pryor Mountains across the border in Montana occasionally move into the Planning Area.

Bighorn sheep prefer open grassy ridges, slopes, or benches close to escape cover in the form of rocky outcrops, precipitous cliffs, or steep rocky slopes. They most commonly prefer herbaceous forage and typically use alpine meadows and mountain shrub habitat types, primarily foraging on forbs and grasses and converting to browsing on shrubs when snow depths dictate.

Bighorn sheep also are known to be susceptible to *Pasteurella sp.* bacteria commonly carried within the nasal cavities of domestic sheep and domestic goats. *Pasteurella*, when transferred, usually through nose to nose contact, causes sickness and death, and has caused the decline of numerous bighorn sheep populations.

The Wyoming Statewide Bighorn/Domestic Sheep Interactions Working Group has designated areas of Wyoming as bighorn sheep native core areas, cooperative review areas, and non-emphasis areas. The western edge of the Bighorn Basin is generally considered a core area and the eastern edge is a non-emphasis area.

Bighorn sheep populations in the Planning Area have increased due to the establishment of native core areas in occupied bighorn sheep habitat and because of habitat augmentation and improvement through burning and livestock permit changes.

Mountain Goat

There are mountain goats on BLM-administered lands near Clarks Fork of the Yellowstone River canyon, predominantly in high, steep and rocky habitat. This habitat provides escape cover and shelter from the wind and storms coming off the Beartooth Plateau. It also is lower in elevation than predominantly spring and summer habitat that is higher on the Beartooth Plateau.

Mountain goat populations are stable in the Planning Area. There is one herd unit in the Planning Area, which has been hunted, and harvests are adjusted to maintain a stable, local population.

Management Challenges

Management challenges for big game species include poor habitat conditions, wildfires, drought, increased development and urbanization, habitat fragmentation, motorized vehicle misuse, disease, hunter access, and the impacts of improper livestock grazing management on the frequency, quality, and composition of key forage species. The WGFD monitors disease in big game species. The BLM and the WGFD continually coordinate and evaluate actions affecting herd units and habitat conditions to determine the appropriate management direction.

Big game species that depend on woody plant communities (e.g., pronghorn, mule deer, and moose) are generally declining in numbers due to a decline in habitat quality and quantity (see Section 3.4.1 *Vegetation – Forests, Woodlands, and Woodland Products*). Species that depend on herbaceous plants (e.g., elk and bighorn sheep) generally have stable or increasing populations.

Trophy Game

The WGFD classifies cougar, black bear, grizzly bear, and gray wolves as trophy animals. Cougars are typically found in remote areas with dense cover and rocky, rugged terrain. They are found in most

habitats where deer, their primary prey base, are present. Black bear are found throughout both the foothills and mountains of the Absaroka front and the Big Horn Mountains, with occasional occurrences along riparian corridors such as the Greybull, Bighorn, and Nowood rivers. They are typically associated with forested and riparian habitats in higher precipitation zones. Grizzly bear are found in the Absaroka and Beartooth mountain areas and have been observed along the western part of the Owl Creek Mountains. Section 3.4.9 *Special Status Species – Wildlife* addresses the grizzly bear and gray wolf.

In the Planning Area, there are management areas for cougar (throughout) and black bear (Absaroka, Owl Creek, and Big Horn Mountains). These represent areas where populations of these species are sufficient to support hunting and to warrant hunting management. Black bear populations are fairly stable and cougars appear to be expanding into a few new areas. However, due to the reclusive nature of black bears and cougars, it is difficult to estimate population. For additional information on trophy game, refer to the WGFD website, http://gf.state.wy.us/.

Furbearing Animals

Badger, beaver, bobcat, marten, mink, muskrat, and weasel are classified as furbearing animals and are found throughout the Bighorn Basin. Population figures for furbearing animals are available only on a statewide basis. Trapping seasons apply to most furbearers; badgers are taken year-round, while others are typically trapped in early winter (bobcat, muskrat, mink, and weasel). Trapping dates vary for beaver and marten.

Beaver, mink, and muskrat populations have likely declined across much of the Planning Area due to drought conditions. Water volumes have decreased in many riparian systems from a loss of water storage capability and from a lack of precipitation. The distribution of mink and muskrat populations has shrunk due to a loss of water in some riparian systems. Beaver depend on aspen, willow, and cottonwood trees to build and maintain their dams and lodges. Conifer trees have invaded many riparian areas adjacent to streams due to drying of these sites from a drop in the water table. Conifers take up available water and space, both surface and subsurface, choking out aspen, willow, and cottonwood communities.

Predatory Animals

According to Wyoming statute, predatory animals include jackrabbit, porcupine, coyote, gray wolf, red fox, raccoon, and skunk. Section 3.4.9 *Special Status Species – Wildlife* addresses the gray wolf. All of these species can be found in the Planning Area. From the standpoint of BLM management, most management efforts and attention focus on coyote, red fox, and skunk damage-control activities. The BLM does not conduct any habitat management activities for predatory animals.

USDA APHIS-Wildlife Services performs predatory animal damage-control activities on public lands, and performs these activities in response to requests from individuals, organizations, and agencies experiencing damage caused by wildlife. Animal damage-control activities primarily include mechanical (trapping, shooting, and denning), chemical (poison), and nonlethal methods (e.g., noise devices and aversive conditioning). Through the Animal Damage Management Board, the state of Wyoming also performs animal damage-control activities, particularly actions involving rabies and other diseases.

Management challenges for animal damage-control activities are to implement a program that responds to predation problems and remains socially acceptable and safe in accordance with applicable laws and regulations. Predator populations typically follow prey populations, particularly when the relationship is prey specific.

Small Game

Small game includes cottontail rabbits, snowshoe hare and fox, and gray and red squirrels. Cottontails, snowshoe hares, and squirrels are found throughout the Planning Area and are hunted from early to mid-winter. Snowshoe hare are found in transition areas adjacent to conifer forest and are indicator species for Canada lynx habitat. Cottontail and white-tailed jackrabbits occur in many habitat types and are broadly distributed in the Bighorn Basin. Red squirrels are found in conifer and mixed forest habitats, generally at higher elevations. There are no available estimates of population size, mortality, and natality rates for these species.

Rabbit and squirrel populations are cyclic, so trends are difficult to determine, however, populations appear to be generally stable. Information regarding hunter days and harvest are available from the WGFD. Snowshoe hare are present in wetter forests, which occur in limited BLM-administered areas. This prey species is important for Canada lynx reproduction and survival.

Game Birds

Game bird management direction for the BLM is identified in the BLM *Fish and Wildlife 2000: Upland Game Bird Habitat Management* (BLM 1992a). All game bird species in Wyoming are managed for recreational use such as hunting and bird watching.

Upland game birds in the Planning Area include pheasant, chukar, gray partridge, blue grouse, ruffed grouse, greater sage-grouse, and turkeys. Section 3.4.9 *Special Status Species – Wildlife* discusses the greater sage-grouse. The forest-woodland edges adjacent to Bighorn and Shoshone National Forests support appreciable stands of preferred habitat that supports populations of blue and ruffed grouse. Chukar and gray partridges are found in hilly and rolling terrain along mountain foothills and to some extent in badland topography in lower elevations of the Bighorn Basin; the best chukar partridge habitat is along the west slope of the Big Horn Mountains in the canyons and foothills. Gray partridge are found in similar foothills and badlands habitat types in the Bighorn Basin. Pheasants are found primarily in habitat associated with riparian areas or corridors, and near or along agricultural fields.

Waterfowl

Ducks and geese occur in aquatic areas throughout the Bighorn Basin. A small number of species breed, winter, or remain yearlong in the state, while larger numbers pass through during spring or fall migration. The entire Bighorn Basin is within the Central Flyway (east of the continental divide). The various sources of water, natural lakes, streams, and manmade reservoirs are important resting areas for a variety of ducks, geese and shorebirds. Waterfowl species include ducks, geese, coots, snipe, and rails. Scattered aquatic resources found throughout the Bighorn Basin support various waterfowl species during nesting periods, and private agricultural lands provide important foraging habitat where grains and hay are grown. Most of these species depend on wetlands or open water that is sufficiently shallow to support rooted vegetation, and they feed on the biotic communities in such habitats.

One important waterfowl habitat is the Bighorn River, primarily because the southern reaches of this river remain open during winter. Many small ponds and reservoirs that have stable water levels have wetlands along their shores. In addition, pools in the numerous streams and their tributaries throughout the Planning Area provide important habitat. Only some of these aquatic resources are on BLM-administered public lands.

As a result of livestock grazing management practices, some riparian zones on public land adjacent to streams, small reservoirs, and ponds have been degraded. This results in the removal of nesting cover

for waterfowl and shorebird species that could nest in these riparian zones. There are several large wetland areas in the Bighorn Basin with large amounts of BLM-administered public land that are protected from or have controlled livestock grazing. These include the Yellowtail Wildlife Habitat Management Area (WHMA), Bighorn River tracts, Wardell and Harrington Reservoirs, Loch Katrine, Renner Habitat Management Area, and several smaller fenced reservoirs that provide good nesting habitat for waterfowl and shorebirds.

Nongame Species

Nongame species include raptors, migratory birds, mammals, and reptiles and amphibians. Such species are numerous and diverse, especially given the diversity of habitats present in the Planning Area. This section addresses only a few of these species or groups. Many nongame species are on the BLM Wyoming State Director's Sensitive Species List; Section 3.4.9 *Special Status Species – Wildlife* addresses those species. The hundreds of additional bird species that inhabit the Bighorn Basin for all or part of their life-cycles are important components of the ecosystem and an important focus of the large segment of recreationists who enjoy bird-watching.

Raptors

Raptor species (eagles, hawks, owls, falcons, and vultures) in the Bighorn Basin include osprey, red-tailed hawk, Swainson's hawk, ferruginous hawk, northern harrier, goshawk, Cooper's hawk, sharp-shinned hawk, rough-legged hawk, golden eagle, bald eagle, merlin, kestrel, peregrine falcon, American kestrel, prairie falcon, great-horned owl, long-eared owl, short-eared owl, great gray owl, and burrowing owl. Some raptors are sensitive to disturbance and occupy an ecological position at the top of the food chain; thus, they can act as biological indicators of environmental quality. Section 3.4.9 *Special Status Species – Wildlife* further discusses several of these species. Raptors are present in habitats throughout the Planning Area.

Most species have specific nest-site requirements, which are key factors in nest-site selection and in reproductive success. These generally include nesting strata, available prey base, and nest-site disturbance. Nests can occur in a myriad of habitats, including on steep cliffs and rock ledges, in trees, and on the ground. Raptors also use manmade structures such as barns, utility poles, and tanks for nesting. The nesting-reproductive season is considered the most critical period in the raptor life-cycle because it determines population productivity.

Many raptors concentrate their nests along a cliff and use this stratum for nesting year after year. These high-use/high-density raptor nesting sites are called raptor concentration areas. Golden eagles and prairie falcons usually build their nests on steep cliffs and rock ledges, and often, red-tailed hawks, great-horned owls, and American kestrels build on these sites.

Numerous raptors in the Planning Area typically nest in trees. Cooper's hawks and sharp-shinned hawks usually nest in lodge pole, mixed conifer forests, or aspen woodlands. Swainson's hawks prefer the more open plains area and usually nest in trees along drainage courses. Most nests in the Bighorn Basin, including most documented red-tailed hawk nests, are in cottonwood trees. Large cottonwood trees along major river corridors also are important nest sites for bald eagles. Northern harriers are ground nesters, but are generally associated with riparian/wetland sites and nest in marsh habitats.

At present, there is no population data for raptor populations; however, the golden eagle population and osprey sightings and nests appear to be increasing throughout the Planning Area.

Raptor habitat protection has been directed toward long-term nest-site protection and minimizing habitat disturbance around nesting sites during the critical nesting period. Raptor nesting stipulations have been applied to surface-disturbing activities such as ROWs and oil and gas leasing. Current stipulations consist of buffer zones around nests, season restrictions on human activities, and "raptor proofing" electrical transmission facilities to prevent electrocution of raptors.

Sensitivity to disturbance varies among individual pairs and species. Nesting pairs that choose to nest near an existing disturbance are probably less apt to abandon the nest than a pair disturbed by new activity.

Migratory Birds

This category includes shorebirds, water birds, and songbirds. A myriad of these species are found throughout the Bighorn Basin. Every plant community type in the Planning Area supports migratory bird species. Riparian/wetland communities typically have the most diverse array of species.

There are no population estimates for most avian species; however, the USFWS has been organizing and conducting breeding bird surveys that provide some data on species occurrence and trend. In addition, the BLM has some observation and occurrence data for some species. In general, habitat-specific information related to migratory birds is incomplete or unknown and population status is undetermined. Degradation, fragmentation, and loss of native sagebrush landscapes have caused relatively large migratory bird declines in the important sagebrush habitat type across the West (Knick et al. 2003).

Sagebrush obligate species populations have been declining, as indicated by the presence of these species on the BLM Sensitive Species List (BLM 2010b) and WGFD Species of Greatest Conservation Need List (WGFD 2005a). Juniper obligate species have stable to upward trends due to the increase in juniper communities.

Mammals

Nongame mammals include species such as mice, rats, voles, ground squirrels, shrews, bats, and prairie dogs. These species are found in habitats throughout the Bighorn Basin. White-tailed prairie dog surveys from 2001 to 2005 in the northern portion of the Bighorn Basin found a 37 percent decrease in the number of towns (105 to 66) and a 71 percent decrease in occupied area (164 acres to 74 acres) from 1980 to 1989 surveys. The black-tailed prairie dog population increased slightly over the same time period but may be vulnerable due to its small size and isolation from the rest of the species' range (Harrell and Marks 2009). There have been bat surveys in suitable caves, mines, and shafts in the Planning Area. There are several known maternity roosts and hibernacula identified in the Planning Area, primarily natural caves that are common in limestone karst areas along the Big Horn Mountains. There is one complex of black-tailed prairie dogs in the Planning Area, and this group of animals is isolated from other populations outside the area. Black-tailed prairie dogs and special status bat species are discussed further in Section 3.4.9 *Special Status Species – Wildlife*.

Reptiles and Amphibians

There is little documentation regarding native reptiles and amphibians in the Bighorn Basin. No estimates of population size are available for any of these species. Some of the reptile species encountered in the Bighorn Basin include greater short-horned lizard, northern sagebrush lizard, eastern yellow-bellied racer, bullsnake, rubber boa, intermountain wandering gartersnake, and prairie

rattlesnake. Amphibian species include tiger salamander, plains spadefoot toad, great basin spadefoot toad, boreal toad, northern leopard frog, spotted frog, and boreal chorus frog. Several species are on the Wyoming BLM Sensitive Species List due to an historical reduction in suitable riparian/wetland habitat and various other factors related to the ongoing general global decline in amphibians (refer to Section 3.4.9 *Special Status Species – Wildlife*).

It is estimated that the trend for reptiles is downward, but this is difficult to confirm because there are no population estimates for these species in the Planning Area. Due to the number of species that are on the Wyoming BLM Sensitive Species List and on the WGFD Species of Greatest Conservation Need List, and the declining condition of suitable habitat on public lands, the BLM assumes that amphibians are generally on a downward trend.

Special Status Species

Several policies and agreements guide management of special status species and their habitat in the Planning Area. In March 1990, the WGFD and the BLM signed an MOU (WGFD and BLM 1990), the purpose of which is to strengthen the agencies' cooperative approach to managing wildlife and wildlife habitat on public land and to encourage the agencies to work together to develop, enhance, maintain, and manage wildlife resources, including planning and sharing data concerning biological resources.

The BLM Wyoming Sensitive Species Policy and List is prepared to focus species management efforts on maintaining habitats for these species (BLM 2010b). The goals of this policy include:

- Maintaining vulnerable species and habitat components in functional BLM ecosystems.
- Ensuring sensitive species are considered in land-management decisions.
- Preventing a need for species listing under the ESA.
- Prioritizing needed conservation work with an emphasis on habitat.

Special status wildlife species are governed under BLM Manual 6840 states that BLM sensitive species will be managed consistent with species and habitat management objectives in land use and implementation plans to promote their conservation and to minimize the likelihood and need for listing under the ESA (BLM 2008e). In addition, management actions for federally listed species are often derived through the consultation process (i.e., Section 7 of the ESA).

The USFWS provides regulatory oversight for all species that are listed, proposed for listing, or are candidates for listing under the ESA. The USFWS also administers designation of critical habitat for listed species and the Migratory Bird Treaty Act, which protects migratory bird species whether they are hunted (e.g., waterfowl) or not (e.g., songbirds). The USFWS oversees management of federally listed species and the designation of critical habitats in accordance with the ESA. Formal consultation is required on any action a federal agency proposes that (1) may adversely affect a federally listed species or (2) will result in jeopardy or adverse modification of critical habitats. Informal consultation is required on any action a federal agency proposes that (1) may affect – not likely to adversely affect or (2) may affect – may have beneficial effects. Special status species discussed in this section include those species listed as threatened or endangered, those that are proposed for listing, those that are candidates for listing, and those the BLM State Director has designated as sensitive.

The BLM is responsible for managing habitat; state and federal wildlife management agencies oversee the management of special status wildlife and fish species. The WGFD manages resident special status fisheries and wildlife populations and waterfowl in the Planning Area.

3.4.7 Special Status Species – Plants

In the Bighorn Basin, the BLM determines the presence of special status plant species through inventory within likely habitats during site-specific project-level analysis. Restrictions in areas with known populations of special status plants are also determined during site-specific project-level analysis. The Wyoming Natural Diversity Database maintains a list of Wyoming plant species of special concern and provides information on global and state abundance, legal status, and state distribution. Species in Wyoming are considered to be of special concern if (1) the species is vulnerable to extinction at the global or state level due to inherent rarity, (2) the species has experienced a substantial loss of habitat, or (3) the species is sensitive to human-caused mortality or habitat disturbances.

The BLM is responsible for managing habitat and populations of special status plant species. Special status species considered in this analysis are those listed as threatened or endangered under the ESA, those proposed for listing or that are candidates for listing under the provisions of the ESA, and those the BLM State Director or the state of Wyoming have designated as sensitive.

One threatened species, Ute ladies'-tresses, could occur in the Planning Area; 11 BLM sensitive species are known to occur. Of the 11 BLM sensitive species, eight are also Wyoming plant species of concern and one is a Wyoming plant species of potential concern. In addition, the following plants are Wyoming species of concern that are not threatened or endangered and do not appear on the BLM Sensitive Species List: Big Horn fleabane, Cary's beardtongue, hairy prince's plume, and Hapemans' coolwart. These species are listed in the Natural Diversity Database, which the University of Wyoming maintains, and are not further discussed in this section.

Special status plant species are found in a variety of habitats in the Planning Area. The landscape in the area exhibits diverse climates, topography, and soils. Table 3-33 lists habitat associations for special status plants that are known to occur or may be found on BLM-administered land in the Planning Area.

Table 3-33. Special Status Plant Species Habitat in the Planning Area

Common Name	Habitat	Status
Ute ladies'-tresses	Mesic to wet riparian meadows, marshes, stream banks between 4,300 and 5,900 feet amsl.	Threatened
Absaroka beardtongue	Sparsely vegetated openings on steep slopes of loose volcanic rubble or outcrops of dry andesitic volcanic rock at 5,920 to 10,000 feet amsl.	Wyoming Plant Species of Concern BLM Sensitive Plant Species
Dubois milkvetch	Barren shale, badlands, limestone, and redbed slopes and ridges at 6,900 to 8,800 feet amsl.	Wyoming Plant Species of Concern BLM Sensitive Plant Species
Evert's wafer-parsnip	Coarse volcanic soils or sandstone outcrops dominated by cushion plants or sparse shrublands in openings within Rocky Mountain juniper or limber pine woodlands at 5,900 to 10,900 feet amsl.	Wyoming Plant Species of Concern BLM Sensitive Plant Species
Hyattville milkvetch	Sparsely vegetated stony ridges and barren red clay slopes 4,900 to 5,900 feet amsl.	Wyoming Plant Species of Concern BLM Sensitive Plant Species
Limber pine	Timberline and at lower elevation with sagebrush.	BLM Sensitive Plant Species
Persistent sepal yellowcress	Riverbanks and shorelines, usually on sandy soils near high water line.	Wyoming Plant Species of Potential Concern BLM Sensitive Plant Species
Rocky Mountain twinpod	Sparsely vegetated rocky slopes of limestone, sandstone or clay 5,600 to 8,300 feet amsl.	Wyoming Plant Species of Potential Concern BLM Sensitive Plant Species
Shoshonea	Shallow, stony calcareous soils of exposed limestone outcrops, ridgetops, and talus slopes 5,900 to 9,200 feet amsl.	Wyoming Plant Species of Concern BLM Sensitive Plant Species
Whitebark pine	Montane forests and on thin, rocky, cold soils at or near timberline at 4,265 to 12,139 feet amsl.	Candidate for Listing BLM Sensitive Plant Species
William's wafer-parsnip	Open ridgetops and upper slopes with exposed limestone outcrops or rockslides 6,000 to 8,300 feet amsl.	Wyoming Plant Species of Concern BLM Sensitive Plant Species
Wyoming tansymustard	Sparsely vegetated sandy slopes at base of cliffs of volcanic breccias or sandstone 8,300 to 10,000 feet amsl.	Wyoming Plant Species of Concern BLM Sensitive Plant Species

Sources: USFWS 2013b; BLM 2010b; BLM 1998b; BLM 1999.

amsl above mean sea level
BLM Bureau of Land Management

Most of the trends and activities that affect other plant species in the Planning Area also affect special status species. These include habitat degradation and fragmentation, grazing practices and management, invasive species, motor vehicles, and climate. These plants are on the BLM Sensitive Species List to ensure actions on BLM-administered lands consider the welfare of these species and minimize the likelihood and need for listing of any other special status species under the provisions of the ESA. The following paragraphs briefly describe each of the 12 special status plant species. Unless otherwise noted, specific information on trends and occurrences for each of the species is not available.

Ute Ladies'-tresses

Ute ladies'-tresses is a federally threatened plant species. This species occurs in mesic to wet riparian meadows, marshes, and stream banks between 4,300 and 5,900 feet amsl. Typical settings for Ute ladies'-tresses can include gravel bars, wet meadow terraces, oxbows, seeps, springs, fens, lakes, and potentially ditches and quarries (Heidel 2007).

Absaroka Beardtongue

The Absaroka beardtongue is a BLM sensitive plant species and a Wyoming plant species of concern. This species occurs in sparsely vegetated openings on steep slopes of loose volcanic rubble or outcrops of dry andesitic volcanic rock at 5,920 to 10,000 feet amsl. Typical settings for Absaroka beardtongue include very barren, steep slopes with little competition from other vegetation (Mills and Fertig 2000a). Absaroka beardtongue is known to occur in the Absaroka Range of northwest Wyoming (Mills and Fertig 2000a).

Dubois Milkvetch

Dubois milkvetch is a BLM sensitive plant species and a Wyoming plant species of concern. This species occurs in barren shale, badlands, limestone, and redbed slopes and ridges at 6,900 to 8,800 feet amsl. Typical settings for Dubois milkvetch include mid to upper slopes near the crest of badland ridges or low knolls (Fertig 2000a).

Evert's Wafer-parsnip

Evert's wafer-parsnip is a BLM sensitive plant species and a Wyoming plant species of concern. This species occurs in coarse volcanic soils or sandstone outcrops dominated by cushion plants or shaded rock outcrops and ridges adjacent to Rocky Mountain juniper or limber pine woodlands at 5,900 to 10,900 feet amsl (Fertig 2000b).

Hyattville Milkvetch

Hyattville milkvetch is a BLM sensitive plant species and a Wyoming plant species of concern. This species occurs in sparsely vegetated stony ridges and barren red clay slopes at 4,900 to 5,900 feet amsl. Hyattville milkvetch is mostly found on outcrops of the Goose Egg and Chugwater formations with some beds of Ten Sleep Sandstone; plants are usually absent from gypsum-rich deposits (Fertig 2001). Hyattville milkvetch is found on the eastern rim of the Bighorn Basin and western foothills of the Big Horn Range near Hyattville, Wyoming (Fertig 2001).

Limber Pine

Limber pine is a BLM sensitive plant species. This species occurs in high montane forests, often at timberline (Flora of North America 1993a). It occurs at elevations of 4,900 to 11,000 feet amsl (Flora of North America 1993a). Species associated with limber pine include Rocky Mountain lodgepole pine, Engelmann spruce, whitebark pine, Rocky Mountain Douglas-fir, subalpine fir, Rocky Mountain juniper, mountain mahogany, and common juniper.

Persistent Sepal Yellowcress

Persistent sepal yellowcress is a BLM sensitive plant species and a Wyoming plant species of potential concern. This species occurs on moist, sandy to muddy riverbanks and shorelines, usually near the high water line (Handley and Heidel 2008).

Rocky Mountain Twinpod

Rocky Mountain twinpod is a BLM sensitive plant species and a Wyoming plant species of concern. This species occurs on sparsely vegetated rocky slopes of limestone, sandstone or clay at 5,600 to 8,300 feet amsl. Rocky Mountain twinpod is endemic to the Bighorn Basin and Absaroka Range (Mills and Fertig 2000b).

Shoshonea

Shoshonea is a BLM sensitive plant species and a Wyoming plant species of concern. This species occurs in shallow, stony calcareous soils of exposed limestone outcrops, ridgetops, and talus slopes at 5,900 to 9,200 feet amsl. Shoshonea is associated with other low-growing forbs and cushion plants on sites with sparse cover (Fertig and Mills 2000). Shoshonea is known to occur in the eastern Absaroka and Owl Creek Mountains (Fertig and Mills 2000).

Whitebark Pine

Whitebark pine is a candidate species for listing of protection under the ESA and a BLM sensitive plant species. This species occurs on thin, rocky, cold soils at or near timberline in montane forests (Flora of North America 1993b).

William's Wafer-parsnip

William's wafer-parsnip is a BLM sensitive plant species and a Wyoming plant species of concern. This species occurs on open ridgetops and upper slopes with exposed limestone outcrops or rockslides at 6,000 to 8,300 feet amsl. Soils tend to be thin and sandy, and often restricted to small cracks in the limestone bedrock (Fertig 2000c). William's wafer-parsnip is restricted to the Big Horn Mountains (Fertig 2000c).

Wyoming Tansymustard

Wyoming tansymustard is a BLM sensitive plant species and a Wyoming plant species of concern. This species occurs in sandy soil at the base of cliffs composed of volcanic breccias or sandstone (Fertig 2000d) at elevations of 8,300 to 10,000 feet amsl.

Management Challenges

Management challenges for special status plant species in the Planning Area include preventing declining population trends for select species; occurrence of drought; spread; not maintaining PFC for riparian/wetland habitats; vegetation treatment with prescribed fire or herbicides; lack of periodic disturbance events (e.g., fire, flood, and grazing); physical trampling (e.g., from OHV use); loss of habitat resulting from altered hydrology; and challenges presented by special status plant populations occurring over multiple land ownerships. While threats to some species might remain low due to remote habitat, threats to other species might increase despite distance or restricted access. For example, special status plant species that depend on groundwater levels could be affected by upstream depletions of groundwater far removed from affected plant populations. In addition, early successional special status

plant species protected from habitat alteration could still be adversely affected by natural succession and the lack of fire, flooding, or other disturbance factors necessary to retain early successional habitat.

3.4.8 Special Status Species – Fish

Fisheries habitats in the Planning Area include perennial and intermittent streams that support fish through at least a portion of the year. See Section 3.1.4 *Water* for a description of surface-waterbodies in the Planning Area.

Special status fish species are listed as endangered or threatened, or are proposed or candidate species for listing under the ESA. Special status fish species also include those designated as BLM sensitive species or state of Wyoming species of concern. No federally listed fish species are known to occur in the Bighorn Basin; however, the Bighorn River and the Clarks Fork of the Yellowstone River both drain into the Yellowstone River, which supports listed species downstream. See Section 3.4.5 *Fish and Wildlife Resources – Fish* for more information on fishery resources in the Planning Area.

The Yellowstone cutthroat trout is the only BLM sensitive fish species and only native trout found in the Planning Area. There is Yellowstone cutthroat trout habitat in the Wind/Bighorn and Yellowstone drainage. This species is found in many headwater streams of the Bighorn, Greybull, Shoshone, and Clarks Fork of the Yellowstone river drainages.

Three other game species of concern are known to occur in the Planning Area – the burbot, sauger, and shovelnose sturgeon. Burbot and sauger are found in Boysen Reservoir and downstream in Bighorn River to Yellowtail Reservoir. In the 1990s, the shovelnose sturgeon was reintroduced to the Bighorn and Greybull rivers, part of its historic range (WGFD 2005b).

Management Challenges

Threats to special status fish species are similar to those for other fish species and can include water depletion, barriers to migration, drought, and degraded habitat conditions. See Section 3.4.5 *Fish and Wildlife Resources – Fish* for more information regarding management challenges and objectives.

Water depletions upstream can change the velocity, volume, and timing of downstream river water flows. Historically, water development projects (i.e., dams, reservoirs, water and sediment control basins, irrigation diversions, sand and gravel mining, and wetland creation) have altered historic surface water hydrographs (i.e., water flow timing, volume, and velocity) in the Missouri River ecosystem through consumption, evaporation, or by altering the timing of water flows.

3.4.9 Special Status Species – Wildlife

Special status species are those listed as threatened, endangered, proposed, or candidates for listing under the provisions of the ESA and those the BLM State Director designates as sensitive. Special status wildlife species in the Planning Area inhabit a variety of habitat types, including sagebrush shrublands, grasslands, and riparian/wetland habitats. Comprehensive data on population numbers and distribution within the Planning Area are not available for most special status species.

One endangered wildlife species (black-footed ferret), two threatened wildlife species (grizzly bear and Canada lynx), one proposed species (North American wolverine), one candidate species (greater sage-grouse), and one experimental nonessential species (gray wolf) have been or are known to occur in the Planning Area. Twenty-six BLM sensitive species are known to occur or have potential habitat in the

Planning Area. Table 3-34 and the discussion of special status wildlife species in this section are organized by the applicable Wyoming statutory categories (see Section 3.4.6 *Fish and Wildlife Resources – Wildlife*). Table 3-34 identifies all special status wildlife species that (1) occur in, (2) have potential habitat in, or (3) could be influenced by activities in the Planning Area. Table 3-34 also summarizes status and general habitat for each special status wildlife species. The BLM uses HMPs to focus habitat management for special status and other species in the Planning Area. There is no critical habitat in the Planning Area.

Most of the trends that affect other species of wildlife in the Planning Area also affect special status species. These include habitat degradation and fragmentation; livestock, wildlife, and ungulate grazing and browsing; invasive species; motor vehicles; and climate.

Table 3-34. Special Status Wildlife Species Habitat in the Planning Area

Common Name	Habitat	Status
Trophy Game		
Grizzly bear	Woodlands, forests and alpine.	Threatened
Game Birds		
Greater sage-grouse	Sagebrush habitats.	Candidate for listing
Nongame Raptors		
Bald eagle	Large bodies of open water such as lakes, marshes, and rivers where there is an abundance of fish and tall trees to roost.	BLM sensitive species
Burrowing owl	Open, dry grasslands, agricultural lands, rangelands, and desert habitats often associated with burrowing animals.	BLM sensitive species
Ferruginous hawk	Arid and semiarid grassland regions with open, level, or rolling prairies. Foothills or middle elevation plateaus largely devoid of trees, and cultivated shelterbelts or riparian corridors.	BLM sensitive species
Northern goshawk	Forested areas and open areas near forested areas.	BLM sensitive species
Peregrine falcon	Found in a variety of habitats, most with cliffs for nesting and open areas for foraging.	BLM sensitive species
Nongame Migratory Birds		
Baird's sparrow	Native mixed-grass and fescue prairie.	BLM sensitive species
Brewer's sparrow	Northern Rocky Mountains including sagebrush and alpine meadows.	BLM sensitive species
Loggerhead shrike	Grasslands interspersed with scattered trees and shrubs that provide nesting and perching sites.	BLM sensitive species
Long-billed curlew	Plains, grasslands, and prairies.	BLM sensitive species
Mountain plover	Short-grass prairie dominated by the blue grama (*Bouteloua gracilis*). Also can be found in taller grasses that have been grazed or associated with prairie dog colonies.	BLM sensitive species
Sage sparrow	Sagebrush flats, alkaline flats with saltbush, and semi-desert shrublands in the lowlands.	BLM sensitive species

Table 3-34. Special Status Wildlife Species Habitat in the Planning Area (Continued)

Common Name	Habitat	Status
Sage thrasher	Open, shrub-steppe country dominated by sagebrush or bitterbrush, with native grasses intermixed, generally avoiding cheatgrass-dominated landscapes.	BLM sensitive species
Trumpeter swan	Ice-free water in estuaries and sheltered coastlines. Rocky Mountain flock concentrate in the Greater Yellowstone Ecosystem, where geothermal activity prevents freezing.	BLM sensitive species
White-faced ibis	Shallow lake waters, muddy ground of wet meadows, marshes, ponds, lakes, rivers, flooded fields, and estuaries.	BLM sensitive species
Yellow-billed cuckoo	Woodlands with clearings and dense scrubby vegetation, often along water.	BLM sensitive species
Nongame Mammals		
Black-footed ferret	Shortgrass and midgrass prairies in close association with prairie dog colonies.	Endangered
Canada lynx	Coniferous forests at higher elevation, with substantial winter snow accumulations.	Threatened
Gray wolf	The gray wolf has thrived in many different environments, but primarily forested areas.	BLM sensitive species
North American wolverine	Rocky Mountain subalpine and alpine habitats.	Proposed for listing
Long-eared myotis	Coniferous forests in mountain areas. Roosts in small colonies in caves, buildings, and under tree bark.	BLM sensitive species
Spotted bat	Prominent rock features in extreme, low desert habitats to high elevation forests.	BLM sensitive species
Townsend's big-eared bat	Mines, caves, and structures in woodlands and forests to elevations above 9,500 feet amsl.	BLM sensitive species
White-tailed prairie dog	Altitudes ranging between 4,000 to 8,000 feet amsl in desert grasslands and shrub grasslands.	BLM sensitive species
Black-tailed prairie dog	Inhabits dry, flat, open, shortgrass and mixed-grass grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle.	BLM sensitive species
Nongame Amphibians		
Boreal toad	Marshes, springs, creeks, small lakes, meadows, woodlands, forests, and desert riparian areas.	BLM sensitive species
Columbia spotted frog	Marshes, springs, creeks, small lakes, and meadows.	BLM sensitive species
Great basin spadefoot toad	Arid or semiarid regions usually with open habitats such as desert brush and grasslands.	BLM sensitive species
Northern leopard frog	Permanent ponds, swamps, marshes, and slow-moving streams throughout forest, open, and urban areas. Waterbodies with abundant aquatic vegetation.	BLM sensitive species

Source: BLM 2010b

amsl above mean sea level
BLM Bureau of Land Management

Trophy Game

The grizzly bear, a BLM threatened species, is the only trophy game special status species in the Planning Area. Grizzly bears are found in the Absaroka and Beartooth mountain areas and have been observed along the western part of the Owl Creek Mountains. Along the Absaroka Front there has been an expansion of grizzly bear range, primarily in the spring and fall, due to increased federal protection, and in some cases forage shortages (pine nuts, moths, Yellowstone cutthroat trout, and berries) during drought years. There has also been an expansion of grizzly bear range due to a steadily growing and expanding Greater Yellowstone bear population during the past 20 years. Grizzly bears have ranged to new areas (including BLM-administered lands) outside of the core population centered in Yellowstone National Park, because protected status has allowed population growth and expansion.

Furbearing Animals

There are no known furbearing special status species in the Planning Area.

Predatory Animals

The gray wolf is a Wyoming BLM sensitive species currently listed as a predatory animal for most of the Planning Area with the exception of that portion of the Cody FO west of Highway 120, where it is classified as trophy game. The USFWS lists the gray wolf as experimental, nonessential. Wolves were reintroduced to the Greater Yellowstone region in winter 1994/1995. Reintroduction has been successful in establishing a wide-ranging population with many packs in northwestern Wyoming. Recovery numbers indicate a recovered population that will be managed by state wildlife agencies as long as the USFWS and the courts accept the Wyoming Wolf Management Plan. Gray wolves were classified as both predators and trophy game animals after the August 2012 delisting from the ESA. The WGFD manages wolves as a trophy game animal along the western side of the Bighorn Basin and as a predator that will be allowed only temporary or limited occupation in conflict-identified areas of the central and eastern Bighorn Basin.

If gray wolves went unmanaged, there would be an upward population trend for years until unoccupied habitat was occupied. This species was managed as an experimental, nonessential endangered species in the Planning Area; however, this designation was removed from this reintroduced population. As of 2012, population and distribution recovery goals for the gray wolf have been exceeded for 10 consecutive years.

Small Game

There are no known small game special status species in the Planning Area.

Game Birds (Greater Sage-Grouse)

Greater sage-grouse populations have declined across North America and the species is a candidate for listing under provisions of the ESA (USFWS 2010). In March 2010, the USFWS published its listing decision for the species as "Warranted but Precluded" and cited inadequacy of regulatory mechanisms as a major threat to the protection of greater sage-grouse populations (USFWS 2010; Manier et al. 2013; BLM 2013a). The USFWS identified conservation measures in RMPs as the BLM's principal mechanism for protecting greater sage-grouse. BLM's Wyoming field offices must incorporate objectives and

conservation measures into RMPs in an effort to avoid the potential listing of greater sage-grouse as a threatened or endangered species under the ESA (BLM 2013a).

In 2012, the Director of the USFWS asked the Conservation Objectives Team (COT), consisting of state and USFWS representatives, to produce recommendations regarding the degree to which the threats need to be reduced or ameliorated to conserve greater sage-grouse 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 2013a) provides objectives based upon the best scientific and commercial data available at the time of its release. The highest level objective identified in the COT Report is identified as to meet the objectives of the 2006 Western Association of Fish and Wildlife Agencies' (WAFWA) Greater Sage-grouse Comprehensive Strategy (Stiver et al. 2006) of "reversing negative population trends and achieving a neutral or positive population trend." The COT Report provides a Management Zone and Population Risk Assessment and identifies localized threats from sagebrush elimination, fire, conifer encroachment, weed and annual grass invasion, mining, free-roaming equids, and urbanization and widespread threats from energy development, infrastructure, grazing, and recreation.

The North American range of the greater sage-grouse has been divided into seven management zones based on populations within floristic provinces (Stiver et al. 2006). Each floristic province is comprised of areas with similar environmental factors influencing desired plant communities (Knick and Connelly 2011). The Planning Area falls within portions of two greater sage-grouse management zones: the Great Plains Management Zone (MZ I) and the Wyoming Basin Management Zone (MZ II). The majority of the Planning Area lies within MZ II, and the majority of the sage-grouse habitat managed by the BLM in the Planning Area also lies within MZ II. MZ II contains the largest population in the species' range, covers approximately two-thirds of the State of Wyoming, and is separated from adjacent populations by distance and topography (USFWS 2013a). Sage-grouse habitats are expansive and relatively intact outside of areas of energy development. Despite the long-term declines in populations, implementation of the Wyoming Governor's Executive Orders (EOs) for sage-grouse may help alleviate these declines. The primary threats to this portion of the population are energy development and transfer, including both renewable and nonrenewable resources, long-term drought, and brush eradication programs (USFWS 2013a).

The Wyoming basins are one of the remaining strongholds of the sagebrush ecosystem and like most sagebrush habitats, threats to the region are numerous (USFWS 2013a; Hanser et al. 2011). Greater sage-grouse in the Bighorn Basin are recognized as a distinct sub-population (Connelly et al. 2004), but suitable habitat in the Copper Mountain, Owl Creek Mountains, and southern Big Horn Mountains that provide travel corridors enable interchange with other greater sage-grouse populations (Easterly 2012).

Fire is one of the primary factors linked to loss of sagebrush-steppe habitat (USFWS 2013a). Wildfire frequency in some sagebrush ecosystems has also increased due to the incursion of nonnative grasses, resulting in a cycle of more frequent fires that precludes the re-establishment of sagebrush (USFWS 2013a; BLM 2013a). Greater sage-grouse habitat is also threatened by the encroachment of native conifers, notably limber pine (*Pinus flexilis*) and juniper (*Juniperus spp.*), into some sagebrush ecosystems mainly due to changes in fire return intervals and the historic overstocking of domestic livestock (USFWS 2013a). In addition, nonrenewable development activities can significantly reduce, and in some cases locally extirpate, sage-grouse populations, even with the implementation of mitigation measures (USFWS 2013a).

Oil and gas developments and the widespread conversion of nearly 60 percent of greater sage-grouse habitat to agriculture have been the primary sources of decline of greater sage-grouse populations within MZ I (Samson et al. 2004; BLM 2013a). Trends in land cover and land use predominately associated with nonrenewable and renewable energy extraction, along with livestock grazing, prolonged

drought, and programs for brush eradication, have been the primary contributors to population declines in MZ II (Manier et al. 2013; USFWS 2013a; BLM 2013a). Residential development has also been identified as a threat (USFWS 2013a).

Although there is currently little scientific data investigating the effects of livestock grazing practices on greater sage-grouse population levels (Connelly et al. 2004), existing research suggests that grazing may be compatible with, or even beneficial to, greater sage-grouse habitat under certain circumstances. Specifically, light to moderate livestock grazing outside of greater sage-grouse breeding and nesting season has been shown to be generally compatible with the use of these habitats by greater sage-grouse (Crawford et al. 2004), and may result in beneficial impacts through the creation of openings in large sagebrush stands that increase the availability of forbs (Call and Maser 1985; Beck and Mitchell 2000) and by reducing fuel accumulation and fire severity in sagebrush habitat (Peters and Bunting 1994; Davies et al. 2010). In contrast, poor grazing management practices, such as subjecting areas to heavy grazing without rest or rotation, especially during the spring, has been shown to cause degradation of sagebrush ecosystems (DOI and BLM 2002). For more information on the potential impacts of livestock management on greater sage-grouse, see the Literature Synthesis of Livestock Grazing Management Literature Addressing Grazing Management for Greater Sage-Grouse Habitat in the Wyoming Basin – Southern Rocky Mountains Ecoregions (BLM and the National Biological Information Infrastructure Great Basin Information Project no date).

Declines of sage-grouse near oil and gas fields in this area have been well documented (USFWS 2013a). However, recent conservation actions, including the Wyoming Governor's EOs designating protective stipulations for Core Habitat Areas and the implementation of conservation easements within these areas have reduced the threat risk to populations in the Wyoming portion of the Wyoming Basin Management Zone (USFWS 2013a). Designated state Core Habitat Areas adequately capture redundancy and representation for the Wyoming portion of the Wyoming Basin MZ population. Due to the large size of this population, the presence of large, contiguous habitats, and regulatory measures providing habitat protection, this population is considered low risk (USFWS 2013a).

Within the Planning Area, greater sage-grouse are distributed in habitat that has not been rendered unsuitable due to fragmentation and degradation. In spring, males congregate in areas known as leks to engage in competitive courtship displays. There are approximately 252 occupied greater sage-grouse leks in the Planning Area (171 of which are located on BLM-administered lands), generally located at mid-elevation sagebrush habitat. Sage-grouse often return to the same lekking grounds year after year. Nesting and brood-rearing habitat is sometimes associated with the lek and sometimes found at a distance from the lek in sagebrush habitat. These remaining suitable sagebrush habitat areas could be productive for greater sage-grouse; however, fragmentation and degradation sometimes limits the distribution and abundance of greater sage-grouse in these areas.

The Wyoming Game and Fish Department (WGFD) has identified Core Habitat Areas that represent relatively productive areas, and has suggested special management for these areas (Wyoming Office of the Governor 2008). On June 29, 2010, the State of Wyoming issued revised boundaries for its sage-grouse Core Habitat Areas (Version 3) from the previous version (Core Habitat Areas Version 2). As shown on Map 42, the Planning Area contains approximately 1,787,109 acres of Core Habitat Areas (Version 3). Patches of Core Habitat Areas are present throughout most of the Planning Area with the exception of the north-central and east-central portions. Of the 252 occupied leks in the Planning Area, 209 are located in Core Habitat Areas.

The BLM identified Key Habitat Areas for greater sage-grouse, which largely coincide with WGFD Core Habitat Areas, but include additional productive habitats identified as important to greater sage-grouse in the Planning Area by the BLM, such as the Little Mountain Mexican Hills area. Map 40 identifies the

current BLM Key Habitat Areas for greater sage-grouse, which include 1,857,485 acres in the Planning Area. The BLM referenced Core Habitat Areas Version 2 in the delineation of Key Habitat Areas.

The BLM reviewed Core Habitat Areas Version 3 to determine if and how BLM's Key Habitat Areas should be modified for consistency with the revised Core Habitat Area boundaries. Greater sage-grouse priority habitats, as defined in the National Technical Team report (Sage-Grouse NTT 2011) are areas that have the highest conservation value to maintaining or increasing greater sage-grouse populations. These areas include breeding, late brood-rearing, winter concentration areas, and where known, migration corridors. Core Habitat Areas are referred to as "Priority Habitat Management Areas (PHMAs)" hereafter. General greater sage-grouse habitat is occupied (seasonal or year-round) habitat outside of PHMAs and is referred to as "General Habitat Management Areas (GHMAs)" hereafter. These areas have been identified by the BLM in coordination with respective state wildlife agencies and are shown on Map 42a.

Preliminary winter concentration areas have been mapped by WGFD and BLM personnel and will be further refined and delineated as more data are collected (Easterly 2012). There are currently 210,229 acres of greater sage-grouse winter concentration areas mapped in the Planning Area, which are located predominately within PHMAs.

A 2012 report investigating greater sage-grouse populations in the Bighorn Basin identified the following trends (Easterly 2012):

- The number of male sage-grouse observed at leks in the Bighorn Basin declined from 2010 to 2012; however, these declines may be the result of natural fluctuations in sage-grouse population cycles.
- From 2002 to 2011, hunters averaged 0.7 birds per hunter and 2.3 days per hunter. In 2011, individual harvest rates decreased despite an increase in hunter effort in comparison to the 10-year average.
- Greater sage-grouse populations in the Bighorn Basin remain stable and are not in danger of foreseeable extinction, but are currently at a low in the population cycle and are faced with a number of threats.

There are many sources of habitat alteration, all of which may affect greater sage-grouse. Industrial and urban development, livestock and wildlife grazing, mining, gravel pit operations, oil and gas activity, land exchanges and disposal, vegetation manipulation, fuel reduction projects, and other activities may introduce artificial components into a natural habitats. Structures such as powerlines and towers and industrial disruptive activities may cause avoidance and abandonment of habitat. Livestock grazing, fuels treatments, and weed infestations are factors that may cause habitat degradation depending upon severity, intensity, and design. West Nile virus, which recently has had lethal effects on greater sage-grouse in parts of Wyoming, could become an important factor in the long-term survival of the greater sage-grouse species. To date, there has been little research to document the presence of the virus and its effect on greater sage-grouse in the Bighorn Basin. In some circumstances, predators may play a significant role in sage-grouse mortality. Large numbers of raptors migrate to the Bighorn Basin during the winter months, and corvids, which have a propensity for egg predation, appear to be increasing in the Planning Area (BHBLWG 2007). However, actual sage-grouse mortality rates in the Bighorn Basin resulting from predation are currently unknown and are subject to ongoing research (BHBLWG 2007).

Greater sage-grouse have been declining across the western United States, which has prompted several petitions to list them as threatened under the ESA, including a recent petition that led to the March 2010 finding by the USFWS of warranted for listing but precluded (USFWS 2010). Population levels

throughout the Planning Area declined during the mid-1990s. However, population levels have remained stable or slightly increased since 2004. Well-timed precipitation events are suspected as a major factor in this resurgence (WGFD 2000; WGFD 2004). These precipitation events promoted forage growth, which aided the survival of young. Population growth has varied throughout the Planning Area based on specific local conditions, with some areas showing little change; other areas have had a recent increase in lek count numbers. With more favorable spring and summer conditions for greater sage-grouse in many parts of the Bighorn Basin in recent years, there are some greater sage-grouse leks that have become active again after many years of non-use. Even so, population modeling suggests that declines will continue over the long-term (USFWS 2013a). Winter conditions generally are not a limiting factor in the Bighorn Basin because snow depths are not as severe as in other parts of Wyoming.

Wyoming Governor's Executive Order 2011-5 sets forth a collaborative strategy for the protection of Core Areas (PHMAs) between state and federal agencies, local governments, and private landowners (Wyoming Office of the Governor 2011). This guidance is supplemented by Executive Order 2013-3, which requires that the BLM collaborate with appropriate federal agencies and the State of Wyoming to: 1) develop appropriate conservation objectives; 2) define a framework for evaluating situations where Greater Sage-Grouse conservation objectives are not being achieved on federal land, to determine if a causal relationship exists between improper grazing (by wildlife or wild horses or livestock) and Greater Sage-Grouse conservation objectives; and 3) identify appropriate site-based action to achieve Greater Sage-Grouse conservation objectives within the framework (Wyoming Office of the Governor 2013).

Migratory Game Birds (Waterfowl)

There are no known migratory game bird special status species in the Planning Area.

Nongame Birds (Raptors)

There are five nongame special status raptor species in the Planning Area – bald eagle, burrowing owl, ferruginous hawk, northern goshawk, and peregrine falcon – all BLM sensitive species. Raptor populations in the Planning Area are generally increasing due to current protection measures. Map 39 shows the locations of special status raptor species nests in the Planning Area.

Management challenges for special status raptor species include habitat degradation and fragmentation, collision and electrocution from powerlines, and incompatible land use practices (e.g., land conversion, clear-cutting, snag removal, industrial activities, intensive recreational activities, and removal of burrowing mammals). Other challenges include impacts from contaminants and human disturbance during sensitive periods.

Bald Eagle

The Bighorn Basin, because of climate and food sources, is predominantly a wintering area for bald eagles, with as many as 200 to 300 observed during the mid-winter eagle count. Bald eagles nest in trees near large bodies of water such as lakes, reservoirs, and large rivers. Bald eagles feed mainly on fish, although they will also consume waterfowl and carrion. Bald eagles are being observed more frequently moving through the Planning Area, and as indicated by mid-winter surveys, it is assumed their population numbers are continuing upward. New nesting sites have been reestablished along larger river systems in the Bighorn Basin over the last 20 years. There are approximately 14 known bald eagle nests in the Planning Area.

Burrowing Owl

The burrowing owl is a mid-sized owl closely associated with prairie dog colonies. Burrowing owls nest in abandoned prairie dog burrows and feed on prairie dogs and other rodents.

Ferruginous Hawk

Ferruginous hawks usually nest on rock outcrops, promontories, tall sagebrush, or in junipers where numerous small mammals provide abundant prey base. Ferruginous hawks are not common in the Bighorn Basin. Many previously active ferruginous hawk nest sites are inactive, so populations might be declining.

Northern Goshawk

Northern goshawks occur in coniferous and deciduous forests (BLM 2010b). Due to dense canopy cover in these areas, nests are difficult to find and inventories for these species are limited to areas identified for habitat alterations.

Peregrine Falcon

Peregrine falcons usually build their nests on steep cliffs and rock ledges. Peregrine falcons are now established in several areas of the Bighorn Basin as a result of reintroduction efforts.

Nongame Birds (Migratory Birds)

There are ten BLM sensitive migratory birds in the Planning Area – Baird's sparrow, Brewer's sparrow, loggerhead shrike, long-billed curlew, yellow-billed cuckoo, sage sparrow, sage thrasher, trumpeter swan, white-faced ibis, and mountain plover. These species occur throughout a variety of habitats in the Planning Area (see Table 3-34). The BLM has little abundance or occurrence data for these species.

Management challenges for migratory birds include habitat fragmentation and degradation, land conversion, incompatible land uses (e.g., industrial activities, human disturbance, contaminants, and agricultural practices), water quantity and quality, collision with powerlines, and interspecific competition for nest sites.

The sage thrasher, loggerhead shrike, Baird's sparrow, Brewer's sparrow, sage sparrow, and long-billed curlew depend somewhat on sagebrush and some are considered sagebrush obligates. Threats to this habitat type include fragmentation and degradation. Sagebrush habitats in the Planning Area are important breeding areas for these migratory species (Birds of North America Online 2008). These migratory birds occupy habitats that are at risk or in decline; therefore, populations might be declining.

Baird's Sparrow

This species occupies grasslands and nests in depressions. The Baird's sparrow forages on insects or seeds.

Brewer's Sparrow

The Brewer's sparrow is a sagebrush obligate bird that requires intact sagebrush habitats for almost all its nesting and foraging needs.

Loggerhead Shrike

Shrublands are the preferred habitats for the loggerhead shrike. This species typically nests in deciduous trees or tall shrubs and feeds on insects, small vertebrates, and carrion.

Long-Billed Curlew

The long-billed curlew is an upland shorebird occupying grasslands and wet meadows. Typical nest sites are on the ground near water with a supply of insects and aquatic macroinvertebrates.

Mountain Plover

The mountain plover inhabits shortgrass prairies and shrub-steppe habitats, both for breeding and wintering. This species prefers areas with little vegetative cover for nesting, particularly prairie dog towns. In the Bighorn Basin, there is an abundance of naturally sparse habitats for mountain plover nesting.

Sage Sparrow

The sage sparrow is a sagebrush obligate bird that requires intact sagebrush habitats for almost all its nesting and foraging needs.

Sage Thrasher

Similar to the sage sparrow, the sage thrasher is a sagebrush obligate bird that requires intact sagebrush habitats for almost all its nesting and foraging needs.

Trumpeter Swan

The trumpeter swan can occupy still-water areas such as lakes, ponds, and marshes, and can use these areas for nesting or migration. The trumpeter swan population might be increasing in the Planning Area. This riparian associated species and its habitat are threatened by invasive species such as Tamarisk, Russian olive, and knapweed, which degrade its habitat. Pesticide use and collision with anthropogenic features also cause direct mortality and reduce habitat suitability.

White-faced Ibis

The white-faced ibis can occupy still-water areas such as lakes, ponds, and marshes, and can use these areas for nesting or migration. The white-faced ibis population might be increasing due to breeding-range expansion in the last 2 decades, due in part to improved nesting habitat management in federal and state refuges (Birds of North America Online 2008). Similar to other riparian-associated species and their habitats, the white-faced ibis is threatened by invasive species such as Tamarisk, Russian olive, and knapweed, which degrade its habitat. Pesticide use and collision with anthropogenic features also cause direct mortality and reduce habitat suitability.

Yellow-billed Cuckoo

The yellow-billed cuckoo can occupy still-water areas such as lakes, ponds, and marshes, and can use these areas for nesting or migration. Yellow-billed cuckoo can occupy the river corridors and any associated riparian areas nearby. They have been shown to prefer open cottonwood galleries with a low-profile shrub component. The yellow-billed cuckoo is on the decline throughout its range. The yellow-billed cuckoo and its habitat are threatened by invasive species, pesticide use, and the threats other riparian associated species face.

Nongame Mammals

Nine nongame special status mammal species occur in the Planning Area – black-footed ferret (endangered), Canada lynx (threatened), North American wolverine (proposed), Townsend's big-eared bat (BLM sensitive), long-eared myotis (BLM sensitive), spotted bat (BLM sensitive), white-tailed prairie

dog (BLM sensitive), and black-tailed prairie dog (BLM sensitive). Management challenges for special status mammals include habitat fragmentation and degradation, land conversion, incompatible land uses (e.g., industrial activities, human disturbance, use of contaminants, abandoned mine lands [AMLs] and cave closures, and animal damage-control practices), lack of cottonwood and willow regeneration, collision with wind turbines (bats), and snag removal in preferred habitats. Management actions are intended to maintain and enhance the presence of nongame mammals and the habitats upon which they depend.

Black-footed Ferret

Thought to be extinct for many years, the black-footed ferret was rediscovered in 1981 northwest of Meeteetse in a large white-tailed prairie dog colony in the Planning Area. The species was taken into captivity and is now successfully being bred, raised, and reintroduced into historical habitats. The black-footed ferret has not been documented elsewhere in the Planning Area or any other locations since its rediscovery. Loss of habitat is the primary reason black-footed ferrets remain listed as endangered. Conversion of grasslands to agricultural uses, widespread prairie dog eradication programs, and incidences of the plague have reduced ferret habitat to less than 2 percent of its historic range. Remaining habitat is now fragmented, with prairie dog towns separated by great expanses of cropland and human development. Since the black-footed ferret was found, researched in the mid-1980s, and subsequently removed for species preservation at breeding facilities, there have been no known and confirmed occurrences in the Planning Area.

Canada Lynx

Canada lynx generally occur in dense coniferous forests at high elevations. Canada lynx have not been documented on BLM-administered land in the Planning Area; however, there are four Lynx Analysis Units that encompass BLM-administered lands and adjacent larger tracts of USFS-managed land along the western and northeastern boundaries of the Planning Area. Lynx habitat does overlap BLM-administered lands. Lynx population information is difficult to obtain due to their reclusive nature. It might be possible that lynx occupy suitable habitat on BLM-administered lands but are not observed. Canada lynx critical habitat has been identified in Wyoming; however, there is no critical habitat designated in the Planning Area, and there have been no confirmed or known occurrences on BLM-administered land. There is no known population trend.

North American Wolverine

In February 2013, the USFWS proposed to list wolverine as threatened under the ESA. Wolverine occurrence in the Planning Area is unknown, but the species could be found in boreal forest and/or alpine habitats along the western edge of the basin where there are limited areas of BLM-administered lands with elevations above 9,500 feet in the Absaroka and Owl Creek mountain ranges. In North America, wolverines occur within a wide variety of habitats, primarily boreal forests, tundra, and western mountains throughout Alaska, Canada, and south to the contiguous United States. Currently, wolverines are found in the North Cascades in Washington and the northern Rocky Mountains in Idaho, Montana, Oregon (Wallowa Range), and Wyoming. Wolverines are opportunistic feeders and consume a variety of foods depending on availability. They primarily scavenge carrion, but also prey on small animals and birds, and eat fruits, berries, and insects. Wolverines have an excellent sense of smell that enables them to find food beneath deep snow.

Bat Species

There are three BLM sensitive bat species in the Planning Area – Townsend's big-eared bat, long-eared myotis, and spotted bat. These bat species are associated with riparian, upland range, forested, and

karst habitat and are susceptible to disturbance and degradation of these habitats. Maternity, hibernacula, and day-roost sites are important to these species and could be disturbed by recreation activities associated with caving. Sometimes these disturbances can cause habitats to become unsuitable for critical life history requirements. There is little population data for bat species, so a trend cannot be determined.

White-tailed Prairie Dog

The white-tailed prairie dog is associated with desert grasslands and shrub grasslands. A long-term study of white-tailed prairie dogs in the Planning Area indicated that there has been a decline in abundance and distribution of this species.

Black-tailed Prairie Dog

There is one known black-tailed prairie dog colony in the Planning Area, which is typically associated with the short grass prairie north and east of the Bighorn Basin.

Nongame Amphibians

Special status amphibians in the Planning Area include the boreal toad, Columbia spotted frog, northern leopard frog, and Great Basin spadefoot toad, all of which are BLM sensitive species. These species are associated with riparian/wetland, woodland, and forested habitat and are susceptible to disturbance from habit degradation and fragmentation, pollution, modified hydrology, and other factors related to the current global decline in amphibian populations.

Management challenges for amphibian species include habitat degradation, land conversion, incompatible land uses (e.g., contaminants and conversion or degradation of aquatic habitats) and degradation of water quantity and quality. Amphibian populations in the Planning Area are thought to be declining because of these issues and other factors related to the general global decline in amphibians.

3.4.10 Wild Horses

The BLM is responsible for protecting, managing, and controlling wild horses on public lands in the Planning Area. The BLM collects data about the animals and their habitat and prescribes management actions to ensure that free-roaming populations are in balance with other uses. In addition, the BLM ensures that the productive capability of wild-horse habitat and a thriving natural ecological balance is achieved and maintained. Wild horses are of interest to some members of the public and are classified as a resource value rather than a land use.

Existing wild horse herds originated from animals released during early European-American exploration and settlement in the region in the 1800s. Current populations incorporate genetic traits from a wide variety of breeds historically used in the region.

The BLM manages wild horses in the Planning Area in two Wild Horse Herd Management Areas (HMA) (Map 45) – the McCullough Peaks HMA and the Fifteenmile HMA. Each HMA has a Herd Management Area Plan that establishes appropriate management levels. Each HMA is located within the boundaries of a larger Herd Area of the same name (Table 3-35); portions of these Herd Areas outside of the HMA boundaries are not managed for wild horses. In addition, there are five Herd Areas in the Planning Area that are not currently managed for wild horses but remain Herd Areas in perpetuity. Analysis for previous decisions determined that managing wild horses in these Herd Areas resulted in management

issues or conflicts (e.g., competition with livestock for water sources or forage, and adjacent landowner complaints), that were most appropriately resolved by the removal of wild horses. Previous decisions also determined that management of wild horses within the original Herd Area boundaries would result in issues or conflicts. Table 3-35 lists acreages and appropriate management levels for the two HMAs and seven Herd Areas, as well as the reason horses were removed from the Herd Areas not managed for wild horses and the decision document or other documentation related to these removals. The wild horse population in 2009 in the HMAs was 199 (see Table 3-35). The BLM collects annual monitoring data to evaluate progress toward meeting management objectives.

Table 3-35. Wild Horse Herd Management and Herd Areas

Herd Management Areas and Herd Areas	BLM-Administered Land (acres)	BOR, State, and Private Land (acres)	Appropriate Management Level (total head)	Estimated Number of Horses (2009)	Herd Area Horse Closure Decision Document and Date	Reason for Herd Area Horse Closure
McCullough Peaks Herd Management Area	103,866	5,999	70-140	110	N/A	N/A
McCullough Peaks Herd Area	138,580	39,283	N/A	Likely same as McCullough Peaks HMA, but not monitored.	N/A	N/A
Fifteenmile Herd Management Area	70,527	10,583	70-160	89	N/A	N/A
Fifteenmile Herd Area	221,018	40,850	N/A	N/A	N/A	N/A
Foster Gulch Herd Area	134,219	7,081	0	0	Environmental Analysis, McCullough Peaks Wild Horse Management Plan. (BLM 1985)	Better control and management; resource conflicts with trespass branded horses (i.e., unfenced boundaries) had occurred; water not owned or controlled by BLM and/or not available within the Herd Area.

Table 3-35. Wild Horse Herd Management Areas and Herd Areas (Continued)

Herd Management Areas and Herd Areas	BLM-Administered Land (acres)	BOR, State, and Private Land (acres)	Appropriate Management Level (total head)	Estimated Number of Horses (2009)	Herd Area Horse Closure Decision Document and Date	Reason for Herd Area Horse Closure
North Shoshone Herd Area	19,231	3,395g.	0	0	Environmental Analysis Record, Horse Roundup-North Shoshone Area (BLM 1976); wild horse count reported absent in 1980. (BLM 1980)	Unauthorized horses, potentially claimed/ removed by a local individual. Horses removed by unknown means. (BLM 1980)
Zimmerman Springs Herd Area	11,518	759	0	0	Washakie Resource Management Plan. (BLM 1988a)	Competition for forage with livestock; water not owned or controlled by BLM and/or not available within the Herd Area.
Alkali Spring Creek Herd Area	2,600	2,583	0	0	Environmental Analysis, Spring Creek Wild Horse Removal. (BLM 1981)	Private landowner requests.
Sand Draw Herd Area	13,743	1,559	0	0	Grass Creek Grazing Environmental Impact Statement. (BLM 1983b)	Competition for forage and water with livestock.

Sources: BLM 2013a; BLM 2009a; BLM 2009k; BLM 1990; BLM 1988a; BLM 1983b; BLM 1981; BLM 1976.

BLM Bureau of Land Management
BOR Bureau of Reclamation
N/A Not Applicable

The wild horse program receives a high level of public interest and scrutiny. For a variety of purposes and reasons, multiple public organizations closely monitor the health, nutrition, and general well-being of wild horse herds. These groups present unique opportunities for cooperative and collaborative partnerships, and for controversy. Such groups in the Planning Area have provided monitoring assistance and publicity for the wild horse program.

The Pryor Mountain Horse Range is physically located in the northern portion of the Planning Area and in Montana and is administered by the Billings BLM Field Office. This RMP revision project does not address the Pryor Mountain Area.

McCullough Peaks HMA

Before the passage of the Wild Free-Roaming Horses and Burros Act of 1971, wild horses were already prominent in the area from what were known as U.S. Cavalry remounts, which included Clydesdale stock, Percheron and Thoroughbred crosses, and most notably, the Cleveland Bay breed. This resulted in the present-day configuration and distribution of wild horses in the McCullough Peaks HMA. The historic water sources at various springs, Shoshone River, and Dry Creek, along with the development of water sources in the 1950s through 1970s, influenced the horses' selection of this area as its home range.

Existing boundary and division fences associated with management of the allotments did not affect horse movement in the late 1980s and 1990s. However, with the increase in public presence in the 2000s, fences have increasingly prevented horse movement and have created a physical barrier that is sometimes harmful to the horses.

Since 1990, much of the exterior boundary of the approximately 110,000-acre HMA has been fenced. An interior fence was also constructed, forming pasture and allotment boundaries to improve management of livestock grazing. The combination of the exterior and interior fences has limited the mobility of the wild horses. Increases in other human activities in the Red Point area, primarily recreational viewing and Special Recreation Permit (SRP) viewing, have resulted in keeping 80 percent of the herd within 20 percent of the HMA.

Horse management planning documents call for the HMA to support 70 to 140 total head of wild horses (1,050 to 2,100 animal unit months [AUMs]) in an attempt to maintain an average of 100 adult wild horses in the HMA (1,500 AUMs). An AUM is the amount of forage necessary for the sustenance of one cow or its equivalent for a period of 1 month; however, as determined in the 1985 McCullough Peaks Wild Horse Herd Area Management Plan (BLM 1985) and the NRCS National Range and Pasture Handbook (NRCS 2003) the BLM bases its appropriate management level calculations on 1.25 AUMs per horse per month. Once herd levels surpass 140 head, or after approximately 4 years, the BLM gathers and removes enough horses to leave 70 head, for an overall average of 100 adult horses. This method is more cost-efficient than annual roundups and has resulted in less capture-induced stress on the horses. There were gathers in 1983 (215 removed), 1987 (152 removed), 1992 (225 removed), 1995 (170 removed), 1999 (188 removed), 2004 (362 removed), 2009 (94 removed), and 2013 (27 removed).

The McCullough Peaks HMA is approximately 12 miles east of Cody, extending an additional 15 miles east, with U.S. Highway 14-16-20 forming the southern boundary. It is bounded on the north by BOR-withdrawn lands controlled by the Willwood Irrigation District. McCullough Peaks and State Highway 32 comprise the western and eastern boundaries. The HMA encompasses approximately 109,856 acres, of which 103,866 acres are on BLM-administered land; the remaining 5,993 acres is scattered parcels of state and private lands. In the third quarter of 2009, the herd had approximately 110 horses.

Vegetation in the McCullough Peaks HMA consists primarily of salt desert shrub and Wyoming big sagebrush communities (BLM 2009a). Big sagebrush, Nuttalls saltbush, greasewood, bluebunch wheatgrass, western wheatgrass, needle-n-thread, Indian ricegrass, blue grama, Sandberg bluegrass, and saltgrass are the major plant species in the area. Average annual precipitation is approximately 5 to 7 inches, with 40 percent occurring from April through June.

There are five grazing allotments in the HMA, and livestock use within these allotments is authorized during spring, summer, fall, and winter depending on the specific allotment and its specified rotational grazing strategy. Each allotment has a built-in rest period during the growing season at least once every 3 years. Water development benefits wild horses, livestock, and wildlife.

At present, the wild horses in the McCullough Peaks HMA are considered to be in good health. Most horses are of ample body condition and forage conditions range from poor to good, with some areas considered in excellent condition. However, the drought of the late 1990s through 2008 adversely affected rangeland health.

Approximately 12,445 acres of the McCullough Peaks HMA is classified as a WSA and is managed in accordance with BLM Manual 6330 (BLM 2012a). Horses are regularly observed in the WSA, and their use is considered compatible with the management objectives and values associated with the WSA.

McCullough Peaks HMA is popular among visitors for its easily photographed horses, easy access, and year-round availability. The BLM issues SRPs for wild horse viewing activity twice daily from May through October. The SRP has a cap of 2,000 visitor-use days with one primary active SRP holder. There has been continued interest from additional "outfitters" or guide services to obtain additional visitor-use days for viewing wild horses. These 2,000 visitor-use days do not include the general public in the calculation. Over the last 8 years, more and more members of the general public have viewed wild horses. However, because of frequent exposure to people, more than 80 percent of the horses have become approachable and do not display the wild and unique characteristics for which they were once known.

Fifteenmile HMA

Wild and free roaming horses have been reported in the Fifteenmile area since the late 1880s. Historically, the horse herd ranged over approximately 330,000 acres between Worland and Meeteetse, and the Greybull River and Gooseberry Creek. After the ranching community arrived, it was common practice to cull the horses periodically and to occasionally introduce new horses to the population. The horses were then gathered as needed. In the 1930s and 1940s, many horses were shot and others were captured and sold. In the 1950s, almost all the horses (approximately 600) were captured and sold. Some wild horses were periodically gathered by local residents until the practice was prohibited in 1971 by the passage of the Wild Free-Roaming Horses and Burros Act.

The wild horse population in 1971 was estimated to be between 150 and 175 head. The first intensive inventory of the population took place in 1974, when 245 horses were counted. In 1978, wild horse numbers had increased to approximately 334 head, and due to drought conditions, the BLM removed 186. The BLM removed another 360 horses in 1984. The Fifteenmile Wild Horse Herd Management Area Plan was approved in 1985. This plan established the current HMA boundary, and specified that the wild horse herd would be managed within a range of 70 to 160 mature horses. The plan also specified that following gathers, the horses remaining on the range would be managed in a ratio of 60 males to 40 females to help slow population growth. Since 1985, there have been periodic (every 4 to 6 years) gathers to reduce the population. These gathers occurred in 1991 (129 horses removed), 1994 (141 horses removed), 2000 (161 horses removed), 2004 (115 horses removed), and 2009 (301 removed).

The Fifteenmile Wild Horse HMA is approximately 35 miles northwest of Worland. The HMA encompasses approximately 81,107 acres, with portions in Big Horn, Park, and Washakie counties, of which approximately 10,383 acres, or about 13 percent, are privately owned. The HMA can support a wild horse population of 70 to 160 mature horses over 1 year of age, or 100 to 240 total horses. However, rangelands in the HMA cannot sustain both the wild horse population and the full permitted livestock grazing use level. In the third quarter of 2009, the herd had approximately 89 horses.

Rangelands in the Fifteenmile HMA are in conformance with the *Wyoming Standards for Healthy Rangelands* (Appendix N). Annual precipitation in the Fifteenmile HMA ranges from 4 to 12 inches per

year, with an average of approximately 7 inches per year. About half of the precipitation falls during the growing season from April through June, with the remainder falling in high intensity summer thunderstorms. Much of the precipitation occurs during summer thunderstorms as runoff to numerous drainages. Some of this water is captured in reservoirs or pits and is the primary source of water for wild horses, livestock, and wildlife. Due to the erosive nature of the soils, these reservoirs and pits quickly fill with sediment, thereby reducing their capacity to hold water. Evaporation rates are high due to the hot, dry weather during summer. In some parts of the HMA that receive little wild horse use, vegetative cover and litter have increased to the point that storm runoff is not sufficient to fill some reservoirs and pits. Because of these factors, water availability is a concern in the HMA.

There are five unfenced livestock grazing allotments in the HMA, and the total permitted livestock grazing on these allotments is 7,925 AUMs, based on the original forage adjudication. An AUM is the amount of forage necessary for the sustenance of one cow or its equivalent for a period of one month. This use is limited to winter sheep use from November through March. Most of this permitted grazing use has been in voluntary non-use for several years, largely because permittees do not run sheep, but permittees could activate grazing use at any time. The overall recommended stocking level for both livestock and wild horses in the HMA, based on rangeland vegetation inventory and suitability data, is approximately 5,670 AUMs. The Grass Creek RMP allocated a total of 2,300 AUMs of forage for wild horses, which is the amount of forage required to sustain the wild horse population at the upper range of the appropriate management level, and 3,370 AUMs of forage for domestic livestock.

The wild horses in and around the HMA are considered to be healthy and in good physical condition. Genetic testing has indicated that the herd exhibits a high degree of genetic variability. Some of the horses frequently travel outside the HMA onto adjacent livestock grazing allotments. There is a small band of horses outside the HMA, approximately 10 to 20 wild horses, in the Fivemile Creek area. There is no known interaction between these horses and the horses in the Fifteenmile HMA. Over the last 20 years, the BLM has attempted several times to remove these horses, but due largely to the remoteness of the area and rugged topography, a few horses have always evaded capture.

Management Challenges

Management challenges for wild horses include controlling herd populations to maintain herd and rangeland health and habitat, forage, and water for native wildlife. Since 1973, when the horse and burro adoption program began, the two legal means of disposing of surplus, gathered animals has been through public adoptions and euthanasia. Some animals, especially older studs, lack the physical appeal and disposition that attract adopters. Ultimately, when these animals are perceived as unadoptable, they are returned to holding facilities or released back onto public lands. Euthanasia is currently the subject of heated public debate. The BLM no longer euthanizes horses to control populations, and the BLM has no current plans to resume the practice in the Planning Area.

From 1988 to 2004 congressional appropriations did not allow public funds for euthanasia as a method of population control. In the fall of 2004, Congress amended the Wild Free-Roaming Horses and Burros Act of 1971 to facilitate the sale of animals 10 years of age and those that have been offered unsuccessfully for adoption at least three times. In fiscal year 2010, congressional appropriations once again did not allow for public funds for euthanasia for population control.

McCullough Peaks Herd Management Area

Although monitoring data indicate horses have localized impacts on vegetation in areas near water in relation to drought, current management of the horse herd should not affect these plant communities. There could be impacts to rangeland resources if herd numbers are allowed to grow beyond appropriate management levels. Continuing to implement fertility control during gathers will help maintain and improve rangeland resources. Managing horse distribution and grazing use will impact the long-term success of a healthy watershed and healthy horses.

With the administration of fertility control methods, the horse population is expected to increase at a rate of 15 percent annually, slower than in the past (BLM 2008a). In 2004, 36 mares were treated with a revised immune-contraceptive vaccine. A single injection will provide up to 2 years of contraception at approximately 94 percent efficiency (BLM 2009l). Contraceptives will become a more common tool in limiting the growth of the horse herd. Scheduled, periodic small gathers will continue so as to maintain population numbers in the targeted range of the appropriate management level.

Fifteenmile Herd Management Area

At present, the wild horses in the Fifteenmile HMA are considered to be in good health. Most horses are of ample body condition and forage conditions range from poor to good, with some areas considered in excellent condition. However, the long-term drought has adversely affected rangeland health. There could be impacts to rangeland resources if herd numbers are allowed to grow beyond appropriate management levels. Managing horse distribution and grazing use will impact the long-term success of maintaining healthy watersheds and wild horse populations.

3.5 Heritage and Visual Resources

This section includes the individual resources of cultural, paleontological, and visual resources. The following sections describe the resource, its existing condition, and management challenges. Section 3.7.3 *National Historic Landmarks* describes the Heart Mountain Relocation Center and Section 3.7.4 *National Historic Trails and Other Historic Trails* describes historic trails in the Planning Area.

3.5.1 Cultural Resources

Cultural resources are any prehistoric or historic district, site, building, structure, or object considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. Cultural resources include archeological resources, historic architectural and engineering resources, and traditional resources. Archeological resources are areas where prehistoric or historic activity measurably altered the earth or where deposits of physical remains (e.g., projectile points, pottery, or bottles) are discovered. Architectural and engineering resources include standing buildings, districts, bridges, dams, and other structures of historic or aesthetic value. Traditional resources can include archeological resources, structures, topographic features, habitats, plants, wildlife, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

3.5.1.1 Identified Cultural Resources

History of Cultural Resource Investigations in the Planning Area

Site identification and recording in the Planning Area dates to the mid-20th Century, when, in 1946, the Smithsonian Institution sponsored work as part of the River Basin Surveys for projects such as Anchor Reservoir in the Absaroka Mountain Slope and Owl Creek subregions and the Oregon Basin Reservoir in the Bighorn Basin subregion. Since the early 1970s, there have been extensive modern cultural resources investigations in the Planning Area. Most investigations have been accomplished in compliance with Section 106 of the National Historic Preservation Act (NHPA) and provisions of National Environmental Policy Act (NEPA), both of which require federal agencies to consider the potential effects of federally assisted or permitted projects on important cultural resources. The BLM has performed cultural resources investigations in the Planning Area pursuant to the BLM stewardship responsibilities under NHPA Section 110, which requires federal land management agencies to identify and preserve important cultural resources on lands those agencies administer.

Cultural Subregions in the Planning Area

There appears to be a pattern of human use of the landscape that changes based on vegetation and other resource availability. The use of areas with less than 10 inches of annual precipitation appears to vary from the use of areas with more precipitation. Identified cultural subregions in the Planning Area include:

- *North Slope of the Bridger Mountains*: Areas with vegetation patterns that indicate average annual precipitation of more than 10 inches along the northern margin of the Bridger Mountains.
- *North Slope Owl Creek Mountains*: Areas with vegetation patterns that indicate average annual precipitation of more than 10 inches along the northern margin of the Owl Creek Mountains.
- *West Slope of the Big Horn Mountains*: Areas with vegetation patterns that indicate average annual precipitation of more than 10 inches along the eastern margin of the Bighorn Basin.

- *East Slope of the Absaroka Mountains*: Areas with vegetation patterns that indicate average annual precipitation of more than 10 inches along the western margin of the Bighorn Basin.
- *Bighorn Basin*: Areas with vegetation patterns that indicate average annual precipitation of less than 10 inches.
- *Clarks Fork Basin*: Areas within the Clarks Fork of the Yellowstone River drainage, which are included in the Yellowstone watershed, with vegetation patterns that indicate average precipitation of less than 10 inches. These areas are differentiated from the Bighorn Basin and surrounding East Slope of the Absaroka Mountains subregions.

Number of Cultural Resource Sites Recorded in the Planning Area

Cultural resources investigations in the Planning Area have recorded approximately 8,340 prehistoric and historic cultural resources (Table 3-36).

Table 3-36. Cultural Resources Inventories, Sites, and Site Density in the Planning Area

Subregion	Number of Surveys	Total Area Surveyed (acres)[1]	Recorded Prehistoric Sites	Per Acre Occurrence of Prehistoric Sites	Recorded Historic Sites	Per Acre Occurrence of Historic Sites[2]	All Recorded Sites	Per Acre Occurrence of All Sites	Overall Site Density[3]
North Slope of the Bridger Mountains	317	8,989	116	0.013	38	0.004	154	0.017	1 site in 58 acres
North Slope Owl Creek Mountains	259	2,646	52	0.02	73	0.028	125	0.047	1 site in 21 acres
West Slope of the Big Horn Mountains	960	43,401	509	0.012	58	0.001	567	0.013	1 site in 77 acres
East Slope of the Absaroka Mountains	1,509	66,375	381	0.006	186	0.003	567	0.009	1 site in 117 acres
Bighorn Basin	2,776	252,161	5,470	0.022	1,335	0.005	6,805	0.027	1 site in 37 acres
Clarks Fork Basin	259	3,262	96	0.029	26	0.008	122	0.037	1 site in 27 acres
Planning Area Totals[4]	**6,080**	**376,834**	**6,624**	**0.018**	**1,716**	**0.005**	**8,340**	**0.0222**	**1 site in 45 acres**

Source: Wyoming SHPO 2009

[1]May include some areas that have been resurveyed.
[2]Total corrected for sites that have both historic and prehistoric components.
[3]Rounded to nearest acre.
[4]Wyoming Cultural Records Office database information current as of January 2009.

Types of Cultural Resources Recorded in the Planning Area

Prehistoric cultural resources are materials deposited or left behind prior to the entry of non-American Indian (European) explorers and settlers into an area. Protohistoric refers to the variable transition period from prehistoric to historic. The latter is the time after Europeans established a presence. The Prehistoric Period, subdivided into a number of subperiods (e.g., Paleoindian Period, Archaic Period, Late Prehistoric Period), began with the entry of human beings into North America sometime about 12,000 to 15,000 years ago, or perhaps much earlier, according to recent data (BLM 2009a). The Protohistoric Period in northwestern Wyoming was initiated in the early 19th Century with the entry of fur trappers and explorers, although early French and British trappers might have passed through the general area in the early to mid-18th Century (BLM 2009a). The establishment of trading centers at Fort William (present-day Fort Laramie) and other trading forts on the Yellowstone and upper Missouri rivers in the early 1830s ushered in the Historic Period, because these were the first permanent European settlements in the region.

Most recorded prehistoric sites in the Planning Area consist of lithic scatters, campsites or habitations of various kinds, stone circles, and stone cairns. Other prehistoric site types include burials, ceremonial stone alignments, rock art, rock shelters, ceramic sites, quarries and secondary lithic procurement sites, hunting blinds, structures, and bison kill and butchering sites. Recorded historic cultural resources in the Planning Area include trails, freight wagon and stagecoach trails, an historic highway, early ranches and farms, stockherding camps, irrigation systems, mines, early oil fields and associated camps, railroads, bridges, and urban buildings. Some locations are noted, but not formally recorded, including utility lines, pipelines, stock dams, survey markers, carbanks or abandoned vehicles and appliances, rip-rap, fencing, recent trash, well and hole markers, culverts, bear baiting sites, unnamed two-track roads, and small-capacity irrigation canals with no historic association.

Native American Site Types in the Planning Area

Native American prehistoric sites are listed in the Wyoming Cultural Records Office (WYCRO) database under 198 site types or characteristics. These can be grouped into 15 generalized or composite site types that are the most commonly occurring types in the Planning Area and the surrounding region, as follows:

- Burials – physical human remains, deliberately interred or not.
- Cairns – piles of stones deposited by prehistoric people for a variety of reasons and purposes, including stockpiling of lithic source materials, marking burials or other ceremonial events, or as locational markers for trails, water sources, or other resources.
- Campsites – locations that contain evidence of at least short-term occupation by prehistoric people.
- Ceramic sites – sites of any other type that contain prehistoric pottery.
- Lodge sites/prehistoric structures/house pits – habitations or occupations that can include features such as stone and wood elements.
- Hunting blinds or traps – structures built by prehistoric people to aid in hunting of big game such as bison, pronghorn, and possibly birds, and that these people might have used for ceremonial purposes.
- Kill sites or butchering/processing sites – locations that contain extensive bone or other evidence of the killing and processing of big game by prehistoric, protohistoric, or early historic aboriginal people.

- Lithic scatters – assemblages of flakes, tested or worked stone cores, roughly shaped pre-forms for tools, and sometimes finished tools that are the products of reduction of stone material into useable tools.
- Quarries – primary procurement sources for lithic materials used by prehistoric people.
- Rock art – includes pictographs or petroglyphs on rock faces or individual rocks.
- Rock shelters or caves – naturally occurring recesses or overhangs that afforded prehistoric people protection from the elements.
- Secondary lithic procurement sites – locations where glacial or stream actions have deposited lithic materials or where lithic materials have otherwise eroded from primary geological contexts.
- Stone alignments and effigies – usually interpreted to be associated with ceremonial or spiritual activities, but some alignments could have been associated with big game hunting or possibly have been locational landmarks.
- Stone circles – rings of rocks that might represent former locations of tipis or other structures, or might represent prehistoric ceremonial activities.
- Other unknown – sites that have limited or no data that can be properly categorized. This category contains a small percentage (about 1 percent) of the recorded sites in the entire Planning Area.

Historic Era Resources in the Planning Area

Historic period resource types are also categorized according to descriptive types. Certain broad categories are commonly used, particularly for emigrant trails and expansion era roads. Most of the 123 site type or characteristic categories in the WYCRO database for the Planning Area can be grouped into 11 thematic or site type groups, as follows:

- Burials and cemeteries – in the historic context, deliberately established burials, interments, and burial groupings such as cemeteries.
- Historic debris – refuse scatters that cannot be directly associated with another category.
- Homesteads/ranches – residences and outbuildings, fields and facilities associated with operation of a farm or ranch or, on occasion, with recreation or the tourism industry.
- Irrigation-related sites – ditches, canals, pumps, or other debris or features directly related to irrigation projects.
- Military sites – forts, camps, and battlefields, and transportation or communications features that can be directly related to military activities.
- Mineral exploration and extraction – oil, gas, coal, and other mining location and associated features.
- Stockherding – typically camps that are not principal ranches or farm headquarters and cairns that cannot be ascribed to some prehistoric or aboriginal activity.
- Timber sites – typically service roads and structures associated with the timber industry. Specific buildings include sawmills.
- Transportation/communications sites – trails, expansion era stagecoach and freight wagon roads, military roads, railroads, bridges, telephone and telegraph lines, and in some cases, powerlines.

- Urban buildings – historic buildings in cities, towns, or villages not directly associated with other categories.
- Other – a large number of historic sites for which the WYCRO database does not provide enough information to allow the sites to be assigned to another category. This category constitutes more than 25 percent of the historic site type representations for the Planning Area.

National Historic Landmarks, Landscapes, and Archeological District in the Planning Area

There are several areas designated as National Historic Landmarks, Archeological Landscape Districts, or Archeological Districts in the Planning Area.

The Paint Rock Canyon Archeological Landscape District includes an extensive archeological record of Native American use of this well-defined location. In addition to the research value of the archeological sites spanning thousands of years of use, the landscape contributes to the resource's integrity and forms an essential part of the resource's cultural value. The steep nature of the canyon limited human use of the area while providing access to lithic materials for tool manufacture and rock shelters for short-term habitation.

The Black Mountain Archeological District is another NRHP-listed grouping of exceptional cultural resources values, spanning from Paleoindian occupation to the Late Prehistoric.

Refer to Section 3.7.3 *National Historic Landmarks*, which addresses the Heart Mountain Relocation Center.

3.5.1.2 Sites of Specific Concern to Native Americans

Native American Traditional Resources Possibly Present in the Planning Area, including Traditional Cultural Properties

There are no traditional cultural properties (TCPs), as defined by National Park Service Bulletin 38 (Parker and King 1998), in the Planning Area. No specific traditional gathering areas have been identified in the Planning Area. This does not mean that Native American tribes do not have resources of concern or TCPs in the Planning Area that have not been formally recognized. Certain site types are likely to be of interest to tribal groups, whether or not they are designated as TCPs or receive other recognition.

Individual Burials and Massacre/Battle Sites

Most Native American tribes believe that burials and burial sites are sacred and should not be disturbed. In addition, there are two battle sites in the Bighorn Basin – Bates Battle in the Bridger Mountains, and a recorded battle site in the Clarks Fork subregion, which is considered important to tribes in the region.

Observatories, Calendar Sites, and Petroglyphs

In general, the medicine wheel site type is considered to be a sacred site type and potentially represents a calendar associated with the seasonal variation in the region. One of the most well-known and sacred medicine wheel sites in North America is the Bighorn Medicine Wheel. This TCP is in the Big Horn Mountains in northern Wyoming, outside of the Planning Area. This site is believed to be aligned with the summer solstice and the summer stars. This medicine wheel has been modified over time, and its preservation is important to the tribes in the region. The complex also is considered sacred as it relates to vision quests and other religious activities (Eagle Bear 2009; Fisher 2009).

Petroglyphs and pictographs, stone alignments, and effigies also have sacred and special meaning to the tribes in the region. Although not entirely understood by archeologists, the symbolism represented is to be protected and preserved whenever possible (McCleary 2008; Keyser and Klassen 2001).

Trails and Trail Markers

Beyond the historically documented trails such as the Bridger Trail, Bad Pass Trail, and the Nez Perce NHT in the Bighorn Basin, cairns are often considered trail markers and are important to local tribes. Three unnamed trails in the south and west portions of the Planning Area have been identified as associated with the Eastern Shoshone (Shimkin 1947).

Geographic Features

The Bighorn Basin is considered an important geologic and geographic feature by many tribes in the region. Its horseshoe shape and towering mountain peaks are discussed in the oral traditions of the Crow and the Sioux, and the region in general has substantial meaning to these groups (Eagle Bear 2009). Specific geographic features such as mountain peaks, rivers, and landforms, including place names associated with the Planning Area, are specifically important to the Crow and the Eastern Shoshone.

3.5.1.3 Current Resource Management

BLM's Responsibilities, Policies, Acts, and Protocols Related to the Management of Cultural Resources

The BLM is legally mandated to identify, evaluate, and manage cultural resources under at least 10 federal laws and four presidential Executive Orders, most prominently the Antiquities Act of 1906, the NHPA of 1966, the NEPA of 1969, and the FLPMA of 1976, as amended, and Executive Order 11593. BLM Manuals 8100, 8110, 8120, and 8130 outline BLM policy and cultural resource program guidance. The BLM detailed its approach to managing National Historic Trails (NHTs) in the 1986 Oregon/Mormon Pioneer NHTs Management Plan. Although the Oregon/Mormon Pioneer NHT does not pass through the Planning Area, the plan (BLM 1986b) addresses overall concerns and management issues common to all NHTs. All viewsheds associated with NHTs and cultural resource locations will only be managed for those sites where integrity of setting is an important element of its eligibility for the National Register of Historic Places, which is limited to some of those eligible under 36 CFR 60.4 (a), (b), or (c), and criterion (d) in instances where setting is a factor for the site eligibility. The BLM intends to revise the plan to meet current preservation needs.

In 2012, the BLM developed an agreement addressing means of complying with NHPA, expressed in the Programmatic Agreement Among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act (BLM, ACHP, and National Conference of SHPO 2012). Pursuant to this national Programmatic Agreement, the BLM Wyoming State Office developed a specific process by which NHPA compliance is accomplished, detailed in the State Protocol between the Wyoming BLM State Director and the Wyoming State Historic Preservation Officer (BLM and Wyoming SHPO 2014). Apart from certain considerations derived from specific cultural resource statutes, management of cultural resources on public lands is primarily based on FLPMA, and is fully subject to the same multiple use principles and the same planning and decision making processes followed in managing other public land resources.

BLM Manual 8130, Planning for Uses of Cultural Resources (BLM 2004c) (incorporating Information Bulletin No. 2002-101, Cultural Resource Considerations in Resource Management Plans), expresses specific objectives for cultural resource management and provides minimum goals for cultural resource management in all RMPs.

Issues Addressed by Management Actions

Almost all the compliance investigations of prehistoric cultural resources in the Planning Area during the past 30 years have been associated with proposed development projects. Exceptions include a Class II inventory performed by the Worland District in the late 1970s that included the Planning Area. Smaller studies have sampled specific areas, such as rockshelters along the Big Horn Mountain Slope (for example, see Fenner and Kornfeld 2006).

Research concerning historic cultural resources in the Planning Area and surrounding region has included extensive attention to the major historic trails; thematic research and fieldwork concerning ranching and homesteading; recent preparation of an historic overview of one of the early automobile routes to Yellowstone National Park; historical overviews and documentation of early major oilfields and oilfield camps; historical overviews and evaluation of at least two railroads; and building surveys performed by Certified Local Governments (primarily in urban settings). Trails, abandoned railroad lines, oil field development, and stockherding campsites are often found on public lands. Other historic cultural resource types are more often found on private property or in urban settings. Outstanding rural historic resources in the Planning Area include Heart Mountain Relocation/Internment Camp, the Bridger and Bad Pass Trails, and associated sites. Funding limitations and the immediate need to comply with Section 106 in advance of development, particularly development for extractive industries, means that current research activities are generally conducted in reaction to potential impacts to specific prehistoric resources.

Use Categories

BLM Manual 8110, Identifying Cultural Resources, defines six use categories – scientific use; conservation for future use; traditional use; public use; experimental use; and discharged from management. As noted in the manual, "A cultural property may be allocated to more than one use category … Allocations should be reevaluated and revised, as needed, when circumstances change or new data become available" (BLM 2004d).

The Planning Area contains outstanding prehistoric and historic cultural resources. There are 83 resources listed on the NRHP within Planning Area boundaries. Notable among these is the Hanson Site, which could be eligible for designation as a "World Heritage" site. Other notable resources include Medicine Lodge Creek, the Legend Rock Petroglyph site, Horner Paleoindian site, Black Mountain Archeological District, Paint Rock Canyon Archeological Landscape, Heart Mountain Relocation Historic District, and a number of rock shelters. Most historic-era resources are within town limits, with notable exceptions of Bates Battlefield, Bad Pass Trail, and Mason-Lovell, T E, and Worland Ranches. In addition to the cultural resources listed on the NRHP, 864 historic properties have been formally determined to be eligible for nomination to the NRHP.

Of the approximately 8,400 recorded cultural resources in the Planning Area, more than 6,400 recorded properties (or about 76 percent) have been evaluated for eligibility for nomination to the NRHP. These evaluations include sites that have been listed on the NRHP, sites for which the Wyoming State Historic Preservation Office (SHPO) has concurred with the evaluation, and others for which the evaluation is still in process. SHPO concurrence on NRHP evaluation is desirable, and while concurrence is not a foregone conclusion, in most cases SHPO will concur with agency determinations of eligibility. Eligibility for

nomination to the NRHP is a major threshold for management consideration of the sites, as discussed below. Cultural resource properties that have been formally evaluated can be assigned to one or more of the BLM resource use classifications, but the more than 1,850 cultural resources that have not been formally evaluated for NRHP eligibility can only be assigned to use classifications in a general or categorical sense, as described below.

Scientific Use

"Scientific Use" implies that the value (or a value) of the property lies in information that can be extracted from the property. This use category usually corresponds to NRHP Criterion D, which recognizes the value to society of properties that can yield or have yielded information important in expanding understanding of history or prehistory. Archeological sites are generally evaluated under this criterion, although other kinds of cultural resources might rarely also be evaluated under this criterion. The regulatory threshold for management of a cultural resource for its scientific values is eligibility for the NRHP under Criterion D. Management opportunities include in-place preservation and protection, or extraction of the scientific information by means of excavation and analysis. In the latter case, the physical cultural resource is at least partially destroyed, and the management requirement shifts to analysis and preservation of the information extracted from the site.

This use category applies to archeological resources that have been determined to be eligible for the NRHP under Criterion D, but it also applies to all archeological resources that have not yet been evaluated for NRHP eligibility. This use category could also apply to historic archeological sites or the archeological components of building complexes or examples of extractive industry. Because BLM Manual 8110 defines scientific use as "study that would result in the property's physical alternation or destruction," this use category does not apply to sites that are not altered or destroyed through study, such as emigrant trails, railroads or historic roads, most buildings and other structures, historic graves, or sites of primarily commemorative value, including rock art sites, medicine wheels, possibly other stone alignments, and TCPs.

Conservation for Future Use

Manual 8110 (BLM 2004d) defines this category as "reserved for any unusual cultural property which, because of scarcity, a research potential that surpasses the current state of the art, singular historic importance, cultural importance, architectural interest, or comparable reasons, is not currently available for consideration as the subject of scientific or historical study that would result in its physical alteration." This use category pertains to all cultural resources regardless of age or thematic associations, unless the resources have been formally determined to be ineligible for the NRHP under all of the NRHP Criteria for Evaluation. Sites that could be of scientific value, but are not immediate candidates for study under the "Scientific Use" category, will be managed under the "Conservation for Future Use" category. Because it is not feasible for the CYFO and the WFO to test all archeological sites and otherwise evaluate the NRHP eligibility of all of the recorded cultural resources in the Planning Area, conservation for future use effectively resolves into monitoring of other public land uses, evaluating specific proposed activities that might disturb specific cultural resources, controlling erosion of the resources, and actively stabilizing the resources as appropriate.

The Bighorn Basin includes a wealth of rock art sites that fit this category, particularly in terms of research potential and singular cultural importance. With a few exceptional cases where other uses have been explicitly identified (e.g., Legend Rock and Medicine Lodge Creek), rock art should be managed for conservation. Similarly, rock shelter sites also should be managed for conservation because of their potential to preserve exceptional chronological data in cultural deposits, and the possibility of including unique artifact types.

Traditional Use

Traditional use of cultural resources is interpreted to mean use of the cultural resource by a specific social and/or cultural group that perceives the resource as important to its heritage. Cultural resources can include TCPs, which are properties critical to a living community's beliefs, customs, and practices. TCPs can be topographical features; stone alignments, rock art, or other physical artifacts; sources of plants or other materials; or areas without obvious physical manifestation of the site's cultural significance. The regulatory threshold for management of a property as a TCP is eligibility for listing on the NRHP under any of the Criteria for Evaluation, although Criterion A is most commonly appropriate for representation of an event or broad pattern in history. No resource has been specifically identified in the Planning Area as a TCP as defined in National Register Bulletin 38 (Parker and King 1998).

TCPs in Wyoming are most commonly associated with Native Americans. Because the tribes of the area were removed to reservations outside the Planning Area in the 1860s, the ensuing discontinuity of occupation and use of the Planning Area since then is likely to have resulted in loss of areas of critical importance to some living Native American communities. Rock art localities throughout the Bighorn Basin are likely candidates for the traditional use category (McCleary 2008). Protection and access limitations are recommended for most of these, with efforts made to direct public interest toward groupings that are already well known (e.g., Medicine Lodge Creek) or slated for interpretive development (e.g., Legend Rock).

Public Use

Long-term preservation and onsite interpretation are most appropriate for cultural resources that have visually obvious manifestations of the site's historical or archeological importance. This resource type is well represented by the extensive examples of rock art in the Planning Area. Although the type of onsite interpretation that invites public access to the site is usually not appropriate for cultural resources that can be easily vandalized or degraded, including most archeological sites that might be important for their scientific values, some sites are already well known and thus vulnerable to damage. The intent of interpretive efforts is that education will help preserve the site and similar examples.

All BLM-administered lands are managed for public uses of one kind or another, and there is no distinct regulatory threshold for managing cultural resources through long-term preservation and onsite interpretation. Considerations for management in this manner are (1) the relative significance of the resource within historical, archeological, or other cultural context(s), (2) the sensitivity of the cultural resource to loss or degradation as a result of increased public access, and (3) the ability of the BLM to install and maintain interpretive features and support facilities while protecting the cultural values of the site. Management under this use category is therefore likely to be driven more by practical considerations than by regulatory requirements. Onsite interpretation also is not appropriate for most Native American TCPs, because of the possible degrading effects of public presence on the setting and feeling of these locations.

Experimental Use

Experimental use is rarely appropriate for cultural resources because of the singular, nonrenewable, and typically fragile nature of the resource. However, certain archeological sites, particularly rockshelters that contain well-defined stratified deposits might be appropriate for management under this use category. Also, an archeological site where there has been past excavation or where looting has already adversely affected the integrity of part of the site, could be a candidate for experimental use. Certain lithic sources, particularly a primary source, could provide samples useful in identifying sources and possibly ages of lithic materials found in archeological sites over a wide region. The regulatory threshold

for managing cultural resources for experimental use is likely to be eligibility under NRHP Criterion D, which involves the likelihood of yielding information important to expanding knowledge of history or prehistory. Archeological sites that could be adversely affected by development or other factors could also be candidates for experimental use as mitigation for the adverse effect. The BLM remains responsible for analyzing and protecting information obtained during mitigation of potential adverse effects to cultural resources.

Discharged from Management

This use category applies to any cultural resource the BLM and the Wyoming SHPO have determined to be ineligible for nomination to the NRHP. The Planning Area contains approximately 4,950 recorded cultural resources that have been determined to be ineligible for nomination to the NRHP, have been determined to be non-contributing elements of eligible properties, or have been destroyed. Sites placed in this use category "remain in the inventory, but they are removed from further management attention and do not constrain other land uses" (BLM 2004d).

Management Challenges

The BLM's primary challenge is to achieve a balance between protecting valuable cultural resources and simultaneously making other resources available within the context of multiple use. Pressures on cultural resources will likely increase from continued mineral resource development and direct, indirect, and cumulative impacts will continue to degrade a percentage of the cultural landscape. Case-by-case inventory will prevent harm to individual sites, but the lack of comprehensive inventory coverage will continue to hamper broad-scale interpretation and assessment of cumulative effects. Inventories would probably continue at roughly 100 or more projects per year, with inventories covering approximately 10,000 acres per year. Impacts to resources for which mitigation measures could not be developed through consultation could be expected to occur once every 5 to 10 years. However, as oil and gas exploration and development increase, the potential conflicts related to cultural resources also will increase.

The demand for consumptive use of cultural resources through tourism and archeological research projects is low but is anticipated to increase through time. This reflects an increasing interest in history and recognition of the fragile nature of the resource. Historic trails, particularly those in the NHT system, could see increased visitation. Maintaining the historic setting is critical to providing a quality experience for visitors. The setting is an essential component in determining whether a particular trail segment contributes to the trail's overall significance, and preservation of the viewshed through a setting consideration zone is a management goal. Setting is also an essential aspect of NRHP eligibility for other cultural resource types such as rock art and Native American sensitive sites and potential TCPs. However, it is not as important for some types of linear sites, such as canals and some roads. For example, preservation of viewshed through setting consideration zone is not necessary for the Black and Yellow or Park to Park highways.

American Indian concerns are becoming increasingly important as development pressures and awareness of four main issues increase. First, the Native American Graves Protection and Repatriation Act charges the BLM with establishing the cultural identity of human remains and returning them to the appropriate tribal group or reburying them according to their wishes; implementation of the Native American Graves Protection and Repatriation Act requires the BLM to consult with a broad spectrum of tribal authorities to determine the tribe to which the remains and materials should be repatriated. Second, American Indian religious concerns must be addressed through consultation with various tribes who have or historically had a presence in the area. While certain types of these cultural resources are

recognizable by their physical characteristics, others can only be identified by the practitioners of the culture to which they are relevant through the consultation process and on-the-ground site visits. The third area of concern is the identification of areas where Indian Traditional Practitioners collect plants or minerals. The final issue is assurance of access to areas of traditional importance, as provided for by American Indian Religious Freedom Act. In some cases these resource areas might also be eligible TCPs requiring full compliance with NHPA Section 106.

3.5.2 Paleontological Resources

Paleontological resources are defined as any fossilized remains, traces, or imprints of organisms, preserved in or on the Earth's crust, that are of paleontological interest and that provide information about the history of life on Earth. Paleontological resources (or fossils) can be the remains of plants or animals (body fossils), or reflect their actions (trace fossils). Paleontological resources are typically preserved in sedimentary rocks or, in a few unique situations, igneous and metamorphic rocks. They can be microscopic, as in single-celled animals (bacteria) or pollen; or macroscopic, such as fossils of leaves, petrified wood, shells of invertebrate animals, bones, teeth, tracks, feeding traces, coprolites, and burrows. Typical public conceptions of fossils are those of animals, especially dinosaur bones or teeth, or petrified wood.

BLM Management and Protection of Paleontological Resources

Paleontological resources on public lands are managed and preserved using scientific principles and expertise. BLM policy defines important fossils as including all vertebrate fossil remains, and plant and invertebrate fossils determined, on a case-by-case basis, to be scientifically unique. Abundance of these resources varies, with some geologic formations containing few or no important fossils and other formations known to commonly produce important fossils throughout the formation. The BLM does not allow commercial collecting of fossils from public lands, except petrified wood which is managed as a mineral material and is salable under the Mineral Materials Act (43 CFR 3600); unless it is determined that it is a paleontological resource because of its paleontological interest.

Congress passed the Paleontological Resources Preservation Act (PRPA) in March 2009. This Act supplements existing laws and guidance regarding paleontological resources on BLM-administered lands (e.g., FLPMA, BLM Manual 8270, and BLM Handbook H-8270-1). To address requirements in the PRPA, the BLM issued two IMs ("Casual Collecting of Common Invertebrate and Plant Paleontological Resources under the Paleontological Resources Preservation Act of 2009," April 24, 2009 and "Confidentiality of Paleontological Locality Information under the Omnibus Public Lands Act of 2009," June 5, 2009) (BLM 2009m; BLM 2009n).

Active Paleontology Permits, Monitoring, and Mitigation Efforts

Under current policy and continuing under PRPA, the BLM allows the collection of fossils with some restrictions, depending on the significance of the fossils. The BLM allows the public to collect common invertebrate or plant fossils in reasonable quantities for personal use, making negligible disturbance using only hand tools (casual-use or hobby collecting). Vertebrate and any administratively designated plant or invertebrate fossils may be collected only under certain conditions outlined in permits the BLM issues to qualified researchers. All fossils collected under a permit remain public property and must be curated in an approved repository.

The basic permit is the "Paleontological Resources Use Permit." Any research on paleontological resources, whether fossils are collected or not, requires a permit. The BLM issues a "Survey and Limited Collection Permit" for any research, survey, and collection of surface finds, and limits surface disturbance to 1 square meter or less. If the disturbance will be more than 1 square meter or require mechanized equipment, the researcher must apply for an excavation permit. Before it can issue an excavation permit, the BLM must prepare an Environmental Assessment for the proposed location. All fossils collected under a permit remain public property and must be curated in an approved repository.

As of early 2014, the BLM Wyoming State Office has issued between 100-120 separate active paleontological resources permits involving research and/or consulting in the Planning Area (BLM 2014b).

Potential Fossil Yield Classification

The BLM utilizes the Potential Fossil Yield Classification (PFYC) system to classify the potential to discover or affect important paleontological resources. The PFYC system is intended to help determine proper mitigation approaches for surface-disturbing activities, disposal or acquisition actions, recreation possibilities or limitations, and other BLM-approved activities. The PFYC system also highlights areas likely to be a focus of paleontological research efforts or illegal collecting. There are five classes of potential fossil yield, ranging from Class 1, "No Potential," to Class 5, "Very High Potential," for vertebrate or scientifically important paleontological resources. The *Glossary* includes a complete description of PFYC system classifications. Although granite and other igneous or metamorphic rock types are usually considered to be devoid of fossils, outcrops of these rocks can have fissure fillings, cave-like structures, sinkholes, and other features that could preserve important paleontological resources or information, so the potential is not zero; therefore, the BLM applies Class 1 to these rock types usually considered not to contain fossil resources.

As shown in Map 46, approximately 79 percent of the Planning Area is classified as Class 3 or 5 geologic formations, indicating a "Moderate" to "Very High" potential for vertebrate or scientifically important paleontological resources.

Identified Paleontological Resources

The Planning Area is one of the most important areas in the northern hemisphere for the paleoecological study of global climate change. Recent and current scientific research is focused on the Paleocene-Eocene Thermal Maximum (PETM) stratigraphic zone, which provides important data about paleoclimate in the basin. This important geologic contact between the Fort Union and Willwood formations in the Bighorn Basin and adjacent strata is an internationally known marker for data on paleoclimate, carbon isotopes, past global warming, and mammalian evolution. This important geologic zone is found in several locations throughout the Planning Area, including in the Clarks Fork Basin and Polecat Bench areas, south of McCullough Peaks, the Foster Gulch area, and several areas in the southern part of the basin. Research interest focusing on these areas is expected to increase over the next planning cycle.

The Planning Area is one of the principal areas in the U.S. for paleontological research on plants, dinosaurs, dinosaur tracksites, early mammal evolution, and paleoenvironments, with a long history of producing many important dinosaur, mammal, and plant specimens.

The Brown/Howe Dinosaur Area ACEC, which includes the Big Al Quarry, includes extensive outcrops of the famous Jurassic Morrison Formation, a well-known dinosaur-fossil bearing deposit (refer to Section 3.7.1 *Areas of Critical Environmental Concern*). Coyote Basin, and other areas north of Shell, Wyoming, are large areas of exposed dinosaur-rich fossil strata on public lands. The Red Gulch Tracksite ACEC contains a world-class exposure of Jurassic dinosaur tracks exposed in the lowermost Sundance Formation. Scientists have expressed interest in building a geoscience museum in nearby Shell that would focus on the paleontological values of the area. The Big Cedar Ridge ACEC contains outcrops of Cretaceous Meeteetse Formation that produce extremely well preserved plant fossils in a 72-million-year-old mudflow of volcanic ash. Natural Trap Cave, in the Little Mountain ACEC, is famous for producing fossils of Pleistocene-age mammals and other animals that fell into the cave and were preserved.

Important Fossil-bearing Strata in the Planning Area

Known fossil deposits in the Planning Area represent the past 543 million years, including the Paleozoic Era, virtually all of the Mesozoic Era (Age of Reptiles), and a major portion of the Cenozoic Era (Age of Mammals). Table 3-37 lists important fossil-bearing strata in the Planning Area, including some of the types of fossils within each strata, by decreasing geologic age. Only a few of the many different types of invertebrate and vertebrate fossils found in the formations are listed in the table and the list is not all inclusive.

The Jurassic Period Morrison Formation is known for its rich dinosaurian fauna (e.g., bones, teeth, skin impressions, eggshells, and trace fossils), and the Sundance Formation is important for its marine reptiles, trace fossils, and important invertebrate fossils.

Cretaceous strata in the Bighorn Basin have yielded important paleontological finds. In particular, outcrops of the Cloverly, Meeteetse, and Lance Formations produce dinosaur bones, while outcrops of the Thermopolis Shale and Mowry Shale produce the fossil bones of marine reptiles. The Meeteetse Formation has produced hadrosaur (duckbill dinosaur) bones and skin impressions in the Elk Basin area, and hadrosaur bones near Meeteetse. Fossil bones and teeth of the dinosaurs *Deinonychus* and *Tenontosaurus* have been found in many localities from the Cloverly Formation. The Paleocene/Eocene Willwood Formation occurs throughout the Bighorn Basin and is considered a world-class fossil resource in the field of mammalian paleontology and paleoclimate. These geologic zones are found in various locations throughout the Planning Area. Research interest focusing on these areas is expected to increase (BLM 2008f; Breithaupt 1996; Druckenmiller 2002; Eicher 1962; Love and Christiansen 1985).

Table 3-37. Geologic Age of Fossil-Bearing Strata in the Bighorn Basin

Formation or Deposit	Era	Period	Fossils Found within Unit
Cottonwood Canyon Member of Madison Limestone	Paleozoic	Devonian/Mississippian	Fossil Fish
Gypsum Spring Formation	Mesozoic	Jurassic	Vertebrate/Trace Fossils/Tracks
Sundance Formation	Mesozoic	Jurassic	Vertebrate/Invertebrate/Trace Fossils
Morrison Formation	Mesozoic	Jurassic	Vertebrate/Dinosaurian Fossils, Microvertebrates
Cloverly Formation	Mesozoic	Cretaceous	Vertebrate/Dinosaurian Fossils
Thermopolis, Mowry, Frontier, Cody shales	Mesozoic	Cretaceous	Vertebrate/Marine Reptiles and Fish Fossils
Meeteetse Formation	Mesozoic	Cretaceous	Vertebrate/Dinosaurian Fossils, Plant Fossils
Lance Formation	Mesozoic	Cretaceous	Vertebrate/Dinosaurian Fossils
Fort Union Formation	Cenozoic	Paleocene	Vertebrate/Mammalian Fossils, Plant Fossils
Willwood Formation	Cenozoic	Eocene	Vertebrate/Mammalian Fossils, Plant Fossils
Tatman Formation	Cenozoic	Eocene	Vertebrate/Mammalian Fossils, Plant Fossils
Wiggins Formation	Cenozoic	Eocene	Vertebrate Fossils
Terrace, colluvial, alluvial, glacial, eolian or cave deposits	Cenozoic	Quaternary/Pleistocene	Vertebrate Fossils

Sources: BLM 2008f; Breithaupt 1996; Druckenmiller 2002; Eicher 1962; Love and Christiansen 1985.

Paleontological Resources Management

Special Management Designations for Paleontological Resources

Four existing ACECs in the Planning Area have been identified for their paleontological values – Big Cedar Ridge, Red Gulch Dinosaur Tracksite, Brown/Howe Dinosaur Area, and Little Mountain. In addition to these existing ACECs, four areas have been nominated as new ACECs based on their paleontological values – the Clarks Fork Basin/Polecat Bench West Paleontological Area, the McCullough Peaks South Paleontological Area, the Foster Gulch Paleontological Area, and the Rainbow Canyon Area. Refer to Section 3.7.1 *Areas of Critical Environmental Concern* for information on these existing and proposed ACECs.

Management Challenges

The BLM manages paleontological resources for the overall benefit of the public, which can include research, preservation, interpretation and museum display, and recreation. While implementing regulations under the PRPA have not been issued at this time, the BLM is required to "manage and protect paleontological resources on federal land using scientific principles and expertise." Until the implementing regulations are issued, the BLM will continue to follow the policy and guidelines discussed above under *BLM Management and Protection of Paleontological Resources*.

Scientific Use

Balancing the needs of scientific research and public recreation (including hobby collecting and onsite interpretation and development) against preservation of the resource presents a challenge for the BLM. The primary resource indicator for paleontological resources is whether there is a loss of characteristics that make the fossil locality or feature important for scientific use or public education and enjoyment. Natural or accelerated erosion, decay, improper collection, and vandalism can remove, alter, or damage characteristics that make the paleontological resource scientifically important or enjoyable to the public.

The BLM management of research efforts is relatively indirect and limited, primarily responding to requests from scientific researchers for paleontological use permits. At present, there are more than 100 active permits for the Planning Area, and the number of requests for use permits is expected to increase in the future.

Public Use: Recreational Visits and Hobby Collecting

The BLM allows hobby collecting of common varieties of invertebrate or plant fossils and petrified wood throughout the Planning Area. Invertebrate fossils can only be collected in reasonable quantities for personal use while making a negligible disturbance and using only hand tools; unrestricted collecting is not allowed. Petrified wood can be collected for personal use in quantities of up to 25 pounds per day, but is limited to no more than 250 pounds per year. Because of a lack of information, at this time it is not possible to identify specific areas where unsupervised hobby collecting could occur; further study might determine that there are such areas and that collecting activities can occur in those areas. Concentrating people at a developed site often increases adverse impacts to that site and the resource through increased vehicle and foot traffic and exposure to vandalism.

Regional Population Growth

Increasing visitation to public lands due to increased population could result in both intentional and unintentional damage to paleontological resources as a result of collection, vandalism, surface disturbance, and other depreciative behavior. Remote areas once protected by their distance from populated areas, are now within reach of hikers, OHV users, and nearby residents. In addition, paleontological resources in the Western United States, including sites where dinosaur bones have been found, are attracting visitors from all over the world to areas where they could adversely affect fragile resources through overuse.

Vandalism and Looting

Throughout the decades, public lands have been an easy target for thieves and looters, and the plundering and destruction of paleontological resources has become a highly lucrative business involving a network of looters and buyers in the United States and elsewhere. Most fossils taken from public lands are difficult to track to their place of origin.

Localities known to contain commercially valuable fossils are the primary targets of looters, although objective estimates of the extent of damage and destruction to such places are hard to develop.

3.5.3 Visual Resources

The BLM has a basic stewardship responsibility to identify and protect visual values on public lands (BLM 1986c). To accomplish this, visual values are systematically identified and evaluated to determine appropriate management objectives. BLM policy guidance for Visual Resource Management (VRM) of BLM-administered public lands has not changed or been updated since the early 1980s. The following paragraphs describe the VRM system and visual resource inventory (VRI) process.

Visual Resource Inventory

As mandated by Section 201 of the FLPMA, the BLM prepares and maintains visual resource inventories to identify visual values for all public lands (BLM 1986c). The CYFO completed a new visual resource inventory in January 2009. The WFO reviewed and updated its visual resource inventory for all lands south of the Greybull River in winter and early spring 2009. This RMP and EIS incorporate the updated visual resource inventory information. See Appendix X for additional information on the visual resource inventory.

The VRI process uses three primary components to determine visual values within the Planning Area: Scenic Quality Evaluation, Sensitivity Level Determination, and Delineation of Distance Zones. Scenic Quality is evaluated based on an area's landform, vegetation, color, adjacent scenery, scarcity, and the level of human modification. The BLM rates the Scenic Quality of an area as an A, B, or C; A areas are the most scenic, and C are the least. Sensitivity Level is determined based on the type of users of a given area, the amount of use, public interest in the area, adjacent land uses, and any special designation (such as WSA) in the area. Based on these factors, the BLM rates an area's visual resources as having either high, medium, or low sensitivity levels. Landscapes are also divided into three Distance Zones based on their visibility from travel routes or Key Observation Points: foreground-middleground, background, and seldom seen areas. The foreground-middleground zone includes areas seen from highways, rivers, or other viewing locations which are less than 3 to 5 miles away. Seen areas beyond the foreground-middleground zone, but usually less than 15 miles away, are in the background zone. Areas not seen as foreground-middleground or background (i.e., hidden from view) are in the seldom-seen zone. Because of the dense travel network within the Bighorn Basin, no areas were classified as background, or seldom seen; the only Distance Zone classification in the Planning Area is foreground-middleground.

Based on Scenic Quality, Visual Sensitivity, and Distance Zone, BLM-administered lands are placed into one of four VRI classes. These inventory classes represent the relative value of the visual resources and are informational in nature. Classes I and II are the most valued, Class III represents a somewhat lesser value, and Class IV represents the least value (due to low scenic quality or substantial development). Changes in sensitivity levels and scenic quality in the Planning Area have resulted in changes to the VRI. Some areas moved from Class II and III to IV, and other areas from III and IV to II. Special Areas, such as WSAs, are automatically rated as visual resource inventory Class I. Table 3-38 provides an illustration of the basis for determining VRI classes based on the components of Scenic Quality, Visual Sensitivity, and Distance Zones.

Table 3-38. Visual Resource Inventory Classes

		Visual Sensitivity Levels						
		High			***Medium***			***Low***
Special Areas		I	I	I	I	I	I	I
Scenic Quality	A	II	II	II	II	II	II	II
	B	II	III	III[1]	III	IV	IV	IV
				IV[1]				
	C	III	IV	IV	IV	IV	IV	IV
Distance Zones		f/m	b	s/s	f/m	b	s/s	s/s

Source: BLM 1986c

Distance zones: f/m = foreground-middleground, b = background, s/s = seldom seen areas

[1]If adjacent areas are Class III or lower then Class III is assigned. If adjacent areas are higher than Class III, then Class IV is assigned.

Table 3-39 includes the acreage for each VRI component sorted by rating (Scenic Quality, Sensitivity Level, and Distance Zone) in the Planning Area along with the resultant VRI classes. The VRI classes provide the baseline for visual resources in the Planning Area and are the indicator of visual values against which the impacts from VRM under the various RMP alternatives are measured. Maps showing the scenic quality evaluations, sensitivity levels, and VRI classes for the Planning Area are provided in Appendix X.

Table 3-39. Visual Resource Inventory Component and Class Ratings

Inventory Component and Rating	Acres (BLM-administered surface)
Scenic Quality Evaluation[1]	
A	1,333,214
B	1,017,932
C	699,458
Special Areas[2]	141,000
Sensitivity Level Determination[3]	
High	1,013,970
Medium	479,435
Low	1,557,200
Special Areas[2]	141,000
Distance Zone[4]	
Foreground/Middle Ground[4]	3,046,814
Special Areas[2]	141,000
Visual Resource Inventory Class	
Class I	140,971
Class II	984,812
Class III	384,589
Class IV	1,681,176
Not Rated[5]	37

Sources: BLM 2013a; BLM 2009e.

[1]A-rated lands are the most scenic, C-rated lands are the least.
[2]Special Areas include Wilderness Study Areas and other federal agency's surface land. These areas are either required to be managed as VRM Class I and therefore automatically placed into VRI Class I (e.g., WSAs on BLM-administered surface) or are managed under other agencies' VRM procedures and therefore not assigned to a VRI class (e.g., National Recreation Area lands around Yellowtail Reservoir). As a result, numbers may exceed total of all BLM-administered lands in Planning Area due to slight overlap in class ratings. For both cases, lands classified as Special Areas are not rated for Scenic Quality, Visual Sensitivity, or Distance Zone.
[3]High, medium, or low sensitivity levels are based on factors including amount of use, public interest, and adjacent land uses.
[4]The only distance zone in the Planning Area is Foreground/Middle Ground. Foreground-Middleground is the area seen for a distance of 3 to 5 miles.
[5]Surface lands managed by another federal agency, such as the National Park Service. These areas are not assigned to a VRI class.

BLM Bureau of Land Management

Visual Resource Management Classes

The BLM considers visual values along with other resource values in the RMP process. Based on the VRI, along with other resource values and opportunities in a given area, the BLM establishes visual objectives for VRM. The BLM conducts visual resource inventories for all lands in the Planning Area; however, only BLM-administered lands are managed within the VRM system. Approved VRM objectives according to each VRM Class (see below; not to be confused with VRI classes) provide visual management standards for the design and development of projects on the public lands. The specific objectives for the four VRM classes are as follows:

- **Class I Objective.** The objective for this class is to preserve the existing character of the landscape. This class provides for natural ecological change; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
- **Class II Objective.** The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- **Class III Objective.** The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- **Class IV Objective.** The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These 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 repeating the basic landscape character elements. (Note that Class IV areas are not necessarily of low scenic quality).

Visual Contrast Rating and Design Principles

The VRM system is designed to separate the existing landscape and proposed projects into features (landforms and water, vegetation, and structures), and landscape character elements (form, line, color, and texture) to compare each part to the other to identify parts that are not in harmony. The BLM uses the visual contrast ratings (BLM 1986d) to analyze proposed projects during the environmental review process. Visual contrast ratings determine whether proposed projects meet established VRM objectives. They also are a valuable tool to identify visual impacts and to identify effective means to mitigate them. Basic landscape design principles, which include repeating landscape character elements, minimizing surface disturbance, and proper siting and location, are invaluable to design (or re-design) projects to minimize adverse visual impacts.

Visual Resource Management within the Planning Area

Important Visual Resources

There are many highly scenic areas in the Planning Area. The landscape exhibits a high degree of variability in the visual environment. The Planning Area contains open rolling hills, low mesas, badland areas, small mountain ranges, scenic river valleys, narrow, deep canyons, and dramatic colorful ridges. Specific scenic areas in the Planning Area include the slopes of the Big Horn and Absaroka mountains; badland areas such as McCullough Peaks, Fifteenmile area; dramatic landforms like Sheep Mountain, Carter Mountain, and Bald Ridge; portions of the Bighorn River corridor; Heart Mountain; and the numerous canyons along the west slope of the Big Horns. Rattlesnake and Cedar mountains, along with the Shoshone River canyon, frame the major travel corridor between Cody and Yellowstone National Park. The Wind River Canyon into Thermopolis, and Highways 16, 14, and 14a offer high scenic qualities to the casual observer as they enter the basin. Table 3-39 provides a quantitative summary of the ratings under each of the VRI components.

VRM Classes and Associated Acreages

Table 3-40 lists acreages by VRM class for all lands in the Planning Area. Lands in VRM Class I are WSAs and the Five Springs Falls ACEC. Lands not rated include the Bighorn Canyon National Recreation Area and Buffalo Bill State Park. Map 47 shows existing VRM classes in the Planning Area.

Table 3-40. Visual Resource Management (VRM) Classes

VRM Class	Acres (BLM-Administered Surface)
Class I	141,127
Class II	340,784
Class III	890,482
Class IV	1,815,043
Not Rated	23

Sources: BLM 1988a; BLM 1990; BLM 1998a; BLM 2013a.

BLM Bureau of Land Management

Visual Resource Conditions

While a large proportion of BLM-administered lands in the Planning Area are classified as VRM classes III and IV, most of the Bighorn Basin retains a fundamentally natural appearance and has notable scenic quality. Few areas are visually degraded by industrial activity and those that have undergone development (for example, the Elk Basin oil field northeast of Cody) have a very high potential to be restored to natural-appearing scenic landscapes. The Planning Area also contains fairly rugged landscapes with considerable visual variety. Landscapes such as these have the capacity to absorb visual intrusions and limit adverse impacts of development on the scenic quality of the landscape.

Types of Visual Intrusions

Visual intrusions on BLM-administered lands in the Planning Area include oil and gas fields, bentonite mining, the network of roads and highways, powerlines and various facilities needed to support mineral development, recreation, range improvements, and other facilities and infrastructure. Overall, other than the pockets containing a significant amount cultural modifications (such as Hamilton Dome, Grass Creek, Oregon Basin, and Elk Basin to name a few), the development in the Planning Area has left a small footprint and has not substantially changed the visual character of the area.

Management Challenges

Management challenges for VRM in the Planning Area remain essentially unchanged over the last 20 years. Management challenges for visual resources typically result from development associated with minerals and ROWs. An emerging management challenge for VRM in the Planning Area could result from renewable energy development. There could be wind-energy development projects in the Planning Area during the planning cycle because of wind potential and current policy direction for renewable energy development on public lands. Additional discussion on policies relevant to renewable energy production on public lands is included in Section 3.6.2, *Renewable Energy.* Due to the height and size of wind turbines and the locations of areas with high wind potential (usually along ridgelines, hills, or other highly visible areas) impacts to visual resources can be especially intrusive and difficult to mitigate. If development of wind energy occurs in the Planning Area, the BLM will face management challenges in meeting visual resource objectives in these areas.

Another challenge for VRM is the growing and expanding development of bentonite extracting activities. Currently, BLM-administered public lands managed under VRM Class II objectives overlay desirable bentonite beds. A recent increase of bentonite plans of operations have been located in VRM Class II, which provides a challenge to authorize the mining activity while maintaining Class II objectives.

3.6 Land Resources

Land Resources include the individual resources of lands and realty, renewable energy, ROWs and corridors, comprehensive travel and transportation management (CTTM), recreation, wilderness characteristics, and livestock grazing management. The following sections describe each resource, its existing condition, and management challenges.

3.6.1 Lands and Realty

The lands and realty program manages the underlying land base that supports all resources and management programs in the Planning Area. Management decisions for lands and realty are limited to BLM-administered public lands, though lands and realty actions during the life of the RMP could involve other surface managers. The primary activities of the lands and realty program include (1) land use authorizations such as ROWs, leases, and permits; (2) land tenure adjustments, including sales and other types of disposal actions, exchanges, donations, acquisitions of lands and interests in lands (i.e., access easements); (3) withdrawals, classifications, and segregations; and (4) management of land boundaries. As part of the processing of lands and realty actions, the BLM works cooperatively with other federal agencies, the state of Wyoming, cities and counties, and public and private landholders.

Land Status

The BLM administers 3,187,814 acres (56 percent) of surface lands in the Planning Area (Table 3-41). Private land ownership accounts for the second largest amount of surface land ownership in the Planning Area. Of the four counties in the Planning Area, Big Horn County contains the largest amount of BLM-administered land (Table 3-42).

Table 3-41. Surface Ownership in the Planning Area

Surface Manager	Planning Area Total Acres	Planning Area Percentage
Bureau of Land Management	3,187,267	56.5
National Park Service	15,645	0.3
State of Wyoming	418,659	7.4
Bureau of Reclamation	86,193	1.5
Private	1,919,656	34.0
Water	12,643	0.2
Other	3,777	0.1
Total	**5,644,868**	**-**

Source: BLM 2013a

Table 3-42. Acres of Bureau of Land Management-Administered Lands and Federal Mineral Estate in the Planning Area

County	BLM-Administered Land	Federal Mineral Estate[1]
Big Horn	1,157,920	1,288,238
Hot Springs	500,631	741,151
Park	624,870	1,049,904
Washakie	903,846	1,123,281
Total	**3,187,814**	**4,203,213**

Source: BLM 2013a

[1]The acreages listed for BLM-administered federal mineral estate do not include United States Forest Service lands.

BLM Bureau of Land Management

The BLM administers 4,203,213 acres of federal mineral estate in the Planning Area (Table 3-42). The CYFO extends west beyond the Planning Area boundary, but the USFS and the National Park Service manage these lands and the associated mineral estate, and they are not further addressed in this RMP and EIS. Although the BLM administers the leasing of the mineral estate underlying USFS and BOR withdrawn lands, mineral management decisions on these lands are made by the surface management agency. On many of the private lands, the mineral estate (all of the minerals or portions of the minerals) is reserved to the U.S. Government. In these cases, the BLM administers the mineral estate and the private landowners administer the surface estate. These lands are referred to as split-estate (ownership) lands.

Land Use Authorizations

Land use authorizations include various authorizations to use public surface for leases, including ROWs under Section 501 of FLPMA, permits, and easements under Section 302(b) of FLPMA; Recreation and Public Purposes (R&PP) leases under the R&PP Act of June 14, 1926 (43 U.S.C. 869 et seq.); and airport leases under the Federal Public Airport Act of 1928, as amended (49 U.S.C. Appendix, Sections 211-213). This section briefly describes land use authorizations and the authorizing regulations for these lands and realty actions.

Rights-of-Way

FLPMA Section 501 authorizes the BLM to grant ROWs for infrastructure and facilities that are in the public interest and require ROWs over, under, upon, or through BLM-administered lands. Most ROW applications in the Planning Area are for linear developments such as roads, pipelines, and other associated infrastructure. Refer to Section 3.6.3 *Rights-of-Way and Corridors* for a detailed description of ROWs in the Planning Area.

Leases, Permits, and Easements

Section 302(b) of FLPMA authorizes the BLM to issue leases, permits, and easements for the use, occupancy, and development of public lands. The field offices in the Planning Area administer six long-term special land use permits, three of which authorize farming on 60 total acres. In addition, an average of seven short-term permits are managed in the Planning Area each year, which can include

short-term permits for commercial filming projects. The BLM has never authorized easements for public land use in the Planning Area.

Recreation and Public Purposes Act Leases and Conveyances

The R&PP Act authorizes the BLM to lease or convey public surface to state and local governments and qualified nonprofit organizations for recreation and/or public purpose uses. Examples of typical uses under the R&PP Act include historic monument sites, campgrounds, schools, parks, public works facilities, and hospitals. Lands are typically leased first until development of the site is completed and then, if appropriate, the BLM may convey a title. Lands proposed to be leased or conveyed under the R&PP Act must first be classified as suitable for such use. R&PP classifications segregate the land from operation of the public land laws other than the R&PP Act; the R&PP Act precludes disposal by sale, exchange or other means, but specifically allows for R&PP lease or conveyance. R&PP classifications also segregate areas from operation of the mining laws, closing the area to mining of locatable minerals. R&PP classifications do not segregate areas from mineral leasing. R&PP leases and conveyances reserve all minerals in the land to the United States.

The BLM administers 12 R&PP patents covering 2,744 acres, including 3 pending covering 537 acres. In addition, there are a total of seven R&PP leases; six covering 435.5 acres and one pending lease application totaling 440 acres. Table 3-43 lists existing and pending R&PP leases in the Planning Area.

Table 3-43. Existing and Pending Recreation and Public Purpose Act Leases in the Planning Area

Current Leases	Lessee	Acres
Cody Archery Range	City of Cody	96
Lovell Gun Range	Big Horn County	136
Wapiti Fire Station	Fire District	2
Moonrock Equestrian Area	Washakie County	127.5
Radio-Controlled Model Airplanes	Washakie County	34
Thermopolis Radio Control Club	Hot Springs County	40
Current Total	**-**	**435.5**
Pending Leases (applications in process)	**Lessee**	**Acres**
Bighorn Bow Hunters-Archery Range	Hot Springs County	440
Pending Total	**-**	**440**

Source: BLM 2009a

Airport Leases/Grants

Six communities in the Planning Area have an associated public airport – Powell, Cowley, Greybull, Worland, Thermopolis, and Cody. In 1950, the BLM conveyed 650 acres of public land to Big Horn County/City of Greybull for the Greybull Airport, with an additional 70 acres proposed for a runway expansion. In 2004, the BLM conveyed 80 acres of public land to the City of Worland to allow shifting of the primary runway and an extension of the runway and taxiway at the Worland Municipal Airport. The BLM has not received any other airport or airway applications. Refer to Appendix M for additional details pertaining to airport grants.

Unauthorized Use, Trespass, and Illegal Dumping

Unauthorized use and trespass are the use, occupancy, or development of public land or its resources without a required authorization, or in a way that is beyond the scope and terms and conditions of an authorization; this definition excludes uses defined as casual use in the regulations (43 CFR 2920.1-2[a]).

Some trespass actions, such as illegal dumping, can cause unmitigated damage to public lands and natural resources. In the event the BLM is not able to identify a responsible party, the cost to resolve trespass and to clean up and reclaim the affected public land is often passed on to the general public. These costs direct appropriated funds away from planned work, and affect the BLM's ability to complete its mission. In addition, the public does not receive fair market value for use of the public lands, lands that could be otherwise available for use can become unavailable.

Trespass has been an ongoing problem in the Planning Area. Limited staff and funding is a contributing factor allowing trespass to continue unabated. When trespass actions go undetected or are not addressed, there is no incentive to cease and no deterrent to further trespass action. Known illegal activities include placement of beehives; indiscriminate dumping of trash, debris, and household wastes; farming/irrigation of public land; corrals; fences; and construction of roads and other utility-related features. Agriculture trespass and trash dumping are the most common, with numerous small-acreage areas involved. There are no known hazardous material issues associated with permitted facilities. An inventory of closed landfills in 2007 indicated there are no problem areas that need to be addressed in the CYFO; there has been no similar inventory for the WFO portion of the Planning Area.

In the CYFO Planning Area, there are more than 30 substantial (1 to 5 acres or more) unresolved trespass cases, and another 60 to 70 possible cases involving less than 1 acre in the CYFO. In the WFO, there are 57 documented cases of realty trespass and one documented case of ROW trespass. Typically, 3 to 5 cases are resolved each year, with some situations requiring a formal land survey to determine property boundaries. There is a potential for other unauthorized agricultural and occupancy trespass situations to occur in the Planning Area.

Land Tenure Adjustments

Scattered parcels of BLM-administered land can be difficult to manage as part of the public land system. In many cases, the small size of the scattered parcels, their isolation from other parcels of public land, and lack of legal access can make them of marginal utility for retaining in public ownership. Occasionally, these isolated parcels can serve other resource purposes, such as providing wildlife habitat in an area that has been fragmented by suburban development or providing recreational facilities.

Land tenure (or land ownership) adjustment refers to lands and realty actions that result in the retention or disposal of BLM-administered lands, or BLM acquisition of non BLM-administered lands or interests in lands. The FLPMA requires that public land be retained in public ownership unless, as a result of land use planning, disposal of certain parcels is justified. Parcels of land designated as potentially available for disposal are more likely to be conveyed out of federal ownership through an exchange rather than a sale. Prior to disposal of federal lands, the BLM conducts additional analysis including preparation of a mineral potential report and standards for boundary evidence certificate(s). Acquisition of and interests in lands are important components of the BLM land tenure adjustment strategy. Acquisition of and interests in land can be accomplished through several methods, including exchange, purchase, donation, and condemnation. Voluntary purchases or exchanges from willing sellers, including easements, are common methods used to increase access to public lands. Appendix M contains detailed information regarding land retention, acquisition, and disposal.

The BLM acquires lands and interests in lands to accomplish the following actions:

- To allow for access to BLM-administered lands across private lands.
- To improve management of public land 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.

Exchanges

Exchange is the process of trading lands or interests in lands. Conducted under the authority of Section 206 of the FLPMA, land exchanges are a tool that enables the BLM and other landowners to improve land management, consolidate ownership, and protect environmentally sensitive areas. By exchanging public land that is isolated and difficult to manage, the BLM is able to acquire other lands with importance for recreation, wildlife, fisheries, wetlands, habitat for threatened and endangered species, wilderness, open space, scenic, cultural, and other resource conservation purposes. Land exchanges allow the BLM to reposition lands into more manageable units and to meet community expansion needs.

Exchanges are the primary means by which the BLM acquires land. Except for exchanges that are congressionally mandated or judicially required, exchanges are voluntary and discretionary transactions with willing landowners. Lands to be exchanged must be of approximately equal monetary value and in the same state. Exchanges must also be in the public interest and conform to applicable BLM land use plans and other relevant guidance.

There has been only modest exchange activity in the Planning Area, although interest in exchanges continues to increase. The most recent land exchanges were the Hoodoo Ranch/Hunt Oil Exchange (7,848 acres conveyed, 6,487 acres acquired) in 1995 and the Great Western Exchange (6,894 acres conveyed, 2,399 acres acquired) in 1999. Another recent exchange resulted in the acquisition of 2,839 acres of private land in the South Big Horn Mountains area. Appendix M contains additional detailed information regarding BLM land exchanges and sales.

Purchases

Under Section 205 of the FLPMA, the BLM has the authority to purchase lands or interests in lands. Similar to other acquisitions, purchase is used to acquire key natural resources or to acquire legal ownership of lands that enhance the management of existing public lands and resources. Acquisition of lands through purchase helps consolidate management areas to strengthen resource protection. Given the limited funds available through appropriations, the BLM acquires lands through purchase sparingly. Depending on the designation and land ownership pattern, private, State or Bureau of Reclamation lands surrounded by BLM-administered public lands managed as a special designation, such as ACECs or WSAs, may be considered for acquisition.

The BLM recently completed several land purchases in the Planning Area using Land and Water Conservation funds. Two such purchases were completed in 2003 and involved lands associated with distinct management areas – a 160-acre in-holding in the Brown/Howe Dinosaur Area ACEC near Shell, and 8,200 acres in the Little Mountain area near Lovell. The BLM recently purchased 153 acres along the Bighorn River to secure property along the river for public access and wildlife habitat. An additional 1,179 acres of land within the Craig Thomas SMA was acquired in 2010 with Land and Water Conservation Funds.

Acquiring access easements across non-federal lands for roads and trails provides for legal public access to "landlocked" public lands. Easement acquisition has been a long-term effort in the Planning Area, largely because of the scattered land pattern in many areas. The BLM usually purchases access easements using appropriated funds, although some have been donated. Most access easements provide legal public vehicular, foot, or horseback access on roads or trails to large blocks of federal land. The BLM currently manages 110 easements acquired for public access across non BLM-administered land in the Planning Area.

Donations and Condemnations

The BLM occasionally receives gifts or donations of lands or interests in lands when an entity elects not to receive the market value for the interests being conveyed. A donation of $100,000 from the Rocky Mountain Elk Foundation was part of the Devils Canyon Ranch acquisition in 2003. The BLM has not acquired any lands in the Planning Area through condemnation.

Land Disposal

Public lands have potential for disposal when they are isolated and/or difficult to manage. Disposal actions are usually in response to public requests, such as community expansions. Disposals result in a title transfer, wherein the lands leave the public domain. The BLM coordinates all disposal actions with adjoining landowners, local governments, and current land users.

The BLM manages public sales under the Section 203 disposal criteria of FLPMA. Public lands determined suitable for sale are offered on the initiative of the BLM or through a nomination/request for sale from the public. The BLM does not sell lands at less than fair market value.

Appendix M and Map 51 describe and show properties identified for disposal or retention. Tracts of land designated in this RMP as potentially available for disposal are more likely to be conveyed out of federal ownership through an exchange rather than a sale.

Section 209 of the FLPMA specifies that all minerals underlying public lands disposed of by sale shall be reserved to the United States, unless there are no mineral values in the lands or the reservation of mineral rights to the United States is interfering with or precluding appropriate non-mineral development of the land, and such development is a more beneficial use of the land than mineral development.

Section 209 of FLPMA also specifies the conditions under which mineral rights will be conveyed, including payment of the administrative costs of the sale, payment of fair market value for the mineral rights, and conducting an exploratory program. Mineral rights may be sold with the land surface, sold as a separate transaction, or retained by the United States. In the Planning Area, the BLM has conveyed mineral rights only in conjunction with the sale of lands.

Approximately 115,905 acres of public lands are currently identified for disposal by sale. However, little public land has actually been offered for sale under FLPMA. Four parcels have been sold in the last 11 years, as follows:

- In 2003, the BLM sold 0.99 acre to Hawkins and Powers, Inc., for a parking lot for an airplane museum near Greybull.
- In 2002, the BLM sold 30 acres to Robert G. Griffin for the existing Grass Creek Sawmill site, which was previously authorized under a long-term lease.
- In 2006, the BLM sold 3.75 acres to the Mary A. Clay Revocable Trust to resolve an inadvertent trespass issue.

- The BLM has identified (and Congress has authorized) approximately 16,122 acres of land (the Westside Irrigation Project) for conveyance to local farmers for development as farm land (private land ownership). Pending inventory of these lands, some or all will be disposed from BLM ownership. The BLM will retain lands in this area not disposed of and will manage those lands consistent with adjacent BLM-administered lands.

Retention

Lands identified for retention in the Planning Area are BLM-administered lands not identified for disposal and lands not currently classified for disposal (e.g., R&PP Lands and Desert Land Entry [DLE] Lands). The BLM has identified a total of 3,071,909 acres for retention in the Planning Area.

Desert Land Entries

Congress passed the Desert Land Act on March 3, 1877, to encourage and promote the economic development of arid and semiarid public lands in the western United States. The purpose of the Act is to permit reclamation by irrigation of arid public land through individual effort and private capital. Arid lands capable of producing a reasonable cash agricultural crop using irrigation may be considered for a DLE. The lands must be untimbered, surveyed, unreserved, and unappropriated. If an applicant meets the final proof requirements of a DLE, a patent to the legal title of the land may be conveyed.

Most of the lands suitable for agricultural development in the Planning Area have already been placed into private ownership. With the problems of finding suitable public land, limited water available for irrigation, and the high cost of development, it is difficult to acquire a DLE under the 1877 Desert Land Act, but Act authority remains available.

A total of 1,409 acres are currently classified as suitable for entry under the Desert Land Act. There were DLE conveyances in 2003 west of Greybull (280 acres) and two DLE conveyances in 1999 (a total of 457 acres), also in Big Horn County. Since the previous RMPs, the BLM has received a number of DLE applications, but the BLM has not processed the applications because of other higher priority workload commitments, such as energy development. Additional details regarding BLM processes for desert land entries are located in Appendix M.

Withdrawals and Classifications

Lands are withdrawn under various legal authorities, including Acts of Congress. A withdrawal is a formal action that withholds an area of public land from settlement, sale, location, or entry under some or all of the public land laws; or segregates (closes) the area to mineral entry (locatable mineral development) or mineral leasing (leasable mineral development). Withdrawals are made with the purpose of limiting activities under those laws to maintain other public and resource values in the area, to reserve the area for a particular public purpose or program, or to transfer jurisdiction over an area of federal land from one department, bureau, or agency to another. Withdrawals are established for a wide range of public purposes, including military reservations, reclamation projects, and power-site reserves.

Existing withdrawals in the Planning Area have been established to protect resource values and to transfer jurisdiction to other federal agencies to accomplish their missions and goals. Withdrawals may be subsequently relinquished, in which case the land may be returned to its original jurisdiction. Withdrawn lands no longer needed by the agency for which the lands were withdrawn and have been relinquished by the agency, that are suitable for return to the public land status, will be managed by the BLM. Table 3-44 lists existing and proposed withdrawals, classifications, and other segregations in the Planning Area.

Table 3-44. Existing and Proposed Withdrawals, Classifications, and Other Segregations in the Planning Area

Field Office	Name	Acres[1]	Segregates/Withdrawals from	
			Disposal	*Locatables*
	Resource Protection			
CYFO	Stock Driveway	37,297	■	
WFO	Stock Driveway	60,452	■	
CYFO	Cave and Karst Areas	0		■
WFO	Cave and Karst Areas[2]	8,560		■
CYFO	Spirit (Cedar) Mountain Cave	234	■	■
CYFO	Horsethief/Natural Trap Caves	519	■	■
WFO	Big Cedar Ridge Paleontological Area	264	■	■
WFO	Red Gulch Dinosaur Tracksite	1,798	■	■
WFO	Castle Gardens Recreation Site	110	■	■
CYFO	Beck Lake Scenic Area (Proposed)	708	■	■
CYFO	Heart Mountain National Historic Landmark	72		■
	Management Areas			
CYFO	ACECs	11,935		■
WFO	ACECs[2]	22,239		■
CYFO	Wild and Scenic Rivers	4,518		■
WFO	Wild and Scenic Rivers	12,129		■
	Other Segregations			
CYFO	Cody Industrial Park	0		■
WFO	BLM-Wyoming State Office Public Water Reserve	2,140	■	
CYFO	BLM-Wyoming State Office Public Water Reserve	625	■	
WFO	BLM-Wyoming State Office Power Site Reservation	159	■	■
CYFO	BLM Power Site Reservation	3,308	■	■
	Other Federal Agency Withdrawals			
WFO	Power Site Classification (FERC)	1,249	■	■
CYFO	Power Site Classification (FERC) (Clarks Fork of the Yellowstone and Bighorn rivers)	15,696	■	■
CYFO	Department of Defense (Lovell Military Training Area)	3,543	■	■
CYFO	National Park Service – Big Horn Recreation Area	15,630	■	■
CYFO	U.S. Forest Service – Wood River Guard Station	39	■	■

Source: BLM2013a

[1]Withdwrawal and classification acreages provided in this table are not additive.
[2]Withdrawals for cave and karst areas that overlap the Spanish Point Karst ACEC are counted in both locations.

ACEC	Area of Critical Environmental Concern	CYFO	Cody Field Office
BLM	Bureau of Land Management	FERC	Federal Energy Regulatory Commission
BOR	Bureau of Reclamation	WFO	Worland Field Office

Two public land orders (Public Land Order 7396 on July 6, 1999, and Public Land Order 7370 on November 5, 1998) restored approximately 153,762 acres of previously withdrawn BOR land to BLM jurisdiction.

Land classification is a process required under specific laws to determine the suitability of public lands for certain types of disposal or lease, or suitability for retention and multiple use management. Most land classifications also segregate public lands from operation of some or all of the public land laws and/or mineral laws. Table 3-44 identifies existing site-specific classifications. Pending classifications associated with a proposal/application include 2 R&PPs and 13 DLEs which are under consideration for classification. Lands proposed to be leased or conveyed under the R&PP Act must first be classified as suitable for such use.

The 1964 Classification and Multiple Use Act established several existing classifications. The lands were classified for retention and multiple use management, and against sale, agricultural entry, and mining location, but they remain open to mineral leasing. In the Little Mountain area, approximately 2,800 acres are still included in this group of classifications.

Other segregations result from a variety of actions, such as exchanges and land sales in which the federal mineral rights are reserved to the United States in the land patent.

Management Challenges

There are a variety of management challenges for the lands and realty program in the Planning Area. These are based on historic activities and trends and current and future needs of public resources and internal and external customers. Most management challenges for lands and realty are related to balancing land tenure adjustments and land use authorizations between the maintenance of BLM resource objectives and the needs and desires of the public and other federal agencies.

Resolving trespass, dumping, and illegal use issues on public land is an important management challenge for the lands and realty program. There also are management challenges related to land tenure adjustments and the availability of lands and realty and other BLM personnel. The BLM has not fully surveyed many parcels identified for disposal and is uncertain of the condition of resources in these lands. Inventories of lands listed for disposal might identify unique resources, which could cause the BLM to reconsider these lands for disposal. Inventories of disposal lands and their resources also could increase public interest in land exchanges that would benefit both parties. Land exchanges present their own set of challenges because exchanges require a commitment of resources in both personnel and operating costs. Land exchanges, and potentially any land tenure adjustment, can be issues in relation to the value and appraisals attributed to the land and the equity of the land exchange. Interest groups and the general public are vested in the use of public lands, and the lands and realty program faces internal and external challenges to implement equitable land tenure adjustments that are in the public's interest.

Timely processing of permits (e.g., filming permits) and leases is a challenge for the lands and realty program. Local filming commissions compete intensively to bring these projects to the Planning Area, where the projects help support short-term economic activity. If the BLM cannot quickly process filming and other permits and leases, applicants often pursue other locations that would not benefit economies in the Planning Area.

3.6.2 Renewable Energy

Solar, wind, biomass, geothermal, and hydroelectric power are considered renewable energy resources. Wind energy produces electrical energy through the use of large wind turbines. Solar power refers to energy from the sun that is converted into thermal or electrical energy. Geothermal energy is derived from the heat stored in the interior of Earth. Biomass energy is the burning or use of organic materials as a source of energy. Hydroelectric power refers to the production of electrical power through the use of falling or flowing water. Wind, solar, biomass, and hydroelectric facilities are processed through the lands and realty program and authorized under Title V of FLPMA as ROW actions. Geothermal actions are considered a fluid leasable mineral and the BLM processes those actions according to the provisions of the Mineral Leasing Act.

BLM policy is to encourage the development of renewable energy in acceptable areas. In addition, Executive Order 13212 instructs the BLM "to expedite projects that will increase the production, transmission, or conservation of energy." As demand has increased for clean and viable energy to power the Nation, consideration of renewable energy sources on BLM-administered land has become a necessary component of land management planning.

In March 2009, the Secretary of the Interior issued a secretarial order making the production, development, and delivery of renewable energy on public land a top priority for the DOI. In addition to making renewable energy production a top priority for the department, the secretarial order established an energy and climate change task force with the goal of furthering the renewable energy agenda and identifying specific zones on public lands where the DOI can facilitate a rapid and responsible move to large-scale production of solar, wind, geothermal, and biomass energy.

In cooperation with the U.S. Department of Energy National Renewable Energy Laboratory (NREL), the BLM assessed renewable energy resources on BLM-administered land in the western United States, including Wyoming (BLM and DOE 2003). The BLM reviewed the potential for concentrated solar power, photovoltaic, wind, biomass, and geothermal energy on DOI, Bureau of Indian Affairs, and USFS lands in the West. Additional programmatic-level documents for wind, geothermal, and solar energy (the draft solar Programmatic EIS is under development) describe development potential, policies, and BMPs for renewable energy resources on public lands. Development of renewable energy resources on public lands follows policy and BMPs identified in these Programmatic EISs and other resource-specific policy and guidance.

Based on current policy direction and advances in technology, there is potential for renewable energy development in the Planning Area during the life of this RMP. The following paragraphs discuss resource potential and the affected environment for all types of renewable energy resources in the Planning Area. Wind energy has the greatest potential for development in the Planning Area and is discussed in more detail than other renewable resources. Additional details pertaining to wind-energy development are contained within the RFD.

Wind Energy

In 2005, the BLM completed a Programmatic EIS for a Wind Energy Development Program for the western United States (BLM 2005a). The ROD for this Programmatic EIS amended the current RMPs in the Planning Area by implementing programmatic policies and BMPs for wind-energy development in the Planning Area. IM 2009-043 (BLM 2008g) provides additional guidance for wind-energy development on BLM-administered land. The BLM issues ROWs for wind-energy projects for specific sites for meteorological towers, sites for meteorological towers and a project area (for the purpose of

excluding other wind energy ROWs while site testing and monitoring is being completed), and for full wind-energy development.

The BLM Wind Energy Programmatic EIS determined which areas on BLM-administered lands have high (Classes 4 to 7), medium (Class 3), or low (Classes 1 and 2) potential for wind-energy development based on their wind power classifications (BLM 2005a). The BLM uses NREL wind power classifications to identify wind resource potential based on wind power density at 50 meters above ground level. Class 4 to 7 wind resources are generally considered to be economically developable with current technology. Class 3 wind resources are expected to become more economical when low-wind-speed turbines, which are currently in development, become available. In some areas, a Class 3 wind resource could be economical using existing technology, depending on project-specific financing and incentives (BLM 2005a). Wind resource potential in the Planning Area varies from poor to superb (Table 3-45).

Table 3-45. Wind-energy Potential by Wind Power Class in the Planning Area

Wind Power Class	Resource Potential	Wind Speed (miles per hour)	Acres in Planning Area (BLM-Administered Acres)	Percent of Planning Area (Percent of BLM-Administered Lands)
1	Poor	0 to 12.5	3,296,107 (2,090,388)	58 (66)
2	Marginal	12.5 to 14.3	157,760 (793,995)	3 (25)
3	Fair	14.3 to 15.7	506,527 (209,481)	9 (7)
4	Good	15.7 to 16.8	147,001 (47,543)	3 (1)
5	Excellent	16.8 to 17.9	55,201 (17,788)	1 (1)
6	Outstanding	17.9 to 19.7	38,320 (13,516)	1 (Less than 1)
7	Superb	Greater than 19.7	24,100 (15,103)	Less than 1 (Less than 1)

Source: BLM 2005a

Note: The National Renewable Energy Laboratory has validated the estimates; however, the numbers are just estimates and should be confirmed by direct measurement.

In addition to wind power classifications, other factors influence the potential for wind-energy development in the Planning Area. Proximity to transmission lines to transfer energy produced at wind-energy sites influence the potential for wind-energy facilities. Adverse impacts to other resources and resource programs also affect the potential for wind-energy development in the Planning Area. Large wind turbines affect the visual landscape and can be considered a visual intrusion. Another key factor affecting wind-energy development potential in the Planning Area is the presence of special designations (e.g., ACECs and National Historic and Scenic Trails and WSAs) that are excluded from wind-energy development through the Wind Energy Programmatic EIS (BLM 2005a).

There are concentrated areas of medium (Class 3) to high (Class 4 through 7) wind potential in the south, southwest, and southeast portions of the Planning Area (Map 56). There are other areas of medium to high wind potential in the northern portion of the Planning Area around Cody along the Absaroka Mountain Front and McCullough Peaks area. The Absaroka Mountain Front area is close to major transmission lines that could be used to distribute wind energy.

Applications for ROW grants may be submitted for one of the following types of wind-energy projects:

- Site-specific wind energy site testing and monitoring ROW grant for individual meteorological towers and instrumentation facilities with a term limited to 3 years.
- Wind energy site testing and monitoring ROW grant for a larger project area, with a term of 3 years that may be renewed, consistent with 43 CFR 2807.22 and the provisions of IM 2006-216 (BLM 2006b) beyond the initial 3-year term.
- Long-term commercial wind-energy development ROW grant with a term not limited by the regulations but usually in the range of 30 to 35 years.

There are no current or pending ROW authorizations for wind energy facilities in the Planning Area. If meteorological data confirm wind resource potential along the Absaroka Mountain Front, this area could be a viable site for wind-energy development because there is major transmission infrastructure nearby. Given the current policy direction for renewable energy and the wind resources present in the Planning Area, it is likely that there will be wind-energy development during the life of this RMP. However, the BLM does not anticipate widespread wind-energy development in the Planning Area.

Solar Resources

The BLM currently processes solar energy ROW applications for lands under its Solar Energy Development Policy in IM No. 2007-097 (BLM 2007d). The U.S. Department of Energy, Energy Efficiency and Renewable Energy Program, and the BLM are preparing a Solar Energy Development Programmatic EIS to assess environmental impacts associated with development and implementation of agency-specific programs that would facilitate environmentally responsible utility-scale solar energy development on public land in six western states (Arizona, California, Colorado, New Mexico, Nevada, and Utah). The Solar Energy Development Programmatic EIS does not include Wyoming. However, the BLM would likely apply policy direction, BMPs, mitigation, and other management to solar energy projects in Wyoming.

There are no solar facilities or pending applications for solar facilities in the Planning Area. Based on the findings of the BLM Renewable Resource Assessment Project (BLM and DOE 2003), there are no locations in the Planning Area that receive six or more kilowatt hours per square meter per day of solar insolation. As a result, the potential for development of solar resources in the Planning Area is not likely.

Biomass Energy

Biomass power is obtained from the energy in plants and plant-derived materials, such as food crops and grassy and woody plants, residues from agriculture or forestry, and the organic component of municipal and industrial wastes. Biomass can be used for direct heating (e.g., burning wood in a fireplace or wood stove) and for generating electricity, or it can be converted directly into liquid fuels to meet transportation energy needs.

There are no biomass facilities and no pending applications for biomass facilities in the Planning Area. The potential for biomass energy facilities in the Planning Area is low because of low precipitation, a short growing season, allocation of grasslands resources to livestock grazing, and minimal availability of commercial forestland.

Hydroelectric

Hydroelectric power is generated through use of the gravitational force of falling or flowing water. Hydroelectric power is one of the most widespread forms of renewable energy throughout the world; however, its application is limited to the presence of flowing waterbodies of sufficient size to support economically viable development. Management of riparian and aquatic resources present additional constraints on hydroelectric development. There is no specific policy guidance or direction for the development of hydroelectric facilities on BLM-administered land as a renewable energy resource.

The BOR operates the Buffalo Bill Dam and Reservoir in the Planning Area near Cody. The dam produces hydroelectric power that is transmitted into a Western Area Power Administration transmission line. The BOR also operates Yellowtail Dam and Reservoir on the Wyoming-Montana border, which produces hydroelectric power.

New major hydroelectric power sources in the Planning Area would require construction of a new dam and reservoir, which is not likely because the only suitable site in the Bighorn Basin is in Clarks Fork Canyon. A dam and reservoir in this location could affect the WSR section of the Clarks Fork of the Yellowstone River north of Cody. There are no other known localities for major hydroelectric power production in the Planning Area.

The BLM has not received applications for hydroelectric power authorizations in the Planning Area on BLM-administered land, and it is not likely that any additional hydroelectric facilities would be developed in the future. However, there could be a need for new electrical transmission lines that serve hydroelectric turbines on non BLM-administered land.

Geothermal Energy

Geothermal resources are typically underground reservoirs of hot water or steam beneath the surface of Earth. Geothermal energy is produced when this steam or heat is used to turn a turbine to create electrical energy. Geothermal steam and hot water naturally discharge at Earth's surface in the form of hot springs, geysers, mud pots, or steam vents. Geothermal resources also include subsurface areas of hot, dry rock.

The Final Programmatic EIS for Geothermal Leasing in the Western United States evaluates various alternatives for allocating lands as being closed or available for geothermal leasing and analyzes stipulations to protect sensitive resources. The ROD for the Geothermal Programmatic EIS (BLM and USFS 2008a) amended existing plans to facilitate geothermal leasing on federal mineral estate in the Planning Area. The ROD for the Geothermal Programmatic EIS allocates acreages as open and closed, as listed in Table 3-46.

Table 3-46. Acres of Federal Mineral Estate Allocated as Open and Closed in the Record of Decision for Geothermal Leasing in Western States

Field Office	Land Use Plan Amended	Acres Open to Geothermal Leasing	Acres Closed to Geothermal Leasing
Cody	Cody RMP	722,834	39,317
Worland	Grass Creek RMP Washakie RMP	1,537,942	91,803

Source: BLM and USFS 2008b

RMP Resource Management Plan

Although geothermal resources are present throughout the Bighorn Basin, there are no active or pending federal geothermal leases in the Planning Area.

According to the Geothermal Programmatic EIS, there is potential in the Bighorn Basin for geothermal resource development; however, this potential is likely low to moderate because of the quality of geothermal resources and the backlog of geothermal resource development in other western states (BLM and USFS 2008a). Policy direction, advances in technology, and increased interest in renewable energy resources could lead to minimal geothermal resource development in the Planning Area during the life of this RMP.

For more information on geothermal resources, see Section 3.2.4 *Leasable Minerals – Geothermal* in this RMP and EIS and the *Reasonable Foreseeable Development Scenario for Geothermal, Bighorn Basin Planning Area* (BLM 2009h).

Management Challenges

One of the most notable management challenges associated with renewable energy resources is the ability to transmit power generated by renewable energy sources to the grid and to deliver it to the load centers where the energy is needed. Capacity to transmit new power out of the Planning Area appears to be limited unless existing lines are upgraded or new transmission lines built. Like wind turbines, power transmission lines include vertical structures, but also introduce a linear feature that can be particularly noticeable on a visual horizon on certain landscapes. Adverse impacts to other resources and resource uses caused by the development of renewable energy facilities can create additional management challenges.

3.6.3 Rights-of-Way and Corridors

Section 501 of FLPMA authorizes the BLM to grant ROWs for infrastructure and facilities that are in the public interest and require ROWs over, under, upon, or through BLM-administered lands. The BLM ROW program consists of the evaluation, authorization, and management of ROWs, including corridors, for a variety of uses on public/federal land. A ROW grant is an authorization to use specific pieces of public land for certain types of projects, such as developing roads, pipelines, transmission lines, and communications sites. A grant authorizes rights and privileges for a specific use of the land for a specific period.

In the existing plans, ROW corridors were formally designated as the preferred location for existing and future ROWs in the Planning Area. Land uses that typically do not require ROWs are those defined as "casual use" (43 CFR 3809.5). Casual use activities involve practices that do not ordinarily cause any appreciable disturbance to BLM-administered lands, resources, or existing improvements.

An important component of the ROW program is the intrastate and interstate transportation of commodities ultimately delivered as utility services (e.g., natural gas and electricity) to residential and commercial customers. Equally important at the local level is the growing demand for legal access to private homes and ranches using ROW grants. While most existing ROW actions in the Planning Area are for linear facilities, there also are many existing site ROWs for non-linear communications sites, water reservoirs, and energy resource distribution and transmission.

The BLM and other agencies (U.S. Department of Energy Office of Electricity Delivery and Energy Reliability and the USFS) prepared the Programmatic EIS for the Designation of Energy Corridors on Federal Land in Eleven Western States (DOE and BLM 2008b). The Programmatic EIS evaluates potential impacts associated with the proposed action to designate corridors on federal land in 11 western states

(including Wyoming) for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities. The ROD for the Programmatic EIS amended current RMPs in both the CYFO and WFO by designating energy corridor 79-216 as a multi-modal energy corridor (Map 63). Energy corridor 79-216 is the preferred location for major transmission and linear energy infrastructure in the Planning Area. This corridor contains several existing pipelines that go from the southern boundary of the Planning Area to the Montana border.

Existing ROW corridors are the preferred location for minor ROW grants (Map 63). These routes or areas are located primarily along existing highways, major pipelines and powerlines, oil fields, and communication sites. Concentrating new ROW grants along existing corridors works well when the source and terminus are nearby or when land along the route is predominantly on federal land. Due to the large blocks of public land and the various locations requested for the applications received, it is not always possible to concentrate new grants into designated corridors.

The use of ROW corridors in the Planning Area has been moderate, and existing corridors designated for major ROWs have been sufficient to meet demand and the needs of public land users. ROWs on BLM-administered lands in the Planning Area have primarily supported the development of energy minerals (i.e., project access roads, gathering/transportation pipeline systems, and related oil and gas facilities). However, in recent years, access roads and utilities associated with development of private lands have become more common.

Communications sites are authorized by a ROW under Section 501 of FLPMA and administered under regulations at 43 CFR 2800. Communications sites are typically site ROWs, which consist of facilities such as small buildings, towers, antennas, and other structures. The Planning Area contains a total of 72 communications sites concentrated in seven areas (Map 63). Communications site concentration areas are typically on mountaintops, ridgelines, or other high-elevation areas to allow uninterrupted transmission of the associated communications signal. Communications site plans have been prepared for each of the communications site concentration areas identified on Map 63. These plans govern specific development and management of communications sites in the area. Regularly updated information on communications site facilities, concentration areas, links to site plans, and other information for communications sites in the Planning Area can be found though the BLM website at: http://www.blm.gov/commsites/.

There are 2,192 existing ROWs (see Table 3-47) in the Planning Area covering approximately 44,539 acres. Most ROW applications in the Planning Area are for the development of powerlines, transportation and delivery of mineral-related commodities and facilities, telephone facilities (including fiber optic lines and communications sites), access roads, and water-related facilities (pipelines, ditches and canals, reservoirs). Over the last 10 years, the BLM has processed between 45 and 60 new or amended ROW applications every year for the Planning Area.

Table 3-47. Existing Rights-of-Way in the Planning Area

Existing Authorization	Number of Sites	Acres
Linear Rights-of-Way	2,108	43,659
Site Rights-of-Way	84	880
Total	**2,192**	**44,539**

Source: BLM 2009a

In the past 10 years, regional demand for ROWs on public land in Wyoming has increased; however, ROW demand in the Planning Area has remained relatively stable (BLM 2009a). Much of the regional demand has focused on exporting energy products through and from the sparsely populated western states to population centers, most recently dominated by west coast power demands. The upsurge in exploration and development of cleaner-burning fuels, such as natural gas, CBNG, and renewable energy resources, has resulted in the need for more pipelines and transmission lines. Technological advancements have also resulted in new demands on public land, largely related to wind energy and telecommunications (such as cellular and fiber optic). ROW applications in the region are likely to continue a slight upward trend during the planning cycle, while ROW demand in the Planning Area is expected to remain relatively stable.

If the current rate of development continues and current management remains in place, designated ROW corridors should adequately meet future needs over the next 10 to 20 years. At this rate of development, corridors could eventually be more intensively used, but the BLM does not anticipate crowding.

Oil and gas production in the Planning Area is expected to continue to come mostly from established fields that already have adequate infrastructure such as roads, powerlines, and gathering/transmission lines. Produced oil volume is flat or declining from these fields, and gas volume is stable or increasing. Therefore, no major increase in the number of new ROWs for oil and gas infrastructure (each field office currently issues 4 to 8 per year) is anticipated for the next 10 to 15 years unless there is more activity, such as the construction of a pipeline to bring CO_2 gas for use in oil recovery in existing oilfields.

The BLM estimates that demand for public land for access roads and electric or pipeline ROWs in the Planning Area will remain moderate over the next 10 to 20 years, depending on the location of energy mineral development (Williams 2011). A small increase in demand for public land for major energy transportation ROWs is expected, potentially involving one or two major projects every 10 years. Further development of renewable energy resources, specifically wind in Wyoming, could create additional need for ROWs for transmission lines in the region and through the Planning Area to deliver energy produced in Wyoming to other markets.

With the current market demand, the BLM expects the demand for communications sites on BLM-administered land to continue in the foreseeable future. Future need for additional fiber optic lines is not known; however, because these types of development tend to run between population centers, existing ROW corridors appear to be sufficient to meet future needs.

Management Challenges

In general, ROW management challenges include meeting national and regional demands for energy, infrastructure, telecommunications, and other services while balancing management objectives for other resources (e.g., the preservation of sagebrush habitat).

A specific management challenge associated with linear ROWs is the proliferation of unauthorized roads and trails caused by the general public driving along the ROWs. This unauthorized development can cause extensive damage to resources that often goes unmitigated.

3.6.4 Comprehensive Travel and Transportation Management

There are two fundamental and interrelated tasks associated with CTTM – (1) the delineation of travel management areas and (2) the delineation of OHV management areas, which designates travel management (as open, limited, or closed).

The transportation network on the public lands in the Bighorn Basin consists of federal and state highways, county roads, and roads built to facilitate industrial and commercial development. There is also an extensive network of official BLM roads that range from regularly maintained ditched and crowned gravel roads to an extensive array of unofficial roads and vehicle routes that were never formally constructed and rarely receive maintenance. Many are two-track vehicle trails created and maintained simply by the passage of motor vehicles. The network of two-track roads and trails is important for recreational and ranching uses on public lands.

Motorized Vehicle Use in the Planning Area

For purposes of this RMP and EIS, motorized vehicle use refers to the use of motor vehicles (e.g., all-terrain vehicles) off the main highway network in the Planning Area. The road and trail network in the Planning Area provides access for private, commercial, and industrial vehicles. Motor vehicle use supports many other resource uses, including livestock grazing, mineral exploration and development, communications, administrative activities, and recreation. Numerous types of motor vehicles are used on BLM-administered lands in the Planning Area, including large trucks, four-wheel drive vehicles, automobiles, motorcycles, and all-terrain vehicles.

Motorized vehicle use in the Planning Area has local, regional, and national significance, and has increased over the last 10 years. Recreation enthusiasts are buying OHVs at a rate of approximately 1,500 units per day nationwide (BLM 2001a). The use of these motorized vehicles is linked to a variety of recreation activities, including dispersed camping, hunting, and fishing, and they have become a popular form of recreation in the Planning Area. The McCullough Peaks area, Little Mountain, the west slope of the Big Horn Mountains, and Carter Mountain are popular areas for OHV use, especially during hunting season. In addition, OHVs have become tools for resource-related industries, including ranching, mineral exploration, and oil and gas production. Due to increases in the price of gasoline, there has been an increasing trend in the use of OHVs for recreational activities and common transportation.

The use of OHVs is expected to continue to grow, increasing the demand for specialized trails and areas available to motorized vehicle use (BLM 2001a). Areas between Basin and Greybull, outside of Lovell, and the Red Lakes area south of Cody, Wyoming, are experiencing an increase in off-road motorized vehicle use, even though this activity violates current motorized vehicle use management prescriptions for these areas.

Off-Highway Vehicle Management Areas

All public lands are required to have motorized vehicle use designations (43 CFR 8342). Accordingly, all lands are to be designated as open, limited, or closed to motorized vehicle use (Map 69). Lands designated as open are open to all motor vehicle use, on or off established roads and vehicle routes, as long as this activity does not cause unacceptable levels of resource damage. Limited means OHV use is restricted to designated roads and trails, and where an area is restricted, at certain times, in certain areas, and/or to certain vehicle uses. These restrictions can be of any type, but generally can be accommodated within the following categories: number of vehicles; types of vehicles; time of season of vehicle use; permitted or licensed use only; use on existing roads and trails (limited to existing roads and trails); and use on designated roads and trails (limited to designated roads and trails). Existing roads and trails are to be used as an interim designation until a Travel Management Plan designates each individual route as open or closed for motorized use (BLM Handbook 8342-1). Closed means the area is closed to all motor vehicle access, with the authorized officer granting exceptions for emergencies,

firefighting, public safety, or related incidents. A closed designation usually does not exclude foot or horseback travel or mechanized (such as mountain bikes) travel, and can be implemented to protect back country recreational setting opportunities or sensitive wildlife habitat.

The BLM manages some areas in the Planning Area specifically for nonmotorized vehicle use. Areas with trails open only to foot traffic include interpretive areas such as the Red Gulch Dinosaur Tracksite, Gooseberry Interpretive Trail, and Legend Rock. Areas open only to foot travel and mechanized vehicle use include the Paint Rock Trail, Lone Tree Trail, Salt Lick Trail, Canyon Creek access trail, Gebo, Bobcat/Houlihan Trail, and Four Bear Trail. The BLM manages these areas to protect their natural resources, provide for semi-primitive recreation opportunities, and provide for public health and safety.

Open to Motorized Vehicle Use

Approximately 1,311 acres in the Planning Area are open to motorized vehicle use. These locations include an area south of Cody, an area southeast of Lovell, an area northeast of Lovell, areas near Powell, and an area west of Worland. Several of the areas have been used for many years and continue to be used for this type of activity, even though there has been no formal implementation of this travel designation. See Appendix R for a list of other areas open to motorized vehicle use.

OHV groups, in coordination with the BLM, had previously adopted an area southeast of Worland called The Pits as a "play area" (an area open to motorized vehicle use where on- or off-route travel is almost unrestricted). However, after further monitoring and analysis, the BLM closed the area as a designated play area because of concerns about public health and safety related to H_2S from the oil and gas wells in the area. As a result, an area located west of Worland was allocated for open OHV use, but implementation plans have never been completed.

Other areas throughout the Bighorn Basin exist where off-road cross-country OHV use is observed, although the areas are not allocated to accommodate the use. In some areas, law enforcement has attempted to impede these activities, and in other areas, these areas are examined to determine whether or not they qualify (as per 43 CFR §8340.0-5, (f), (g) and (h) respectively) as open OHV areas.

Motorized Vehicle Use Limited

Motorized Vehicle Use Limited to Existing Roads and Trails

Motorized vehicle use is limited to existing roads and trails on approximately 2,315,896 acres in the Planning Area. The BLM created this designation to allow motorized vehicle use without increasing the number of acres disturbed by route creation. Recreational users are not authorized to travel off of roads and trails in these areas, except during the performance of necessary tasks such as the retrieval of game or for maintenance of range improvements and livestock management. Throughout the life of the current land use plans, OHV use in the Bighorn Basin has increased dramatically (BLM 2009a). Each year, new unauthorized pioneered routes and trails are being created by recreational users, casual use and necessary tasks in support of land use projects, and during observed spikes in OHV use, such as during hunting season. See Appendix R for a list of other areas where motorized vehicle use is limited to existing roads and trails. In recognition of the continual proliferation of pioneered routes in areas managed as "limited to existing roads and trails", recent BLM guidance changed "limited to existing roads and trails" from an OHV management allocation to an interim designation. The designation will change from "limited to existing roads and trails" to "limited to designated roads and trails upon the completion of a travel management plan" (BLM Handbook 8342-1).

Motorized Vehicle Use Limited to Designated Roads and Trails

Motorized vehicle use is limited to designated roads and trails on approximately 797,077 acres, primarily in environmentally sensitive areas, in the Planning Area. These areas include the west slope of the Big Horn Mountains (which includes the Little Mountain ACEC, West Slope Special Recreation Management Area (SRMA), Medicine Lodge and Renner Wildlife Habitat Management Units, Carter Public Access Area, and South Brokenback); the Upper Nowood area; the Bridger Mountains; the Red Canyon Creek area south of Thermopolis; Meeteetse Draw Rock Art area; the Sheep Mountain Anticline ACEC; the McCullough Peaks area; and the Absaroka Mountains which include the southern Absaroka Mountain foothills, Carter Mountain ACEC, the mountains along the North and South Forks of Shoshone River; Rattlesnake Mountain; and Bald Ridge. This designation has been successfully applied in a number of these locations. Travel management has been successfully implemented in the Grass Creek/Enos Creek area, Carter Mountain ACEC, Rattlesnake Mountain, McCullough Peaks, Little Mountain, Medicine Lodge and Renner Wildlife Habitat Management Areas, South Brokenback area, and the Upper Nowood. Such implementing strategies used to enforce travel management decisions include on the ground tools such as fences, regulatory signs, barricades, and enforcement, as well as through the assistance and cooperation of affected stakeholders. The off-road travel that does occur is infrequent, and the establishment of new two-tracks has remained minimal. Additional areas where motorized vehicle use is limited to designated roads and trails include essential and recovery habitat for threatened or endangered species, areas with fragile soils or with Class I or II VRM ratings, areas containing important cultural and paleontological resources, and areas over important caves or cave passages. See Appendix R for a list of other areas where motorized vehicle use is limited to designated roads and trails.

Seasonal and Over-Snow Closures

A number of locations in the Planning Area are generally limited to designated roads and trails, but also have a seasonal closure. During a portion of the year these areas are closed to motorized vehicle use. These seasonal restrictions are designed to protect the values of other resources, such as crucial wildlife winter range, and to protect fragile soils. Areas with seasonal closures include Carter Mountain, Medicine Lodge and Upper Renner WHMAs, Little Mountain Travel Management Area, Bald Ridge area, and Twin Creek Trail; the dates of these closures appear in Appendix R.

Areas closed to over-snow travel are generally decided on a case-by-case basis. However, some areas, such as Lynx Analysis Units, are designated as closed to this type of use to protect important habitat.

Closed to Motorized Vehicle Use

Approximately 68,115 acres in the Planning Area are closed to motorized vehicle use. Travel management designations in these areas are designed to protect resources from unnecessary damage, to sustain and manage for wilderness characteristics in the WSAs, and to protect recreationists from hazardous conditions. These areas include the Cody Archery Range; the Lovell Rod and Gun Club area; around the Duck Swamp-Bridger Trail Environmental Education area; surrounding the rifle range west of Worland; Sheep Mountain, Red Butte, Bobcat Draw Badlands, and the Owl Creek WSAs; the Spanish Point Karst ACEC; and along the Bighorn River south of Greybull, Wyoming, to protect threatened and endangered species habitat. See Appendix R for a list of other areas closed to motorized vehicle use.

Travel Management Areas

In order to manage the transportation system, the BLM addresses travel management by subdividing the field office into travel management areas that focus travel management planning efforts to maintain desired resource objectives, manage use and user conflicts, and protect public health and safety. Travel

management areas address acceptable modes of access and travel consistent with the designation criteria (43 CFR 8342.1). They also identify objectives for allowing travel in the area and setting characteristics to be maintained, including recreational settings for SRMAs. Travel management plans identify the appropriate network of roads and trails, including nonmotorized vehicle access, in travel management areas.

The BLM has implemented travel management plans for the McCullough Peaks; areas along the West Slope of the Bighorns including Little Mountain, South Brokenback, Medicine Lodge and Renner wildlife habitat areas, and the Upper Nowood area; and areas along the Absaroka Front including Grass Creek, Carter Mountain ACEC, and Rattlesnake. The BLM implements these plans through coordination with many stakeholders including, but not limited to local landowners, the WGFD, and the Wyoming State Trails program. Using the designation criteria as spelled out in 43 CFR 8342.1, travel management plans designate and develop travel routes as well as identify areas closed to motorized vehicle use in areas popular for big game hunting, hiking, camping, horseback riding, interpretive environmental education, and OHV use, and in crucial wildlife habitat areas. The areas for which travel management plans have been completed and implemented are areas where substantial motor vehicle use was identified as compromising the health and sustainability of the resources. The BLM established cooperative agreements with private land owners and other entities, including the WGFD and the Wyoming State Board of Land Commissioners, to manage motorized vehicle use in areas in the Absaroka foothills and the west slope of the Big Horn Mountains. Through the life of the existing RMPs, the WFO and CYFO implemented Off-Road Vehicle Designations for the McCullough Peaks (CYFO), Owl Creek, Bobcat Draw Badlands, Sheep Mountain, and Red Butte WSAs (WFO). The McCullough Peaks plan designated the primitive routes within the WSA, and the Grass Creek Resource Area's WSA travel management plan closed all primitive routes within the WSAs mentioned above to motorized use.

Motorized Vehicle Use and Environmental Concerns

In the Planning Area, the number and percent of lands open to cross-country motorized vehicle use is minimal and in areas where there are less likely to be sensitive resources or where potential conflicts can be mitigated (1,311 acres, or less than one percent of BLM-administered surface in the Planning Area). In addition to areas currently managed as open to cross-country motorized vehicle use, several new areas or expansions of existing areas are analyzed as part of this RMP revision project. Table 3-48 shows all areas proposed as open to cross-country motorized vehicle use currently or under any of the RMP alternatives, and any of a selection of key resource values each such area overlaps. Where overlaps between areas open to cross-country motorized vehicle use and these key resource values occurs. Table 3-48 describes why such use does not pose resource damage concerns or cause inherent conflicts. The percentage of lands closed to motor vehicle use is limited to areas, such as certain WSAs, where resource protection is paramount. Most of the Planning Area is available to motorized vehicle access on the designated or existing network of roads and trails (see Appendix R), and these areas include locations where motorized vehicle access and the protection of resources are important priorities.

Table 3-48. Overlap of Areas Open to Cross-Country Motorized Travel with Select Key Resource Values

Open Area	Acres	Wetland Riparian Areas (acres)	Greater Sage-Grouse Key Habitat Areas (acres)	Big Game Crucial Winter Range (acres)	Known Prehistoric or Historic Cultural Sites[2]	NHTs /Other Historic Trails (acres within 3 miles)[3]	Area Description
Hill Climbing areas near Cowley	118	0	0	0	No	0/0	This area is a de facto OHV hill climbing area. Motorcycle hill climbing events have been authorized in the past using Special Recreation Permits. Members of the public have used the area for many years for this purpose. The area is being mined for bentonite, and previous events were coordinated with the mining company. Once mining is completed, there may be an opportunity for hill climbing, depending upon land ownership and the terrain.
Hills area near Lovell (Bentonite Hills)	43	0	0	0	No	0/0	This area was identified in the Cody Resource Management Plan (BLM 1990) as an open area, but implementation never occurred. Motorized recreationists (using all-terrain vehicles and motorcycles) use the area for its technically challenging hill climbing opportunities. Nearly the entire area has been used for cross-country motorized travel.
Lovell Lakes Motocross Area	158	0	0	0	No	0/0	This area was identified in the Cody Resource Management Plan (BLM 1990) as an open area, but implementation never occurred.

Table 3-48. Overlap of Areas Open to Cross-Country Motorized Travel with Select Key Resource Values (Continued)

Open Area[1]	Acres	Wetland Riparian Areas (acres)	Greater Sage-Grouse Key Habitat Areas (acres)	Big Game Crucial Winter Range (acres)	Known Prehistoric or Historic Cultural Sites[2]	NHTs /Other Historic Trails (acres within 3 miles)[3]	Area Description
Red Lakes area near Cody	67	0	0	0	Yes	0/0	This area was identified previously as an open area, but implementation never occurred. This area is a de facto OHV play area where motorized recreationists (using all-terrain vehicles and motorcycles) use the area for its technically challenging hill climbing opportunities. Much of the area has been used for cross-country motorized travel.
Area near Park County Landfill	619	0	406	0	Yes	0/343	The open area is on the periphery of the Greater Sage-Grouse Key Habitat Area, where the habitat is marginal. This area is used by motorized recreationists (using all-terrain vehicles and motorcycles).
Basin Gardens Play Area	4,600	4	0	0	Yes	0/0	Wetland/riparian areas and known eligible historic properties could be mitigate through site specific implementation.
Rattlesnake Ridge	7,996	0	0	0	Yes	0/61	This area is a de facto OHV play area where motorized recreationists use the area for its technically challenging hill climbing opportunities. The area is also heavily used for oil and gas activities, a concern due to high levels of hydrogen sulfide gas. The area is currently managed as motorized use limited to existing roads and trails.

Table 3-48. Overlap of Areas Open to Cross-Country Motorized Travel with Select Key Resource Values (Continued)

Open Area[1]	Acres	Wetland Riparian Areas (acres)	Greater Sage-Grouse Key Habitat Areas (acres)	Big Game Crucial Winter Range (acres)	Known Prehistoric or Historic Cultural Sites[2]	NHTs /Other Historic Trails (acres within 3 miles)[3]	Area Description
Worland OHV Play Area	1,576	0	0	842	Yes	0/1,289	The Grass Creek Resource Area Resource Management Plan (BLM 1998a) designated about 900 acres as open for cross-country motorized travel, but implementation never occurred.

Sources: BLM 1998a; BLM 1990, BLM 2013a.

[1]Area, or portion of area, currently managed as open to motorized vehicles.
[2]Based upon existing available inventories and information. An inventory would precede the site-specific analysis for any plan to open these areas to cross-country motorized travel.
[3]Inventories and assessments have not occurred to determine where the contributing segments of these Other Historic Trails are located.

NHT National Historic Trail
OHV Off-highway vehicle

Environmental concerns associated with motorized vehicle use include a loss of soil and damage to vegetation due to surface disturbance, the creation of scars on hillsides, habitat loss, disturbance of wildlife in crucial habitats such as winter ranges, siltation of streams due to erosion from roads and trails, and degradation of scenic qualities and cultural sites.

Areas of concern in relation to actual and potential damage from motorized vehicle activity generally include highly erodible soils, riparian/wetland areas, crucial wildlife habitat (such as winter range), fragile soils and vegetation, scenic areas, WSAs, ACECs, cultural sites, and historic trails.

Management Challenges

Managing motorized vehicle use on public lands is one of the great challenges associated with public land management. This is not just a challenge unique to the Bighorn Basin or the state of Wyoming, but all over the United States. The BLM uses travel management designations, public information and education, and law enforcement as primary tools to manage motorized vehicle use on public lands.

Controlling the proliferation of unauthorized roads and trails is a challenge for the BLM CTTM program. Unauthorized road and trail proliferation damages scenic resources, disturbs vegetation and wildlife, and degrades wildlife habitats, the end result of which is that long-term resource values and uses are compromised.

3.6.5 Recreation

This section briefly describes the broad spectrum of recreational opportunities available on BLM-administered land in the Bighorn Basin.

Recreation Management

Recreational opportunities are offered to the public on all BLM-administered lands in the Planning Area to which there is legal access. Federal lands in the Planning Area provide a broad spectrum of outdoor opportunities that afford visitors the freedom of recreational choice with minimal regulatory constraints. The BLM provides opportunities for outdoor recreation and nature-based tourism using the concept of multiple-use management. Visitors to public lands are afforded the opportunity to enjoy natural landscapes, the freedom to choose a particular activity in which to participate, the opportunity to test skills in a sport, time spent with family and friends, and the opportunity for discovery. Recreational activities on public lands are multi-faceted.

There is dispersed recreation throughout the Planning Area in a wide range of recreational settings, and recreation can occur in combination with other resource activities. Dispersed recreation includes, but is not limited to, hunting, sightseeing, touring, backpacking, horseback riding, mountain biking, hiking, OHV use, spelunking, photography, wildlife viewing, fishing, boating and other water-related activities, and camping. The BLM offers some combination of these recreational opportunities to the public on all BLM-administered lands in the Bighorn Basin. Public access to BLM-administered lands is more readily available in the central and eastern portions of the Planning Area, in the basin and along the western slopes of the Big Horn Mountains, and less available in the southern Absaroka Foothills region.

In addition to managing dispersed recreation throughout the Planning Area, the CYFO and WFO recreation programs manage developed recreation sites ranging from minor improvements for parking to multi-site hosted campground areas. The BLM manages seven SRMAs (Map 75) and one National Back Country Byway (Map 90) in the Planning Area (refer to Section 3.7.2 *National Back Country Byways* for more information).

The BLM manages recreational uses on public lands to protect resources, reduce user conflicts, and promote public safety. Travel management designations are one of the ways this is accomplished. These designations have been implemented statewide and are designed to direct the appropriate use of motorized vehicles on BLM-administered lands.

The BLM uses law enforcement and routine monitoring of recreational uses and areas, along with information from the public, to identify issues related to recreation. The BLM addresses recreational issues through user education, signs, additional facilities, maintenance, and law enforcement attention.

The BLM has actively embraced the Leave No Trace and Tread Lightly programs in an effort to encourage responsible use of public lands. Both programs promote and teach outdoor ethics and are geared toward reducing the adverse impacts of recreation. The goal is to make recreational uses more sustainable in the long run.

Recent BLM guidance (IM No. 2006-060 and IM No. 2007-043) establishes the agency's commitment to incorporate the framework of benefits-based management (BBM) into its recreation management program. BBM is a method of managing recreation that focuses on the beneficial outcomes from engaging in recreational activities in areas managed for desired settings and experiences, rather than only on the recreation activities themselves. This approach gives the BLM a framework within which to manage recreation on public lands to provide outcomes that benefit individuals, communities, economies, and the environment (BLM 2009o). BBM represents a departure from previous recreation management methodologies by integrating management of recreation settings with desired recreation opportunities and benefits through collaboration with public and local and private-sector providers. It is guided by the premise that the BLM is not a sole-source provider of recreation opportunities and that recreation planning must be considered in a regional context (BLM 2007e). Appendix O provides more information about BBM.

Special Recreation Permits

The field offices in the Planning Area have active SRP programs, administering over 80 SRPs per year for outfitters, activities, and events. Typical activities and events include outfitting and guiding for hunting, fishing, floating, horseback rides, wild horse viewing tours, interpretive tours, livestock drives, horseback fundraising events, horse endurance rides, yoga trips, motorcycle hill climbs, paragliding, triathlon events, mountain bike races, and wagon trains. The field offices collect between $11,000 and $14,000 per year in SRP fees and spend this revenue on visitor services, maintenance, monitoring, and law enforcement.

Outfit-guided hunting trips are the most popular SRP activity in the Bighorn Basin. Outfitters are widely dispersed over several hunt areas, and authorized activities take place during different times and places throughout the Planning Area. Conflicts between these SRP activities and other recreational uses are not uncommon and can result in visitor displacement.

Recreation Management Areas

The RMP planning process identifies areas where recreation is the management focus. SRMAs were traditionally areas that had higher recreation use or required extra recreation investment, or where more intensive recreation management was needed. When the Bighorn Basin planning revision was initiated, the 2005 revision of the BLM Land Use Planning Handbook (H-1601-1) amended the criteria for identifying an SRMA; these are administrative units where the predominant land use and emphasis is recreation. SRMAs provide specific long-term recreation opportunities (activities, experiences, benefits) and settings. SRMAs must identify a distinct, primary recreation-tourism market (destination, community, or undeveloped), and a corresponding and distinguishing strategy.

Since then, Washington Office Instruction Memorandum No. 2011-004 revised the guidance for Recreation and Visitor Services planning in conjunction with the BLM land use planning process. The major change establishes a three-tier classification for lands used and managed for recreation. This new

classification replaces the existing 30-year-old, two-tier system where all lands were classified as either special or extensive recreation management areas.

New guidance now defines RMAs as designated in a land use plan. The RMAs are classified as either SRMAs or extensive recreation management areas (ERMAs). The RMAs are land units where Recreation and Visitor Services (R&VS) objectives are recognized as a primary resource management consideration and specific management is required to protect the recreation opportunities. The RMA designation is based on: recreation demand and issues, recreation setting characteristics, resolving use/user conflicts, compatibility with other resource uses, and resource protection needs.

SRMAs are administrative units where the existing or proposed recreation opportunities and recreation setting characteristics are recognized for their unique value, importance, and/or distinctiveness, especially as compared to other areas used for recreation. SRMAs are managed to protect and enhance a targeted set of activities, experiences, benefits, and desired recreation setting characteristics. Within SRMAs, R&VS management is recognized as the predominant LUP focus, where specific recreation opportunities and recreation setting characteristics are managed and protected on a long-term basis.

SRMAs may be subdivided into recreation management zones (RMZ) to further delineate specific recreation opportunities. The BLM Land Use Planning Handbook (H-1601-1) states that each RMZ has four defining characteristics − it (1) serves a different recreation niche within the primary recreation market, (2) produces a different set of recreation opportunities and facilitates the attainment of different experience and benefit outcomes (to individuals, households, communities, economies, and the environment), (3) has distinctive recreation setting character, and (4) requires a different set of recreation provider actions to meet the strategically targeted primary recreation market demand. At present, there are no designated RMZs in the Planning Area, but several are proposed as part of this RMP revision project.

SRMAs/RMZs must have measurable outcome-focused objectives. Supporting management actions and allowable use decisions are required to: 1) sustain or enhance recreation objectives, 2) protect the desired recreation setting characteristics, and 3) constrain uses, including non-compatible recreation activities that are detrimental to meeting recreation or other critical resource objectives (e.g., cultural or threatened and endangered species).

The Cody, Washakie, and Grass Creek RMPs identified seven areas to be managed as SRMAs (Map 75) based on the unique values and identified desired recreational settings, experiences, and beneficial outcomes. Chapter 2 describes current management for SRMAs and the proposed management for RMZs. The following paragraphs briefly describe existing SRMAs and proposed RMZs in relation to those SRMAs.

Absaroka Mountain Foothills SRMA – Goals and objectives for the 72,130-acre Absaroka Mountain Foothills are to enhance semi-primitive motorized and nonmotorized recreational opportunities in this scenic area.

Badlands SRMA – Goals and objectives for the approximately 213,981-acre Badlands SRMA are to provide for interpretive opportunities and to display the scenic qualities of the area. There are three RMZs proposed for the Badlands SRMA − Tour de Badlands, Wild Badlands, and Tatman Mountain.

Bighorn River SRMA – Goals and objectives for this approximately 15,256-acre SRMA are to provide for and enhance public access to the Bighorn River so as to enhance recreational opportunities and wildlife management. Recreational uses of public lands along the Bighorn River include fishing, hunting, and floating.

Historic Trails SRMA – This 12,065-acre SRMA includes segments of the Nez Perce NHT, Bridger Trail, and the Fort Washakie Trail to Red Lodge Stage Route.

The Rivers SRMA – This SRMA includes about 18,247 acres of public land along the Clarks Fork of the Yellowstone River, the north and south forks of the Shoshone River, and the main stem of the Shoshone River.

West Slope SRMA – The west slope of the Big Horn Mountains is popular for dispersed recreational activities due to scenic qualities; a variety of recreational resources, activities, opportunities, and experiences; access to the Bighorn National Forest, and accessibility in the area. The area provides recreation opportunities such as hunting, fishing, camping, hiking, backpacking, horseback riding, driving for pleasure, sightseeing, and spelunking. This SRMA contains several caves rated as significant. The West Slope SRMA is approximately 375,888 acres. There are four RMZs proposed in the West Slope SRMA − Trapper Creek, Paint Rock, Brokenback/Logging Road Area, and South Bighorns.

Worland Caves SRMA – The goals of this cave-focused SRMA are to provide protection for the fragile cave resources, promote ethical uses, and help educate the public on proper management and recreational use.

In addition, this RMP and EIS propose several new SRMAs (Red Canyon, Basin Garden, Horse Pasture, Rattlesnake Ridge, Newton Lake Ridge, Beck Lake, and McCullough Peaks).

ERMAs are administrative units that require specific management consideration in order to address recreation use, demand or R&VS program investments. ERMAs are managed to support and sustain the principal recreation activities and the associated qualities and conditions of the ERMA. Management of ERMAs are commensurate with the management of other resources and resource uses.

ERMAs must have measurable objectives. Supporting management actions and allowable use decisions must facilitate the visitors' ability to participate in outdoor recreation activities and protect the associated qualities and conditions. Non-compatible uses, including some recreation activities, may be restricted or constrained to achieve interdisciplinary objectives. In ERMAs, the BLM must identify management actions and allowable use decisions for R&VS and other programs to achieve ERMA objectives. In ERMAs, all decisions are compatible with other resource objectives. Within the R&VS Program, the BLM is to identify decisions necessary to facilitate visitor participation in the identified outdoor recreation activities; maintain particular recreation setting characteristics; address visitor health and safety, resource protection, and use and user conflicts (e.g., areas closed to target shooting, camping limits); and address the type(s), activities, and locations where special recreation permits would be issued or not issued. Within other programs, the BLM must establish terms, conditions, or special considerations for other resource programs necessary to achieve the ERMA objective (e.g., stipulations on mineral or other development, designations for all types and modes of travel, areas available for livestock grazing, or visual resource management classes). All actions must conform to applicable program policy, regulations and valid existing rights.

Several new ERMAs are proposed as part of this RMP revision project: Bighorn River ERMA, Absaroka Foothills ERMA, Rattlesnake Ridge ERMA, Red Canyon Creek ERMA, Southern Bighorns ERMA, and Basin Gardens ERMA.

Public lands that are not designated as RMAs are managed to meet basic R&VS and resource stewardship needs. Recreation is not emphasized however recreation activities may occur. The R&VS are managed to allow recreation uses that are not in conflict with the primary uses of these lands. Management actions and allowable use decisions may still be necessary to address basic R&VS and resource stewardship needs (visitor health and safety, use and user conflicts, the type(s), activities and

locations where special recreation permits would be issued or not issued, and mitigation of recreation impacts on cultural and natural resources).

The remaining BLM-administered public lands in the Bighorn Basin that are not identified as an RMA, which named under the old guidance, are the Cody ERMA (756,152 acres) and the Worland ERMA (1,566,022 acres). These areas do not have substantial numbers of developed recreational facilities such as campgrounds, nor does the BLM develop specific recreational setting prescriptions or recreation activity plans for these areas. The BLM provides custodial management of recreational activities in these areas to help ensure user health and safety, protect resources, and resolve use and user conflicts.

Recreational Use Patterns

Hunting and fishing are two of the most common recreational activities for local users on BLM-administered public lands in the Planning Area. Most pronghorn hunting, and a major portion of deer, elk, and upland bird (greater sage-grouse) hunting in the Planning Area occurs on public lands.

Hunting opportunities available in the Bighorn Basin also are available to non-residents. Commercial outfitting provides recreational opportunities for residents of other states, and the recreation and tourism industry is one of the most important industries in the Planning Area and the state of Wyoming as a whole.

Regionally, the Wyoming Travel Industry Impact Report of 2006 concluded that 7.3 million overnight visits to Wyoming resulted in $2.5 billion in direct travel-generated expenditures. The report also notes that 98 percent of visitors came to Wyoming for pleasure, while only 2 percent came for business. Travel and tourism resulted in $103 million in state and local tax revenues and $624 million in earnings for Wyoming residents (Wyoming State Office of Travel and Tourism 2007). The economic report of Wyoming Travel economic impacts for 2012 shows an increase of 5.4 percent since 1998 with 8.6 million visits in 2012 (Strategic Marketing & Research, Inc. 2012), contributing to $128 million in revenue, and $759 million in earnings, an 18 percent increase of overnight visits to Wyoming, a 24 percent increase in revenues, and 22 percent increase in earnings since 2006 (Wyoming Office of Tourism 2012). Refer to Section 3.8.2, *Economic Conditions* for more information.

A large proportion of outdoor recreation on public lands relates to hunting and fishing activities. The numbers of hunters and fishermen remain fairly constant over time because they depend on wildlife population numbers and available licenses. While there is no trend toward increased recreation related to hunting and fishing, the numbers do reflect the magnitude of recreation demand on public lands.

Table 3-49 lists hunting and fishing recreation days for Wyoming, BLM-administered lands in Wyoming, and public lands in the Planning Area from 2003 through 2011. The Planning Area estimates assume representative proportions of visitations in Wyoming and are based on a ratio of acreage in the Planning Area to acreage of land in Wyoming.

Table 3-49. Hunting and Fishing Recreation Days

Year	Wyoming	Bureau of Land Management (statewide)	Worland Field Office	Cody Field Office	Planning Area
2003	5,657,670	1,640,742	198,018	96,180	294,198
2004	3,626,301	1,051,627	126,921	61,647	188,568
2005	3,358,523	973,972	117,548	57,095	174,643
2006	3,458,582	1,002,989	121,050	58,796	179,846
2007	3,531,431	1,024,115	123,600	60,034	183,634
2008	3,683,371	1,068,178	128,918	62,617	191,535
2009	3,531,820	1,024,228	123,614	60,041	183,655
2010	3,665,862	1,063,100	128,305	62,320	190,625
2011	3,558,016	1,031,824	124,531	60,4186	185,017

Source: WGFD 2011a

Literature reviews show that recreation visitation trends in the United States fluctuate for a number of reasons, including drought, current social conditions, international conditions, current economic conditions and trends, and an increase in the costs for amenities such as fuel (Pergams and Zaradic 2006; Roggenbuck and Watson 1988).

Recreational use has generally been increasing in Wyoming, particularly in the northwest part of the state. Visitation data have been collected for Yellowstone National Park and Bighorn Canyon National Recreation Area, two national tourist attractions near the Planning Area. While visitation trends between 2002 and 2005 in both of these areas fluctuated, showing an overall decline in visitors, trends in both areas have shown a gradual increase since 2006 (NPS 2008). Based on current upward population trends in the state of Wyoming (Wyoming State Office of Travel and Tourism 2007) and the expansion of energy development in the state, it is likely that the general upward trend in outdoor recreation on public lands will continue for the foreseeable future (BLM 2009a).

There is a modest upward trend in overall public land recreational use in the Planning Area, though the degree of increase of this trend varies by activity. In 2006, 61 percent of recreational visits to Wyoming were to northwest Wyoming, which includes the Planning Area. Use of public land for some activities has remained stable, while use for other activities has increased. Locally, the BLM has seen increases in driving for pleasure, OHV use, fishing, hunting, camping, wildlife and wild horse viewing, and mountain biking. There has also been increased demand for SRPs on BLM-administered land in the Planning Area over the past 20 years.

Over the past 20 years, the BLM has seen a large increase in motorized recreation in relation to other forms of recreation. Part of this increase could be due to a shift in preferences and activities. For example, many hunters have shifted from more traditional foot or horseback travel to OHV travel.

If travel and transportation costs increase, the BLM would expect to see more Wyoming residents recreating on nearby public lands as a substitute for taking trips to more distant locations.

Management Challenges

Managing recreation and recreational resources to maintain the desired settings, experiences, and beneficial outcomes is a challenge when there are such a variety of conflicting uses. OHV recreation poses the most challenging activity in terms of maintaining and enhancing desired opportunities, experiences, and outcomes, as well as addressing the observable impacts OHV use can create. National, regional, and local OHV recreation has been trending upward for many years. The result is more demand for motorized vehicle trails and motorized vehicle use areas. The proliferation of unauthorized roads and trails continues. The BLM recreation program works to minimize resource damage, and use and user conflicts related to such activities. The BLM attempts to address these challenges by working and collaborating with local user groups and organizations, through formal travel management planning, promotion of educational efforts such as the tread lightly program, through resource monitoring, and through law enforcement activities.

3.6.6 Lands with Wilderness Characteristics

As mandated by FLPMA, Section 201, the BLM is to maintain an inventory of all resources, which include wilderness characteristics, and as mandated by FLPMA, Section 202, the BLM is to analyze management of all resources, including wilderness characteristics, in a Land Use Plan, which is reiterated in the BLM Land Use Planning Handbook (H-1601-1). Following the passage of Public Law 112-10, Section 1769 (2011 CR), which prohibit the appropriation of funds to implement, administer, or enforce the designation of lands with wilderness characteristic under Secretarial Order 3310, the BLM released IM 2011-154 clarifying the requirements of Section 201 and 202 of the FLPMA and providing guidance on the consideration of lands with wilderness characteristics in the planning process (BLM 2011f). Two BLM Manuals were released subsequent of the IM, BLM Manual 6310, Conducting Wilderness Characteristics Inventory on BLM Lands, and BLM Manual 6320, Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process. The criteria used to identify these lands originate from the Wilderness Act of 1964.

The inventory process utilized by the Cody and Worland Field Offices is consistent with the process for conducting inventories for lands with wilderness characteristics on BLM lands outlined in Manual 6310. Section 201 of FLPMA requires the BLM to maintain an inventory of all public lands and their resources. As specifically outlined in BLM Manual 6310, the lands with wilderness characteristics inventory included the following steps:

1) A boundary delineation process to define wilderness characteristic inventory unit boundaries, which can be based on existing wilderness characteristics inventory units. The boundary is generally based on the presence of wilderness inventory roads (a route analysis is conducted on all identified vehicle passageways to determine if the route is considered a road for wilderness inventory purposes), federal ownership boundaries, or developed right-of-ways.
2) An analysis of wilderness characteristics, including criteria for sufficient size, naturalness, and outstanding opportunities for either solitude or primitive and unconfined recreation. In addition, it may also possess supplemental values.
3) A boundary delineation process to define the area with wilderness characteristics to exclude wilderness inventory roads and other substantially noticeable human-caused impacts.

The BLM performed an inventory maintenance for all BLM-administered public lands within the Planning Area (see an example inventory form in Appendix S), including areas recommended as part of the "Wilderness at Risk: Citizens' Wilderness Proposal for Wyoming BLM-administered Lands" submitted to

the BLM by the Wyoming Wilderness Association in February 2004, 2011, and once again in 2012 (Wyoming Wilderness Coalition 2004, Wyoming Wilderness Coalition 2011, Wyoming Wilderness Coalition 2012). In addition, the Biodiversity Conservation Alliance submitted wilderness proposals in 2010 to the BLM. The wilderness proposals promoted the designation of approximately 1.1 million acres of BLM-administered lands for wilderness statewide, of which approximately 283,709 acres are in the Planning Area. During the inventory, BLM reviewed comments made during public scoping and recommendations developed during an internal review of multiple-use lands in the Planning Area, as well as incorporated wilderness data submitted by Environmental Resources Group (ERG), an environmental service company contracted out by the cooperators to assist in working on the RMP revision, Local Government Cooperating Agencies, and other local citizens. Consistent with WO IM 2013-106, these comments were integrated into the wilderness characteristics inventories and, as a result, some previously mapped lands with wilderness characteristic's boundaries were adjusted, and other areas previously believed to possess wilderness characteristics were dropped from the inventory after being found to lack those characteristics.

The original inventory identified 52 lands with wilderness characteristics (565,868 acres) in the Planning Area (Map 79). Table 3-50 lists the acreage and other resource values for each area. The final evaluation forms are available for public review at the WFO and the CYFO and on their respective websites. During the time between the Draft EIS, and the Final EIS, the BLM reevaluated data submitted from the public, resulting in 43 lands with wilderness characteristics (476,398 acres).

At present, the BLM manages lands with wilderness characteristics in accordance with the current RMPs. No specific management for retention of wilderness characteristics exists under the current RMPs. Current management for lands with wilderness characteristics appears in Table 3-51.

Table 3-50. Lands with Wilderness Characteristics and Other Resource Values and Uses

Lands with Wilderness Characteristics Area Name	Acres	2011 Inventory Number	2011 Inventory Acres	Supplemental Resource Values	Valid Existing Rights Present	Locatable Mineral Development Potential	Moderate Oil and Gas Development Potential	Scientifically-significant Fossil Potential	In Holdings and/or Access Issues	Existing ROW or ROW Corridor	Limited Manageability (insufficient size, configuration)	Proximity to Wildland Urban Interface
0008 DH	6,417	WY-010-220 Subunit B	6,417	Cultural Resources; Paleontological Resources; Special Status Species	Yes							Yes
0016 DH	6,186	WY-010-221 Subunit E	6,185	Paleontological Resources	Yes							Yes
0048 PR	7,107	WY-010-222 Subunit C	8,757	None identified	Yes							Yes
005 PR	8,014	WY-010-236 Sununit B	7,874	Cultural Resources; Special Status Species	Yes	Yes						Yes
069 JW	1,056	WY-010-213 Subunit A	1,056	Wildlife Resources; Scenic		Yes					Yes	Yes
130 JW	248	WY-010-218 Subunit A	248	Wildlife Resources; Scenic; Cultural Resources							Yes	Yes
1535 PR	17,458	WY-010-242 Subunit B	14,985	Cultural Resources		Yes						
1536 PR	10,685	WY-010-242 Subunit C	7,099	Cultural Resources								Yes
31 PR	2,972	WY-010-231 Subunit A	2,699	Cultural Resources							Yes	Yes

Table 3-50. Lands with Wilderness Characteristics and Other Resource Values and Uses (Continued)

Lands with Wilderness Characteristics Area Name	Acres	2011 Inventory Number	2011 Inventory Acres	Supplemental Resource Values	Valid Existing Rights Present	Locatable Mineral Development Potential	Moderate Oil and Gas Development Potential	Scientifically-significant Fossil Potential	In Holdings and/or Access Issues	Existing ROW or ROW Corridor	Limited Manageability (insufficient size, configuration)	Proximity to Wildland Urban Interface
508 AK	4,035	WY-010-126 Subunit D	0	Scenic; Cultural Resources	Yes						Yes	Yes
508 TriState Gooseberry N Platte	13,464	WY-010-131 Subunit D	13,449	Wildlife Resources; Cultural Resources; Paleontological Resources; Topographic Features	Yes							Yes
509 AK	13,876	WY-010-130 Subunit B	0	Wild Horses; Wildlife Resources; Cultural Resources; Paleontological Resources	Yes				Yes			Yes
509 AK Dorsey Ck.	4,578	WY-010-131 Subunit F	0	Cultural Resources; Paleontological Resources	Yes		Yes				Yes	Yes
516 DH	553	WY-010-115 Subunit A	553	Wildlife Resources; Special Status Species; Recreation; Scenic					Yes		Yes	
568 TS	2,491	WY-010-102 Subunit A	2,492	Wildlife Resources; Special Status Species; Recreation; Scenic					Yes		Yes	

Table 3-50. Lands with Wilderness Characteristics and Other Resource Values and Uses (Continued)

Lands with Wilderness Characteristics Area Name	Acres	2011 Inventory Number	2011 Inventory Acres	Supplemental Resource Values	Valid Existing Rights Present	Locatable Mineral Development Potential	Moderate Oil and Gas Development Potential	Scientifically-significant Fossil Potential	In Holdings and/or Access Issues	Existing ROW or ROW Corridor	Limited Manageability (insufficient size, configuration)	Proximity to Wildland Urban Interface
577 AK	7,107	WY-010-131 Subunit	0	Wildlife Resources; Paleontological Resources; Cultural Resources	Yes					Yes		Yes
622 AK	29,690	WY-010-124 Subunit A	0	Wildlife Resources; Scenic; Cultural Resources; Special Status Species	Yes					Yes		Yes
626 AK	10,280	WY-010-126 Subunit C	0	Scenic; Cultural Resources					Yes			Yes
639 AK	13,921	WY-010-130 Subunit D	13,916	Cultural Resources; Paleontological Resources	Yes			Yes	Yes			Yes
651 AK	6,410	WY-010-131 Subunit E	6,410	Cultural Resources; Paleontological Resources; Topographic Features; Wildlife Resources	Yes							Yes
652 Lower, Upper AK	21,153	WY-010-130 Subunit E	21,147	Paleontological Resources; Wild Horses; Wildlife Resources	Yes				Yes			

Table 3-50. Lands with Wilderness Characteristics and Other Resource Values and Uses (Continued)

Lands with Wilderness Characteristics Area Name	Acres	2011 Inventory Number	2011 Inventory Acres	Supplemental Resource Values	Valid Existing Rights Present	Locatable Mineral Development Potential	Moderate Oil and Gas Development Potential	Scientifically-significant Fossil Potential	In Holdings and/or Access Issues	Existing ROW or ROW Corridor	Limited Manageability (insufficient size, configuration)	Proximity to Wildland Urban Interface
661 TS	743	WY-010-104 Subunit B	0	Wildlife Resources; Scenic; Cultural Resources					Yes		Yes	
665 CW	15,688	WY-010-111 Sununit A	11,200	Recreation; Scenic; Topographic Features	Yes					Yes		Yes
668 AK	3,435	WY-010-131 Subunit F	0	Cultural Resources; Paleontological Resources	Yes		Yes				Yes	Yes
669 AK	8,387	WY-010-130 Subunit C	8,386	Cultural Resources; Paleontological Resources; Wild Horses; Wildlife Resources	Yes							Yes
676 AK, PR	14,225	WY-010-126 Subunit E	14,225	Cultural Resources; Paleontological Resources; Wild Horses; Wildlife Resources	Yes			Yes				
Alkali Creek NW CP	4,444	WY-010-241 Subunit D	4,444	Cultural Resources		Yes			Yes		Yes	Yes

Table 3-50. Lands with Wilderness Characteristics and Other Resource Values and Uses (Continued)

Lands with Wilderness Characteristics Area Name	Acres	2011 Inventory Number	2011 Inventory Acres	Supplemental Resource Values	Valid Existing Rights Present	Locatable Mineral Development Potential	Moderate Oil and Gas Development Potential	Scientifically-significant Fossil Potential	In Holdings and/or Access Issues	Existing ROW or ROW Corridor	Limited Manageability (insufficient size, configuration)	Proximity to Wildland Urban Interface
Bald Ridge	7,077	WY-020-001	4,920	Special Status Species; Wildlife Resources	Yes	Yes						Yes
Bobcat Draw South CP	4,200	WY-010-126 Subunit C	14,471	Scenic; Cultural Resources; Paleontological Resources	Yes						Yes	Yes
Bobcat Draw South II CP	7,567	WY-010-126 Subunit D	11,597	Scenic; Cultural Resources	Yes							
Bobcat Draw West CP	5,511	WY-010-126 Subunit B	5,457	Scenic; Cultural Resources	Yes			Yes		Yes		
Carter Mountain	14,496	WY-020-002	11,777	Special Status Species; Vegetation Resources			Yes		Yes			Yes
Cedar Ridge	6,364	WY-020-003	4,823	None identified	Yes		Yes		Yes			Yes
Coon Creek	30,769	WY-020-004	30,539	None identified	Yes							Yes
Crystal Creek	15,165	WY-020-005	12,807	Scenic; Public Access	Yes	Yes		Yes	Yes	Yes		Yes
Honeycombs 164 CP	1,157	WY-010-221 Subunit D	1,136	Paleontological Resources					Yes		Yes	Yes
Honeycombs NW 107 CP	2,026	WY-010-221 Subunit C	2,015	Cultural Resources; Paleontological Resources					Yes		Yes	Yes

Table 3-50. Lands with Wilderness Characteristics and Other Resource Values and Uses (Continued)

Lands with Wilderness Characteristics Area Name	Acres	2011 Inventory Number	2011 Inventory Acres	Supplemental Resource Values	Valid Existing Rights Present	Locatable Mineral Development Potential	Moderate Oil and Gas Development Potential	Scientifically-significant Fossil Potential	In Holdings and/or Access Issues	Existing ROW or ROW Corridor	Limited Manageability (insufficient size, configuration)	Proximity to Wildland Urban Interface
Honeycombs South CP	34,487	WY-010-221 Subunit B	34,228	Cultural Resources; Paleontological Resources	Yes		Yes	Yes	Yes			Yes
Little Dry Creek	48,929	WY-020-006	42,866	Scenic	Yes				Yes	Yes		Yes
Medicine Lodge North CP – Subunit A	6,322	WY-010-240 Subunit C	6,188	Scenic; Cultural Resources								Yes
Medicine Lodge North CP – Subunit B	0	WY-010-240 Subunit B	1,132	Scenic; Cultural Resources								Yes
N. YU Bench	25,097	WY-020-007	22,108	Open Space	Yes		Yes			Yes		Yes
Owl Creek CP	7,423	WY-010-104 Subunit B	8,168	Scenic; Cultural Resources				Yes	Yes			Yes
Painted Hills	9,182	WY-020-008	7,892	None identified	Yes	Yes				Yes		Yes
Paintrock CP	8,809	WY-010-239 Subunit B	8,795	Scenic; Cultural Resources							Yes	
Rattlesnake Mountain	18,663	WY-020-009	0	Special Status Species	Yes	Yes		Yes	Yes	Yes		Yes
Red Butte North CP	11,777	WY-010-131 Subunit F	19,528	Cultural Resources	Yes		Yes					Yes
Rough Gulch	12,508	WY-020-010	12,188	Wild Horses	Yes				Yes	Yes		Yes
Sheep Mountain South CP	2,172	WY-010-130 Subunit B	16,042	Paleontological Resources							Yes	
Sheep Mountain	13,063	WY-020-011	12,527	Special Status Species; Wildlife Resources		Yes			Yes			Yes

Table 3-50. Lands with Wilderness Characteristics and Other Resource Values and Uses (Continued)

Lands with Wilderness Characteristics Area Name	Acres	2011 Inventory Number	2011 Inventory Acres	Supplemental Resource Values	Valid Existing Rights Present	Locatable Mineral Development Potential	Moderate Oil and Gas Development Potential	Scientifically-significant Fossil Potential	In Holdings and/or Access Issues	Existing ROW or ROW Corridor	Limited Manageability (insufficient size, configuration)	Proximity to Wildland Urban Interface
Trout Creek	4,514	WY-020-012	4,504	Fish and Wildlife Resources; Special Status Species							Yes	
Whistle Creek	37,727	WY-020-013	30,234	Wild Horses	Yes		Yes		Yes	Yes		Yes

Sources: BLM 2011a, BLM 2013a.

CP Citizens Proposed
ROW Rights-of-way

Table 3-51. Acreage of Current Management in Lands with Wilderness Characteristics

Minerals Management			Rights-of-Way			Visual Resources Management				Travel Management				
Withdrawn from Locatable Mineral Entry	*Mineral Materials Closure*	*Closed to Mineral Leasing*	*Exclusion*	*Avoidance/Mitigation*	*Open*	*Class I*	*Class II*	*Class III*	*Class IV*	*Closed*	*Limited to Designated Roads and Trails*	*Limited to Existing Roads and Trails*	*Open*	*Seasonal Restrictions*
21,428	14,355	33,603	12,902	116,045	347,402	< 6	106,900	90,371	278,969	5,714	145,392	325,236	0	17,725

Source: BLM 2013a

< less than

BLM Manual 6320 establishes the BLM's approach for considering lands with wilderness characteristics in land use planning documents (e.g., RMP revisions), and provides national guidance to the BLM on how to meet its obligation to identify and consider lands with wilderness characteristics. The guidance states that "The BLM will analyze the effects of (1) plan alternatives on lands with wilderness characteristics and (2) management of lands with wilderness characteristics on other resources and resource uses. The decision making process the BLM uses to evaluate lands with wilderness characteristics during the preparation of land use plans are the management alternatives (see Chapter 2 of this document for potential management actions for lands with wilderness characteristics in the Planning Area). Under Manual 6320, outcomes of this planning process may include "(1) emphasizing other multiple uses as a priority over protecting wilderness characteristics; (2) emphasizing other multiple uses while applying management restrictions (conditions of use, mitigation measures) to reduce impacts to wilderness characteristics; (3) the protection of wilderness characteristics as a priority over other multiple uses."

In making lands with wilderness characteristics management decisions, BLM will consider, as outlined in Manual 6310, manageability, resource values and uses, and the congressional release of WSAs.

Table 3-50 provides information on other resource uses and values within each area with wilderness characteristics.

3.6.7 Livestock Grazing Management

Before 1934, the General Land Office managed grazing on public lands outside forest perimeters. Congress initiated comprehensive management of these lands in 1934 when it passed the Taylor Grazing Act. The Grazing Service was established and charged with implementing the provisions of the Act. Specific tasks included establishment of a permit system, organization of grazing districts, fee assessment, and consultation with local advisory boards.

In 1946, the Grazing Service and General Land Office merged to form the BLM. Until Congress passed the FLPMA in 1976, the Taylor Grazing Act was the principle legislation used to administer livestock grazing on public lands. In 1978, Congress passed the Public Rangelands Improvement Act, which established a grazing fee formula that sets and adjusts annual fees for grazing on public land.

In 1985, the BLM established three categories for grazing allotments to identify areas with the potential need for management, and to prioritize workloads and the use of range improvement dollars. The BLM categorized allotments as Improve Existing Resource Conditions (I), Maintain Existing Resource Conditions (M), or Custodial Management (C). Criteria the BLM used to place allotments in category I included the amount of public land in the allotment; the willingness of lessees to invest in management; opportunities for constructing range improvements; the existence of grazing-related resource conflicts; the allotment had moderate to high forage production potential and was producing at low to moderate levels; the rancher or the BLM identified opportunities for improvement in range condition; range trend was static or downward; livestock management could be improved through water distribution; seasons of use or other factors; and opportunities for a positive economic return on public investments. The *Glossary* defines the criteria for placing allotments into the three categories; Appendix P provides a complete list of allotments in each of the categories.

In August of 1995, the 43 CFR 4180 regulations were enacted that changed BLM methods and administrative procedures for managing public lands. These regulations directed the establishment and application of standards for healthy rangelands and guidelines for livestock grazing management to achieve the four fundamentals of rangeland health (43 CFR 4180.1). Those four fundamentals are (1)

watersheds are functioning properly; (2) water, nutrients, and energy are cycling properly; (3) water quality meets State standards; and (4) habitat for special status species is protected. The Secretary of the Interior approved *Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for the Public Lands Administered by the BLM in the State of Wyoming* in 1997.

Cattle are the primary livestock grazers on public lands, but grazers also include sheep, domestic horses, and small numbers of bison. Goats and sheep are sometimes authorized for the purpose of suppressing weeds. The relative number of these grazing animals has varied in response to their economic value as a commodity and their use in ranching operations.

Animal Unit Month Allocations

All livestock grazing units in the Planning Area are classified as allotments. Livestock permits authorize grazing use based on perennial vegetation. Grazing preference is attached to base property owned or controlled by a permittee and has a priority position against others for the purpose of receiving a grazing permit. Base property in the Planning Area is land based.

At present, the BLM administers 687 grazing allotments covering 3.2 million acres in the Planning Area. Approximately 203 of these grazing allotments are located either completely or partially in lands with wilderness characteristics. Appendix P provides additional details about grazing allotments, including allotment number, allotment name, total federal acres, type of management, management category (M, I, or C), active use, and kind of livestock. Map 80 shows grazing allotments in the Planning Area. The *Glossary* provides detailed definitions related to livestock grazing management including, but not limited to, Active Use, Permitted Use, and Suspended Non-Use.

Permitted use is the amount of forage available for livestock grazing under a permit and is expressed in AUMs. Permitted use includes active use, suspended use, and temporary suspended use. Active use is the maximum amount of forage generally available in any given year under a permit. Due to fluctuating forage production, in any given year the BLM might authorize more or less forage for use for livestock grazing under a valid permit due to fluctuating forage production. The BLM determines stocking rates by monitoring the condition and amount of vegetation on a given site to ensure that adequate plant recovery time is provided and ample residual forage remains after livestock grazing to provide for healthy rangelands and other uses. Monitoring climate and water availability has resulted in forage availability adjustments, and by extension, adjustments to the numbers of livestock on the range. Predation also has resulted in changes in livestock type from sheep to cattle, and in some cases from cattle to horses. In other areas, disease-related concerns have resulted in the voluntary removal of domestic sheep in areas occupied by bighorn sheep.

Total active use for the Planning Area is 305,264 AUMs. The number of AUMs authorized annually in the Planning Area (Table 3-52) has remained fairly constant, but there has been a slight decline since 1989. This decline in authorized AUMs is due primarily to user requests for temporary non-use and unfavorable climatic conditions. For example, the gradual implementation of rest-rotation grazing systems leaves a portion of the allotment in non-use each year, contributing to the reduction. In addition, until 2009, which was a rare year of above-average rainfall, the Bighorn Basin had experienced drought conditions since 1999. The drought has resulted in less forage available for livestock use and the need for permittees/lessees to take voluntary non-use. During drought years, livestock operators and the BLM work closely to tailor the adjustments in livestock use to meet the needs of the land and ranching operations. In addition, annual fluctuations in authorized AUMs can develop from user demands, climatic conditions, and/or from the collection of monitoring information.

Grazing allotments typically include intermingled federal, state, and private lands that are managed as a unit. Ranches that lease federal rangelands obtain, on average, 28 percent of the total rangeland AUMs from federal lands, 3 percent of AUMs are from state lands, and the remaining 69 percent of rangeland AUMs from private lands, both leased and deeded (Gee et al. 1986a; Gee et al. 1986b). Based on this allocation, ranchers obtain an estimated 2.46 AUMs of rangeland grazing from other sources for every AUM of federal grazing land (Skold and Davis 1995).

Under certain scenarios, such as the relinquishment of grazing permit, the BLM may designate a unique type of grazing unit known as a reserve common allotment. Reserve common allotments may be used by grazing permittees who are temporarily unable to use their regular allotments for various reasons; for instance, to complete range improvements. These allotments would be created with ranchers cooperatively and voluntarily to promote healthier grazing lands. There are currently no reserve common allotments in the Planning Area.

Table 3-52. Billed Animal Unit Months

Year	Worland Field Office	Cody Field Office	Planning Area
1989	151,089	104,336	255,425
1990	161,473	104,287	265,760
1991	160,117	100,208	260,325
1992	154,932	95,090	250,022
1993	167,984	102,388	270,372
1994	168,116	101,782	269,898
1995	176,807	102,481	279,288
1996	183,454	98,301	281,755
1997	173,882	105,514	279,396
1998	175,665	98,773	274,438
1999	171,373	95,330	266,703
2000	148,738	84,531	233,269
2001	128,602	72,893	201,495
2002	96,255	58,686	154,941
2003	108,141	59,295	167,436
2004	121,010	50,130	171,140
2005	123,033	64,274	187,307
2006	133,754	67,828	201,582
2007	137,185	61,080	198,265
2008	129,937	39,031	168,968
2009	136,292	35,631	171,923
2010	137,513	33,912	171,425
2011	149,412	42,568	191,980
2012	144,516	37,987	182,503

Source: BLM Land and Resources Project Office 2013

Livestock grazing uses several resources directly and some resources indirectly. Livestock use rangeland vegetation for forage, but also might use riparian areas and wetlands for sources of water and forage. The BLM authorizes livestock grazing on specific allotments during different seasons. Grazing seasons vary with elevation and geographical change, resource needs, and user preference. Higher-elevation allotments are generally grazed during summer and fall. Lower-elevation allotments may be grazed during any season, but are generally used in fall, winter, and spring. Most of the allotments in the Planning Area are operating under grazing strategies that incorporate rest, seasonal rotations, deferment, and prescribed use levels that provide for adequate plant recovery time to enhance rangeland health. When rangelands are not meeting resource objectives due to current livestock grazing, the BLM implements changes in grazing management. It should be noted that possible deleterious resource uses on public lands (defined in this case as uses that prevent objectives from being met) are not limited to grazing. Policies and regulations provide BLM with direction for coordination, cooperation and consultation with permittees and interested publics regarding the collection, analyses, and reporting of monitoring information.

According to the USDA National Agricultural Statistics Service (NASS), in 2013, Wyoming accounted for 1.4 percent of the total number of cattle and calves within the United States. During 2013, Wyoming accounted for 7 percent of the total number of sheep and lambs in the United States. Nationally, as of 2012 Wyoming ranked second in wool production, second in total number of sheep and lambs, and twenty-third in total number of cattle and calves.

The Stock Raising Homestead Act of 1916 authorized and a Secretarial Order created stock driveways for the specific purpose of creating lanes and reserving water sources for trailing livestock. Stock driveway withdrawals prohibited disposal of these lands, protected water sources, and placed limits on mining activity.

Use of stock driveways was an important part of livestock operations, especially for ranchers driving livestock between summer and winter ranges across the Planning Area. At present, 92,932 acres of public lands are identified as being part of the stock driveway system (BLM 2013a). Approximately 170 miles of stock driveways have been withdrawn for livestock trailing in the Planning Area. Stock driveways in use include predominantly the W-T, Nowater, and Rome Hill Livestock Trails and the Rawhide Allotment (03098). There are more designated livestock trailing routes that do not incorporate land withdrawals. Annual trailing use is over 2,200 AUMs (BLM 2008a).

There are a number of methods livestock managers use to evaluate rangeland health that can reveal trends in the composition or productivity of a plant community. The BLM monitors rangelands throughout the Planning Area as part of the landscape health assessment process.

Overall rangeland trends in relation to livestock grazing are stable or improving. The BLM manages many allotments under grazing rotations and seasons of use designed to meet soil cover and desired plant species growth requirements. Observations of old headcuts, roads, and other disturbances show that perennial species have increased in these areas once disturbances ended. Generally, these observations have been confirmed in the rangeland health determinations completed to date. Where the BLM has identified existing livestock grazing or levels of use as a primary cause for rangeland health standards not being met, it has changed grazing use. The majority of allotments assessed to date meet, or are making progress towards meeting, the *Wyoming Standards for Healthy Rangelands*. Disturbances related to other ongoing resource uses (including oil and gas development and mining) can affect the observed trend.

Starting in 1998, the BLM began assessing grazing allotments for adherence to the approved *Wyoming Standards for Healthy Rangelands* (Appendix N) per the 1995 revision to the 43 CFR 4100 grazing

regulations, and making management decisions in accordance with these standards (Appendix N). The BLM offers grazing permits, and permittees accept them with the understanding that before reissuance, the BLM will evaluate resource conditions to determine if they conform to the standards for healthy rangelands approved by the Secretary of the Interior on August 12, 1997. The *Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for the Public Lands Administered by the BLM in the State of Wyoming* allow sustainable livestock grazing management to continue while simultaneously protecting watersheds, riparian and upland ecosystems, and wildlife habitat. Standards address the health, productivity, and sustainability of BLM-administered public rangelands and represent the minimum acceptable conditions for public rangelands. The standards apply to all resource uses on public lands. The BLM will determine their application as use-specific guidelines are developed. Standards can be synonymous with goals and are observed on a landscape scale. They describe healthy rangelands rather than important rangeland byproducts. The achievement of a standard is determined by observing, measuring, and monitoring appropriate indicators. An indicator is a component of a system the characteristics of which (e.g., presence, absence, quantity, and distribution) can be observed, measured, or monitored based on sound scientific principles.

BLM specialists use Technical Reference 1734-6 version 4-2005, *Interpreting the Indicators of Rangeland Health*, to assist in making a determination for achievement of upland standards for healthy rangelands (Pellant et al. 2005). The BLM authorized officer is required to take appropriate action as soon as practical but not later than the start of the next grazing year upon determining that existing grazing management needs to be modified to ensure that the Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration are either met or making significant progress towards achievement (CFR 4180.1). As discussed in Section 3.4.3, *Vegetation – Riparian/Wetland Resources*, the BLM currently manages all riparian/wetland areas to meet Proper functioning condition (PFC), which under certain circumstances, may require changes in grazing management.

From 1998 through the end of the 2010 fiscal year, the BLM had completed rangeland health evaluations for 308 allotments in the Planning Area (Appendix P). Of these, 168 allotments were found to meet or were making significant progress towards meeting *Wyoming Standards for Healthy Rangelands* 1, 2, 3, and 4. Allotments which had the Water Quality Standard of "unknown" are not considered as Not Meeting Standards. That status is a BLM policy unless the Wyoming DEQ provides specific information that waters in the allotment are not meeting state water quality standards. Including these allotments as "not meeting standards" would be misleading in terms of the current status of grazing allotments in the RMP. Allotment-specific guidelines are being implemented to improve rangeland conditions in areas that do not meet standards. In most allotments not meeting standards, not all public lands were considered to be failing. In addition, many not meeting standards determinations were for reasons other than current livestock management (e.g., historic livestock grazing use, OHV use, oil field development, and mineral extraction). Of allotments not meeting these standards, 20 were due to current permitted livestock grazing management and all 20 have had corrective actions taken. Where current livestock grazing management has been identified as contributing to an allotment failing rangeland health standards, the BLM uses the *Wyoming Guidelines for Livestock Grazing Management* to direct new grazing management stipulations for the allotment.

Range improvement projects and grazing systems, collectively known as BMPs, and allotment management plans (AMPs) have been used in range management since the early 1970s. There are many older range improvement projects on public lands that appear to have never been authorized by the BLM. These consist primarily of reservoirs and fences. It is possible some of these projects were authorized, but their records are not available. In recent years the BLM has cost shared with other agencies and private organizations on some projects to reach mutual goals or objectives.

The BLM Range Improvement Project System database lists range improvement projects completed in the Planning Area. Since the completion of the Cody, Grass Creek, and Washakie RMPs, the BLM has initiated approximately 423 projects and 82,314 acres of vegetation treatments in the Planning Area (Table 3-53). In addition, it has modified or reconstructed several older projects. Projects include vegetative manipulation treatment projects using prescribed fire, mechanical treatments, seeding, or chemical treatments to modify plant communities. The BLM also has constructed fences, water developments, spring enclosures, and cattleguards. Range improvements are planned and designed to enhance rangeland health and wildlife habitat and to mitigate conflicts with other uses. In several projects, the BLM has replaced or modified existing fences to make it easier for wildlife to pass.

Table 3-53. Type and Number of Range Improvement Projects in the Planning Area Since Completion of Previous Resource Management Plans

Type of Project	Number of Projects/Acres Completed
Fences	176 projects
Reservoirs	120 projects
Springs	35 projects
Wells	23 projects
Pipelines	69 projects
Brush Control	82,314 acres

Source: BLM Land and Resources Project Office 2013

Note: This table has not been updated to include a small number of range improvements installed in the Planning Area since the publication of the Draft RMP and Draft EIS.

Management Challenges

Management challenges for the livestock grazing management program include water supply and distribution, forage production, forage quality, and topography. Water availability can have an important effect on the ability of livestock to properly utilize the range. Distribution of water affects the ability of the livestock to efficiently use the forage available in the allotment. Well-distributed water sources equates to efficient use of the grazing pasture, reducing the number of areas that are grazed too intensely or not used at all. Range suitability is related to the distance to water, slope, season of use, and class and kind of livestock. Forage availability is also an important feature. Forage production affects the carrying capacity of the range for all uses and, more specifically, how many and how long livestock can remain on the range. The condition of the range affects forage quantity and quality. For example, a range dominated by appropriate cool-season bunchgrasses generally provides a better forage base than one dominated by invasive species. Surface-disturbing activities (e.g., mineral development) can reduce or change the status of forage in the Planning Area.

3.7 Special Designations and Other Management Areas

This section describes ACECs, National Back Country Byways, NHTs and Other Historic Trails, WSRs, and WSAs. Where data exists, these areas are depicted on maps 84-89, 90, 91-92, 94, and 93, respectively.

3.7.1 Areas of Critical Environmental Concern

Section 103(a) of the FLPMA defines an ACEC as an area within public lands where special management attention is required to protect and prevent irreparable damage to important historical, cultural, or scenic values; fish and wildlife; or other natural systems or processes, or to protect life and safety from natural hazards. BLM regulations for implementing FLPMA ACEC provisions are at Title 43 CFR) Part 1610.7-2(b).

The CYFO and WFO manage nine ACECs in the Planning Area – Carter Mountain, Five Springs Falls, Little Mountain, Sheep Mountain Anticline, Brown/Howe Dinosaur Area, Upper Owl Creek Area, Spanish Point Karst, Red Gulch Dinosaur Tracksite, and Big Cedar Ridge. Refer to Map 84 for the locations of these ACECs in the Planning Area.

Through the public and internal scoping processes, the BLM received a number of nominations for new or expanded ACECs. The BLM reviewed all such nominations to determine if they met the importance and relevance criteria required for consideration as an ACEC as established and defined in 43 CFR 1610.7-2 and outlined in *BLM Manual 1613 – Areas of Critical Environmental Concern* (BLM 1988b). Of the nominations received, 10 new proposed ACECs met the criteria, as did areas adjacent to five existing ACECs (referred to as expansion areas). Table 3-54 lists existing and proposed ACECs, their acreages, the resource value(s) of concern that justify their consideration as ACECs, and identified threats to the areas. Appendix F contains further discussion of the ACEC nomination process, and the ACEC Evaluation Report (BLM 2010b), available on the project website, contains the ACEC evaluation forms completed by the BLM for all existing and proposed ACECs. The ACEC evaluations provide more information about the ACECs identified in this section, including additional references, rationale, and data to support each ACEC nomination.

Table 3-54. Existing and Proposed Areas of Critical Environmental Concern in the Planning Area

Area	Acreage		Value(s) of Concern	Threats
	Existing	Proposed		
Existing ACECs (No Expansion Proposed)				
Big Cedar Ridge	264	N/A	Paleontological	Threats to this ACEC include surface disturbance from mineral and ROW development, and theft and vandalism.
Red Gulch Dinosaur Tracksite	1,798	N/A	Paleontological	Threats to this ACEC include surface disturbance from mineral and ROW development, and theft and vandalism.
Sheep Mountain Anticline	11,520	N/A	Geologic; Caves; Cultural; Scenic	Threats to this ACEC include surface disturbance from mineral and ROW development.
Spanish Point Karst	6,298	N/A	Caves; Recreational; Sinking Stream Segments; Water Quality	Threats to this ACEC include surface disturbance from mineral and ROW development, and aerial spraying of pesticides onto karst aquifer recharge areas.
Existing ACECs (and Proposed Expansion)				
Brown/Howe Dinosaur Area	5,501	15,233	Paleontological	*Existing:* Threats to this existing ACEC include surface disturbance from mineral and ROW development, and theft and vandalism. *Expansion:* Threats to the proposed expansion area of this ACEC include surface disturbance from mineral and ROW development.
Carter Mountain	10,867	5,707	Vegetation; Wildlife *Expansion:* Cultural; Recreational; Special Status Species; Vegetation; Watershed; Wildlife; Soils	*Existing:* Threats to this existing ACEC include surface disturbance from mineral and ROW development, renewable energy development, and theft and vandalism of cultural resources. *Expansion:* Threats to the proposed expansion area of this ACEC include surface disturbance from mineral (including gravel pit) and ROW development, renewable energy development, timber extraction, heavy recreational and motorized vehicle use, and invasive weed infestations. These activities threaten habitat for special status species and have the potential to create disturbances for wintering wildlife.

Table 3-54. Existing and Proposed Areas of Critical Environmental Concern in the Planning Area (Continued)

Area	Acreage		Value(s) of Concern	Threats
	Existing	Proposed		
Five Springs Falls	163	1,646	Recreational; Scenic; Special Status Species *Expansion*: Geologic; Scenic; Public Safety	*Existing:* Rare and endemic plants that occur as a result of the "spray" from Five Springs Falls are in danger when hikers/climbers attempt to climb the wall of the water fall. *Expansion:* Threats to the proposed expansion area of this ACEC include surface disturbance from mineral and ROW development.
Little Mountain	21,475	50,576	Caves; Cultural; Paleontological; Scenic *Expansion:* Recreational; Special Status Species; Vegetation; Wildlife; Scenic	*Existing:* Threats to this existing ACEC include surface disturbance from mineral (including gravel pits, uranium, and limestone) and ROW development, timber extraction, heavy recreational and motorized vehicle use, and invasive weed infestations. These activities threaten habitat for special status species and have the potential to create disturbances for wintering wildlife. *Expansion:* Threats to the proposed expansion area of this ACEC are the same as for the existing ACEC.
Upper Owl Creek Area	13,758	18,975	Cultural; Fish; Recreational; Scenic; Soils; Special Status Species; Vegetation; Wildlife	*Existing:* Threats to this existing ACEC include surface disturbance from mineral and ROW development. *Expansion*: Threats to the proposed expansion area of this ACEC include surface disturbance from mineral and ROW development, timber extraction, and land disposals.
Proposed ACECs				
Chapman Bench	N/A	23,326	Special Status Species; Vegetation; Wildlife	Threats to this proposed ACEC include the resulting probable mining interests when this reserved land is opened to all public land laws. This area was formerly BOR reserved land, and thus had protection from the public land laws and the 1872 mining law. Issuing an opening order, will allow all exploration of resources. Surface disturbance for exploration and claims will have an impact to the resources that are in need of protection: long-billed curlew, mountain plover, and greater sage-grouse.

Table 3-54. Existing and Proposed Areas of Critical Environmental Concern in the Planning Area (Continued)

Area	Acreage		Value(s) of Concern	Threats
	Existing	Proposed		
Clarks Fork Basin/Polecat Bench West Paleontological Area	N/A	23,895	Paleontological; Scenic	Threats to this proposed ACEC include surface disturbance from mineral (including gravel pit, and limestone quarries) and ROW development, timber extraction, heavy recreational and motorized vehicle use, and invasive and nonnative species infestations. These activities threaten habitat for special status species and create disturbances in crucial winter range during critical periods. Heavy public recreational use and existing special recreation permits also threaten recreation experiences. Water quality and quantity issues, as a result of surface and groundwater withdrawals and untreated irrigation outflows, also threaten the area.
Clarks Fork Canyon	N/A	12,249	Geologic; Open Space; Recreational; Special Status Species; Wildlife	Threats to this proposed ACEC include surface disturbance from mineral and ROW development.
Foster Gulch Paleontological Area	N/A	27,302	Paleontological; Scenic	Threats to this proposed ACEC include surface disturbance from mineral and ROW development.
Greater Sage-Grouse Key Habitat Areas	N/A	1,232,583	Special Status Species; Vegetation	Threats to this proposed ACEC include surface disturbance from mineral (including gravel pits) and ROW development, nonrenewable and renewable energy developments, brush eradication programs, prolonged drought, heavy recreational and motorized vehicle use, wildfire, predation, and invasive and nonnative species infestations. These threaten important greater sage-grouse habitats, including breeding, later brood-rearing, and winter concentration areas.
Greater Sage-Grouse Priority Habitat Management Areas	N/A	1,116,698	Special Status Species; Vegetation	Same as above.
McCullough Peaks South Paleontological Area	N/A	6,994	Paleontological; Scenic	Threats to this proposed ACEC include surface disturbance from mineral and ROW development.
Rainbow Canyon	N/A	1,433	Paleontological; Geologic; Scenic	Threats to this proposed ACEC include surface disturbance from mineral and ROW development.

Table 3-54. Existing and Proposed Areas of Critical Environmental Concern in the Planning Area (Continued)

Area	Acreage		Value(s) of Concern	Threats
	Existing	Proposed		
Rattlesnake Mountain	N/A	19,137	Special Status Species; Vegetation; Wildlife	Threats to this proposed ACEC include surface disturbance from mineral (including gravel pits) and ROW development, renewable energy developments, timber extraction, heavy recreational and motorized vehicle use, and invasive and nonnative species infestations. These activities threaten rare plants and habitat for special status species, and have the potential to create disturbances for wintering wildlife.
Sheep Mountain	N/A	25,151	Vegetation; Wildlife	Threats to this proposed ACEC include surface disturbance from mineral (including gravel pit) and ROW development, renewable energy developments, timber extraction, heavy recreational and motorized vehicle use, and invasive and nonnative species infestations. These activities threaten rare plants and habitat for special status species, and have the potential to create disturbances for wintering wildlife.

Sources: BLM 2013a; Appendix F; USFWS 2010 Endangered and Threatened Wildlife and Plants; 12-Month Findings (USFWS 2010); USFWS Conservation Objectives Team (COT) Report (USFWS 2013a); Big Horn Basin Sage-grouse Local Working Group (BHBLWG 2007).

Note: Portions of the Proposed Clarks Fork Basin/Polecat Bench West Paleontological Area, Proposed Foster Gulch Paleontological Area, and Proposed McCullough Peaks South Paleontological Area ACECs make up the proposed PETM ACEC (14,906 acres) under Alternative D. The values of concern listed for those three proposed ACECs are the same for the Proposed PETM ACEC.

ACEC Area of Critical Environmental Concern
BOR Bureau of Reclamation
N/A Not applicable
PETM Paleocene, Eocene Thermal Maximum
ROW rights-of-way

3.7.1.1 Existing Areas of Critical Environmental Concern

Big Cedar Ridge

The Big Cedar Ridge ACEC is on 264 acres of BLM-administered land southwest of Ten Sleep, Wyoming, in Washakie County, in an area of abundant paleontological resources, particularly fossilized plants (Kerr 1992). Fossilized plants were discovered in the Meeteetse Formation in 1990, and the area contains a complete and well-preserved late Cretaceous Period plant community. Sites with such in-place preservation of entire plant communities are rare; however, other sites have been found including two smaller sites in Wyoming and one in New Mexico (Kerr 1992). In addition, 100 previously unknown plant species have been identified at this location (BLM 1997).

Management objectives for the Big Cedar Ridge ACEC are to protect and maintain its paleontological resources in order to provide educational, hands-on experiences for visitors, university studies, and school and paleontological groups, by allowing and promoting collection of reasonable quantities of the fossilized plants for personal use while making negligible disturbance.

Red Gulch Dinosaur Tracksite

The Red Gulch Dinosaur Tracksite ACEC is on 1,798 acres of BLM-administered land off U.S. Highway 14, approximately 10 miles east of Greybull, Wyoming, in Big Horn County. The Red Gulch Dinosaur Tracksite is the largest tracksite in Wyoming. The "basal member" of the lower Sundance Formation contains rare Middle Jurassic dinosaur tracks, which are approximately 167 to 170 million years old. The interval occurs in previously unrecognized intertidal to supratidal carbonate units once thought to be totally marine in origin (Archer et al. 2001). The dinosaur tracks might have been made by at least two types of theropods, meat-eating dinosaurs that walked on their hind legs. Adding to its scientific importance, evidence from this location brings into question assumptions about the geologic history of the area during the Middle Jurassic Period; this location was originally thought to be an ancient sea. Dinosaur tracks in the area have been exposed to surface weathering for varying amounts of time, and new tracks may potentially be exposed each year. The ACEC is also important because of its extensive and unusual Middle Jurassic fossil occurrence. Fossil resources are found throughout the area and include abundant marine fossils such as belemnites, oysters, trilobites, brachiopods, and ammonites, and fossilized plants. In addition, the area consists of the Red Gulch Dinosaur Tracksite recreation area and a small portion of the Red Gulch/Alkali Road National Back Country Byway.

Management objectives and challenges for this ACEC are to protect and maintain paleontological resources. The application of foreign substances such as plaster, resin, and other materials used to make molds has damaged some of the dinosaur tracks in this area. Other types of damage include people scratching circles around tracks or scratching tracks to clean them of sediment. In the outlying areas of the site where more brittle exposures occur, there is evidence of damage to the fossil-bearing surface from people walking on the surface. The possibility remains people could remove or destroy tracks, although removal of individual tracks would be difficult because of the brittle limestone in which the tracks are found.

Sheep Mountain Anticline

The Sheep Mountain Anticline ACEC is on approximately 11,520 acres of BLM-administered land north of Greybull, Wyoming. The ACEC is composed of a classic Laramide anticline, an upward folded rock

structure often featured in geology textbooks. Researchers visit the ACEC and use it for educational field trips. This ACEC also contains several caves that provide recreational, educational, and research opportunities. Some of these caves are of scientific importance because they contain active thermal springs and therefore provide information about the formation of these types of caves and related features.

The management objective for this ACEC is to protect its geological features.

Spanish Point Karst

The Spanish Point Karst ACEC is on approximately 6,298 acres of BLM-administered land on the west slope of the Big Horn Mountains in Big Horn County. The area consists of deeply incised canyon and mountainous terrain, the Medicine Lodge and Trapper Creek WSAs (refer to Section 3.7.6 *Wilderness Study Areas*), several eligible and suitable WSRs (refer to Section 3.7.5 *Wild and Scenic Rivers*), four significant cave and karst systems, sinking stream segments, and regionally important groundwater recharge areas.

Associated with the caves, within the ACEC boundaries, are 45,000 feet of explored cave passages and 100,000 feet of subkarstic waterways. Cave entrances, passages, and waterways in this ACEC serve as a receptacle and circulation system for fresh water originating in the highlands to the east on USFS lands. A portion of the water that circulates through the karsitic system is trapped in the carbonate rocks and recharges the widely used (by both municipalities and irrigators) and economically important Madison aquifer. The Madison aquifer is the source of municipal water for the communities of Worland, Ten Sleep, and Hyattville, and most recently Basin, Greybull, Manderson, and Kirby. The water provides irrigation water for thousands of acres within the Bighorn Basin.

There are recreational opportunities in the area because of its good access for the public, scenic values, and varied potential recreation activities (primarily hiking, rock climbing, and caving). Popular caves in the area include Great X, Tres Charros, Bad Medicine, and P-Bar.

Management objectives for the Spanish Point Karst ACEC are to protect the cave system, sinking stream segments, and groundwater quantity and quality services the area provides.

3.7.1.2 Existing ACECs with Proposed Expansions

Brown/Howe Dinosaur Area

Existing Area

The Brown/Howe Dinosaur Area ACEC is on 5,501 acres of BLM-administered land north of Shell, Wyoming. The area was designated to protect paleontological resources, most notably dinosaur fossils from the suborder Theropoda and Sauropoda that have been recovered there. Tracks of both suborders of dinosaurs have been found in this area, as have soft-tissue fossils. Since the 1930s, the Brown Howe Quarries, which are on nearby private land, have produced hundreds of dinosaur bones. The fossil-bearing sediments continue onto portions of adjacent BLM-administered lands in the ACEC. The Big Al Quarry in the Morrison Formation, on BLM-administered land just north of the Brown Howe Quarries, was the site of the discovery of a nearly complete Allosaurus ("Big Al") skeleton that has subsequently been the subject of several scientific studies and a television program. Additional quarrying is ongoing in this area for dinosaur fossils, such as sauropods, and nonsauropod plant eaters.

Proposed Expansion

The proposed expansion of the Brown/Howe Dinosaur Area ACEC flanks the existing ACEC to the southeast and the northwest and would expand the area by 15,233 acres. As with the existing ACEC, the proposed expansion area contains paleontological resources, primarily from dinosaurs and marine reptiles. This expansion area also typically includes vertebrate fossils and scientifically important paleobotanical, palynological (pollen), mammalian fossil, and dinosaur eggshell site resources.

Management challenges for this area include soil instability, erosion potential, and fossil occurrence that make it vulnerable to surface disturbance. At present, the BLM manages the proposed expansion area as VRM Class II, III, or IV, with approximately 15,160 acres limited to designated roads and trails and 73 acres closed to motorized vehicle use.

Carter Mountain

Existing Area

The Carter Mountain ACEC consists of approximately 10,867 acres of BLM-administered lands on the east slope of the Absaroka Mountains. The BLM manages the area to protect areas of alpine tundra and fragile soils, much of which remains in pristine condition. Some disturbance has occurred in the past, and this juxtaposition of disturbed and undisturbed alpine tundra allows an opportunity to study the effects of disturbance on alpine soils, vegetation, and wildlife. The ACEC also contains scenic areas and provides crucial winter range for elk and mule deer. As stated by Hurley (1996), the Cody elk herd equals or exceeds migratory distances documented for elk, and protection and maintenance of this crucial winter range on Carter Mountain is imperative to the long-term survival of these elk. Recreational opportunities in the ACEC include hunting opportunities pursued by local and visitors from outside the region.

The alpine tundra plant community, which is slow growing and difficult to recover following mechanical disturbance, is responsible for holding fragile soils in the ACEC (Auerbach et al. 1997). The difficulty in recovering these areas is due to a very short growing season, low available water, harsh growing conditions, and desiccation through wind, snow and ice. Alpine environments are indeed "fragile," and may take thousands of years to heal after soil has been lost (Billings 1973). Destruction of the insulating layer of turf can cause thermakarst erosion, which is severe (Billings 1973). Alpine environments can heal from disturbance; however, such recovery depends on the severity of the impact and resistance to disturbance of the vegetation (Billings 1973). Alpine meadows are also susceptible to damage, especially in rocky sites like the Absaroka Mountain Range (Billings 1973). Many other areas in the Absaroka Range are protected as Wilderness, offering greater protection for vegetation and soils than comparable resources receive in the Carter Mountain area.

Proposed Expansion

The proposed expansion of the Carter Mountain ACEC surrounds the area of the existing ACEC and would expand the area by 5,707 acres. Like the existing ACEC, the proposed expansion is a scenic area that contains intact alpine tundra and other habitats, fragile soils, and crucial winter ranges for big game (BLM 2010a). The proposed expansion also contains important habitat for wildlife transition, calving areas, and summer ranges. Elk, deer, and bighorn sheep use the area as they migrate from Yellowstone National Park and the upper reaches of the Shoshone National Forest. In addition, the proposed expansion area supports grizzly bears and grey wolves, and has potential Canada lynx habitat; all three species are current or former listed species (see Section 3.4.9 *Special Status Species – Wildlife*). Three perennial streams in the area support riparian habitat and a pure strain of Yellowstone cutthroat trout

(a BLM sensitive species; see Section 3.4.8 *Special Status Species – Fish*); additional streams in the area might have suitable habitat. Portions of the expansion area contain several special status raptor species and a number of rare and special status species plants (BLM 2010a). The position of Carter Mountain is unique because it is at the edge of the Absaroka Range in an ecotone where species diversity is high. Rare plants often begin to evolve and persist due to the differing ecological pressures of alpine tundra and mountain shrub zones and their phenoplasticity producing ecotypical differentiation. This is why it is more common that these rare plants are found in this zone (see Fertig and Mills 2000).

Management challenges for the area include fragile and unstable soils. In combination with high winds or intense storms, these soils can create hazardous conditions for hikers and other users. At present, the BLM manages this area as VRM Classes II and IV, with 533 acres limited to designated roads and trails and 5,174 acres limited to existing roads and trails for motorized vehicle use.

Five Springs Falls

Existing Area

The Five Springs Falls ACEC consists of 163 acres of BLM-administered public lands on the west slope of the Big Horn Mountains east of Lovell, Wyoming. The BLM objective for managing the ACEC is to protect existing populations of four near-endemic rare and sensitive plant species in the Five Springs Falls area; see BLM 2010a for information about these plant species. This ACEC also contains the Five Springs Falls Campground, which attracts local and Yellowstone National Park visitors. Waterfalls in the steep rocky canyon that makes up the ACEC are public recreational and scenic attractions.

Proposed Expansion

The proposed expansion of the Five Springs Falls ACEC is south and west of the existing ACEC and would expand the area by 1,646 acres. The area of the proposed expansion is dominated by outcrops of highly folded, faulted, and forested limestones and Paleozoic age dolomites. The area is unstable due to steep topography. Downslope movements of soil and rock are common, and landslide deposits and rock-fall (slump) have been documented in the area. This natural phenomenon can pose a risk to public safety. The area also has unstable soil, erosion potential, and fossil occurrence that make it vulnerable to continued surface disturbance and loss of paleontological resources. At present, the BLM manages this area as VRM Classes II and III, with motorized vehicle use limited to designated roads and trails.

Little Mountain

Existing Area

The Little Mountain ACEC consists of approximately 21,475 acres of BLM-administered land on the west slope of the Big Horn Mountains northeast of Lovell, Wyoming. BLM objectives for managing the ACEC are to protect and manage important caves and cave-related paleontological resources, cultural resources, and the maintenance of scenic values. The Little Mountain ACEC contains several caves used by the public for recreational, educational, and research purposes. This ACEC provides hunting opportunities. The area also contains AML hazards due to previous uranium mining activities (refer to Section 3.8.3 *Health and Safety*).

Proposed Expansion

The proposed expansion of the Little Mountain ACEC includes areas east and south of the existing ACEC and would expand the area by 50,576 acres. This expansion area is proposed due to identified wildlife, special status species, recreation, vegetation, and scenic values. The proposed expansion area includes

big game winter, transition, and calving areas; migration corridors; and a bighorn sheep population (see Section 3.4.6 *Fish and Wildlife Resources – Wildlife*). A number of BLM sensitive wildlife species and regionally endemic plant species can be found in the area. Potential Canada lynx habitats and greater sage-grouse brood-rearing, nesting, and winter range can also be found in this area. Lynx Analysis Units in the proposed expansion area were determined in coordination with the USFWS and USFS to provide suitable lynx habitat and to be functional with the adjacent USFS suitable habitat (Lynx Biology Team 2000). Desired plant communities in the proposed expansion area include a portion of the only curl-leaf mountain mahogany population in Wyoming. Recreational use (including hunting, fishing, wildlife viewing, and visitation to the nearby medicine wheel archeological site) is heavy. Scenic resources in the area include deep canyons (including Devil's Canyon and Cottonwood Canyon) and high plateaus that contain paleontological resources. At present, the BLM manages the area as VRM Classes II and III, with motorized vehicle use limited to designated roads and trails.

Upper Owl Creek

Existing Area

The Upper Owl Creek ACEC includes 13,758 acres of BLM-administered public lands in the upper foothills of the Absaroka Mountains surrounding the Owl Creek, Rock Creek, Klicker Creek, Slab Creek, and Vass Creek drainages. BLM management objectives for the area are to protect overlapping and important big game habitats and migration corridors, fisheries habitat, shallow soils, alpine vegetation and rare plants, cultural resources and Native American traditional values, primitive recreational opportunities, and scenic quality (BLM 1998a). The ACEC contains wildlife resources and special status species (including migratory birds, wolves, grizzly bears, moose, and wolverines), cultural resources, and primitive recreational opportunities such as hiking, camping, fishing, and horseback riding. Desired plant communities include endemic plants species growing in "moonscapes" where rocky, sparsely-vegetated soils support low-growing, cushion plant communities, and forested areas that include old-growth tree stands. This ACEC also provides hunting opportunities.

Proposed Expansion

The proposed expansion of the Upper Owl Creek ACEC includes areas east and south of the existing ACEC and would expand the area by 18,975 acres. BLM management objectives and resource values for this area are similar to those in the area of the existing Upper Owl Creek ACEC. At present, the BLM manages the area as VRM Classes II and III, with 18,080 acres limited to designated roads and trails and 1,640 acres limited to existing roads and trails for motorized vehicle use.

3.7.1.3 Proposed ACECs

Chapman Bench

The proposed Chapman Bench ACEC (23,326 acres) is north of Heart Mountain National Landmark and east of Highway 120 in an area of predominantly BLM-administered land. The area contains sagebrush habitat used by sensitive bird species and other wildlife.

The proposed ACEC is an Audubon Society-designated important bird area, and the area contains a diverse and abundant bird population map (Taylor 1986) of this important bird area http://netapp.audubon.org/IBA/State/US-WY). The Chapman Bench area supports at least 12 sensitive species. Greater sage-grouse, long-billed curlew, and mountain plover occur in this sagebrush steppe; all three are BLM sensitive. These sensitive bird species prefer shortgrass or vegetation cover and bare

ground, and they have evolved in disturbance regimes that include grazing and fire. Both these regimes can modify a vegetation community to be more suitable; however, it should be noted that these species also select short stature vegetation types like gardener saltbush dominated sites and blue grama dominated sites regardless of disturbance regimes. Sagebrush obligate species in the area also include the sage thrasher, sage sparrow, Brewer's sparrow, and loggerhead shrike. This area provides nesting habitat for one of the highest concentrations of these species together in the Bighorn Basin. In addition, this area provides pronghorn and mule deer crucial winter range. Visitors travel the area, which provides views of the Absaroka Mountain foothills, on their way to Yellowstone National Park.

At present, the BLM manages this area as VRM Classes II, III, and IV, and motorized vehicle use is limited to existing roads and trails. There has been little development in the proposed ACEC to date.

Clarks Fork Basin/Polecat Bench West Paleontological Area

The proposed Clarks Fork Basin/Polecat Bench West Paleontological Area ACEC (23,895 acres) is west of Powell, Wyoming, in Park County, in the northwestern corner of the Planning Area. The ACEC is proposed to protect the area's stratigraphic contact zone and the paleontological and geochemical values associated with these rock layers, which are exposed in only a few areas worldwide. The area contains mammalian and botanical fossil resources and its geologic information relates to global warming and paleoclimate change. This stratigraphic boundary represents a transition from the Paleocene Epoch to the Eocene Epoch, and produces fossils and geochemical data used in the study of a major Carbon Isotope Excursion recorded during a period of global warming (the Paleocene-Eocene Thermal Maximum). The area also contains scenic and colorful badlands and eroded features.

Management challenges for this area include soil instability, erosion potential, and fossil occurrence that make it vulnerable to surface disturbance and the loss of its identified resource values. At present, the BLM manages this area as VRM Classes III and IV, with motorized vehicle use limited to existing roads and trails.

Clarks Fork Canyon

The proposed Clarks Fork Canyon ACEC (12,249 acres or 4,746 acres depending on the management alternative) is in the far northwestern portion of the Planning Area. The ACEC is proposed to protect the area's geologic, wildlife and special status species habitat, open space, and recreational resources and uses. The geology of the Clarks Fork Canyon, the Canyon Mouth Anticline, and glacial features in the area are of scientific and educational value. The area contains crucial winter range for mule deer, elk, and moose, one of only two ranges for mountain goats in the state, and one of the largest bighorn sheep ranges in the country. The area provides habitat for several species of raptors and contains caves with bat hibernacula and roost sites. Special status species in the proposed ACEC include plant species (such as Shoshonea and Ute ladies'-tresses), habitat for BLM sensitive wildlife species (such as greater sage-grouse, mountain plover, long-billed curlew, sage thrasher, Brewer's sparrow, Baird's sparrow, and loggerhead shrike), and BLM sensitive Yellowstone cutthroat trout. The Clarks Fork area provides opportunities for recreation on large unbroken tracts of public land, including a segment of the Clarks Fork of the Yellowstone River WSR eligible waterway.

At present, the BLM manages this area as VRM Class II, and motorized vehicle use is limited to existing roads and trails with seasonal management restrictions.

Foster Gulch Paleontological Area

The proposed Foster Gulch Paleontological ACEC (27,302 acres) is 10 miles south of Lovell, Wyoming, in Big Horn County. The ACEC is proposed to protect the area's stratigraphic contact zone and the paleontological and geochemical values associated with these rock layers, which are exposed in only a few areas worldwide. The area typically contains mammalian and botanical fossil resources, and its geologic information relates to global warming and paleoclimate change. This stratigraphic boundary represents a transition from the Paleocene Epoch to the Eocene Epoch (the Fort Union/Willwood formations) and produces fossils and geochemical data used in the study of a major Carbon Isotope Excursion recorded during a period of global warming (the Paleocene-Eocene Thermal Maximum). The area also contains scenic and colorful badlands and eroded features.

Management challenges for this area include soil instability, erosion potential, and fossil occurrence that make it vulnerable to surface disturbance and the loss of its identified resource values. At present, the BLM manages the area as VRM Class IV, with motorized vehicle use limited to existing roads and trails.

Greater Sage-Grouse Key and Priority Habitat Management Areas

The proposed Greater Sage-Grouse Key Habitat Areas ACEC encompasses BLM-administered lands in Key Habitat Areas (1,232,583 acres), while the Greater Sage-Grouse PHMAs ACEC encompasses BLM-administered lands in PHMAs (1,116,698 acres). These ACECs encompass large portions of the Planning Area (39 percent of BLM-administered surface for the Greater Sage-Grouse Key Habitat Areas ACEC and 35 percent for the PHMAs ACEC). Both proposed ACECs are discussed together, since both met the same relevance and importance criteria and contain the same values of concern.

The BLM has identified the priority greater sage-grouse habitat encompassed by the proposed Key and PHMAs ACECs as highly important to the health and viability of greater sage-grouse populations. The sagebrush steppe has been identified as one of the most threatened ecosystems in America (Stiver et al. 2006). Numerous sagebrush obligate species are dependent on healthy, intact sagebrush steppe ecosystems and are put at risk by its decline. The primary threats to the Wyoming Basin greater sage-grouse population include energy development and transfer, long-term drought, and brush eradication programs (USFWS 2013b). In addition, sagebrush steppe area provides habitat for numerous BLM sensitive species, including greater sage-grouse, Brewer's sparrow, sage thrasher, sage sparrow, loggerhead shrike, mountain plover, burrowing owl, white-tailed prairie dog, black-tailed prairie dog, long-billed curlew, and Baird's sparrow. Portions of the ACEC in Chapman Bench and Loch Katrine that contain sagebrush steppe habitat are designated as important bird areas by the Audubon Society. Many other animal species are also dependent upon this ecosystem for grazing, pollination, winter range, nesting areas, and birthing areas. For example, pronghorn, though not a sensitive species, are dependent on the sagebrush steppe; Wyoming supports the majority of this species' population.

McCullough Peaks South Paleontological Area

The proposed McCullough Peaks Paleontological Area ACEC (6,994 acres) is adjacent to the McCullough Peaks WSA (which forms the proposed ACEC's northeastern boundary), east of Cody, Wyoming, in Park County. The ACEC is proposed to protect the area's stratigraphic contact zone and the paleontological and geochemical values associated with these rock layers, which are exposed in only a few areas worldwide. The area typically contains mammalian and botanical fossil resources and its geologic information relates to global warming and paleoclimate change. This stratigraphic boundary represents a transition from the Paleocene Epoch to the Eocene Epoch (the Fort Union/Willwood formations) and produces fossils and geochemical data used in the study of a major Carbon Isotope Excursion recorded

during a period of global warming (the Paleocene-Eocene Thermal Maximum). The area also contains scenic and colorful badlands and eroded features.

Management challenges for this area include soil instability, erosion potential, and fossil occurrence that make it vulnerable to surface disturbance and the loss of its identified resource values. At present, the BLM manages the area as VRM Classes II and III, with motorized vehicle use limited to designated roads and trails.

Rainbow Canyon

The proposed Rainbow Canyon ACEC (1,443 acres) is at the foot of the western Big Horn Mountains in Big Horn County, near the northeastern corner of the Planning Area. The BLM acquired access easements using Land and Water Conservation Funds that provide public access across the private land between Wyoming State Highway 14A and public land where Rainbow Canyon is located.

The public access is needed in order to develop Rainbow Canyon as a recreation site involving a scenic overlook.

The proposed ACEC contains scenic and geologic resources, and paleontological resources that include dinosaurian and paleobotanical fossils. The area is dominated by outcrops of the Cretaceous Cloverly Formation, which is known for early Cretaceous dinosaur fossils. These important scientific resources are found throughout large portions of the area. The geology of the area is weathered and eroded, creating a colorful landscape. The viewscape in the ACEC is dominated by exposed beds of the Cloverly Formation, which includes dramatic pink, lavender, and white beds that are exposed in mirror images across the drainage. Though the Cloverly Formation can be found around the Bighorn Basin, the colorful bands presented in the Rainbow Canyon stand out in counter-relief below the backdrop of tan and black Cretaceous shales; this quality is distinct from other bas-relief areas of badlands in the region.

Management challenges for this area include soil instability, erosion potential, and fossil occurrence that make it vulnerable to surface disturbance and the loss of its identified resource values. At present, the BLM manages this area as VRM Class III, with motorized vehicle use limited to designated roads and trails.

Rattlesnake Mountain

The proposed Rattlesnake Mountain ACEC (19,137 acres) is approximately 5 miles northwest of Cody and immediately north of the Buffalo Bill Reservoir. The area is proposed to protect wildlife habitat and desired plant communities, including special status plant species; see BLM 2010a for information about these plant species. The proposed ACEC contains winter, transition, and calving areas for elk, mule deer, and moose (WGFD 2011b). The winter ranges in this area are the eastern-most terminuses of some of the longest intact migration routes in the lower 48 states. The area also contains grizzly bear and gray wolf habitat, and potential Canada lynx habitat. While the area does not contain Lynx Analysis Units, it does contain spruce habitat which meets standards in the Canada Lynx Conservation Assessment and Strategy 2000 (Lynx Biology Team 2000) as suitable habitat and is linked to other suitable habitat to the west. Bird habitat in the area includes greater sage-grouse brood-rearing and migratory bird nesting areas. Watersheds that comprise the area drain into the north fork of the Shoshone River, which provides cold water fisheries habitat. The area is used for hunting and other recreational activities. Important vegetation types and sensitive plant species in the area include mixed conifer and aspen stands and riparian willow, sagebrush, and mountain shrub communities. The unusual aspect of the vegetation habitat in this area is the volcanic, Precambrian, and limestone soils (associated with the

Laramide Orogeny), which provide habitat for rare and BLM sensitive plant species. At present, the BLM manages the area as VRM Class II.

Sheep Mountain

The proposed Sheep Mountain ACEC (25,151 acres or 14,200 acres depending on the management alternative) is immediately west of Buffalo Bill Reservoir in the northwestern quadrant of the Planning Area. The area is proposed to protect important wildlife habitat and desired plant communities. The area contains big game winter, transition, and lambing areas, and migration corridors that link USFS land and Yellowstone National Park with available habitat for wintering and raising young (WGFD 2011b). The area also contains grizzly bear and gray wolf habitat, potential Canada lynx habitat, and greater sage-grouse brood-rearing and migratory bird nesting habitat. While the area does not contain Lynx Analysis Units, it does contain spruce habitat, which meets standards in the Canada Lynx Conservation Assessment and Strategy 2000 (Lynx Biology Team 2000) as suitable habitat and is linked to other suitable habitat to the west. Drainages in the area provide cold water fisheries habitat. The area is used for hunting and other recreational activities and contains visual alignments associated with the equinox and solstice.

Important vegetation types and sensitive plant species in the area include mixed conifer and aspen stands, riparian willow, sagebrush, and mountain shrub communities. The unusual aspect of the vegetation habitat in this area is the volcanic and limestone soils (associated with the Heart Mountain Detachment), which provide habitat for rare and BLM sensitive plant species.

At present, the BLM manages this area as VRM Class II. The area contains 22,926 acres limited to designated roads and trails and 2,227 acres limited to existing roads and trails for motorized vehicle use.

3.7.2 National Back Country Byways

The BLM began a back country byway program in 1989 to focus on enhancing recreational opportunities. Two years later, Section 1047 of the Intermodal Surface Transportation Efficiency Act of 1991 established the National Scenic Byway System. Section 1032 of the Act recognized the BLM's Back Country and Scenic Byways program as a component of the National Scenic Byway System. The objectives of the BLM's Back Country and Scenic Byways program include:

- Enhance opportunities for the American public to see and enjoy the unique scenic and historical opportunities on public lands.
- Foster partnerships at local, state, and national levels.
- Contribute to local economies.
- Enhance visitors' recreation experiences and communicate the multiuse management message through effective interpretative programs.
- Manage visitor use along the National Back Country Byway to minimize impacts to the environment and to protect visitors.
- Contribute to the National Scenic Byway System in a way that is uniquely suited to BLM-administered national public lands.

Red Gulch/Alkali Road National Back Country Byway

The BLM manages one National Back Country Byway in the Planning Area – the Red Gulch/Alkali Road National Back Country Byway. This route is a 32 mile gravel road that provides a scenic drive through

the foothills of the Big Horn Mountains and access to three WSAs and the Red Gulch Dinosaur Tracksite ACEC. Active promotion of the Red Gulch/Alkali Road National Back Country Byway has been limited to available brochures and interpretive kiosks at either end of the route, and its proximity to the Red Gulch Dinosaur Tracksite, which attracts thousands of visitors per year. Local and out-of-state visitors familiar with the area constitute most recreational use. These visitors are generally comfortable with the experience and enjoy the seclusion and the panoramic scenery of the Big Horn Mountains and the Bighorn Basin and the experience, opportunities, and benefits that come from the local areas accessible via the National Back Country Byway.

Management Challenges

Management challenges for the Red Gulch/Alkali Road National Back Country Byway include improving visitor safety and managing for multiple-use resource activities while maintaining the scenic character of the landscape. Outdoor enthusiasts unfamiliar with the area can become intimidated by the type II and III road conditions and limited signage. Hazardous road conditions along this route include a narrow running surface, deep ruts, steep slopes, and soil types that become extremely muddy and slippery during times of inclement weather, even light rain. The route is impassable during winter. Additional signage and increased visitor information is needed to ensure public safety along the Red Gulch/Alkali Road National Back Country Byway.

Multiple-use resource activities have remained limited in the corridor of the National Back Country Byway. Visual intrusions along the byway do not disrupt the overall character of landscape. However, impacts of dispersed recreation, including OHV use, are becoming apparent and can be attributed to the popularity of the area during the hunting season and as a location for horn hunting.

3.7.3 National Historic Landmarks

There is one National Historic Landmark in the Planning Area – the Heart Mountain Relocation Center National Historic Landmark.

The Heart Mountain Relocation Center is a National Historic Landmark designated by the Secretary of the Interior under 36 CFR 65.5. From 1942 through 1945, 14,000 Japanese-Americans passed through the Heart Mountain Relocation Center. At its peak population of approximately 11,000 (two-thirds of whom were American citizens), Heart Mountain was the state's third largest community. The center was built to house some of the 110,000 persons evacuated from the West Coast following the Japanese attack on Pearl Harbor in December 1941. The Heart Mountain Relocation Center is a reminder of a unique episode in American history and is relevant to the military, social, and political history of the Nation (Heart Mountain Wyoming Foundation 2009; NPS 2009).

3.7.4 National Historic Trails and Other Historic Trails

A National Historic Trail (NHT) is a congressionally designated trail that is an extended, long-distance trail, not necessarily managed as contiguous, that follows as closely as possible and practicable the original trails or routes of travel of national historic significance. The purpose of a NHT is the identification and protection of the historic route and the historic remnants and artifacts for public use and enjoyment. A NHT is managed in a manner to protect the nationally significant resources, qualities, values, and associated settings of the areas through which such trails may pass, including the primary use or uses of the trail (BLM 2012c).

In accordance with BLM Manual 6280 (BLM 2012d), the BLM establishes a National Trail Management Corridor where a designated trail is within the Planning Area and sets forth allocation decisions, management actions, and necessary restrictions for resources and resource uses within that National Trail Management Corridor. The Oregon/Mormon NHTs Management Plan (Trails Management Plan) (BLM 1986b) provides specific guidelines for the evaluation and protection of historic wagon trails that apply to all historic trails of either national, regional, or local significance (whether or not the trail is a wagon trail). The BLM manages and protects trails in the Planning Area using these guidelines. The guidelines specifically focus on (1) historical significance and use, (2) the integrity of the setting of the trail segment, and (3) the physical integrity of the trail, including ruts and swales.

As a result of these guidelines, the BLM developed the concept of a protective corridor "at the discretion of individual districts," and defined this management corridor as "a width of ¼ mile either side of the trail or the visual horizon, whichever is less..." (BLM 1986b). At that time, the BLM considered the 0.25-mile management corridor sufficient to identify and protect physical remnants and associated sites. The overall trail setting or viewshed was of secondary importance to preserving the physical evidence. Although developed for the primary routes and important ancillaries to the Oregon/Mormon Pioneer NHTs, in the current RMPs for the Planning Area, the BLM also applied the corridor concept to other historic trails. Subsequent project-specific consultation has indicated that development activity beyond the 0.25-mile management corridor can adversely affect the qualities that contribute to a trail's eligibility. In recent years, the BLM has employed viewshed analysis techniques from VRM guidance to determine the extent of the effects of development activities on nearby trails and other important historic properties.

Trails and Routes in the Planning Area

There is one NHT in the Planning Area – the Nez Perce (Nee-me-poo or Nimi'ipuu) NHT (Maps 91 and 92) (USFS 1990). A total of 16.49 miles of the Nez Perce NHT occurs within the Planning Area, 4.67 miles of which travel across BLM-administered land. The Nez Perce NHT was established by Congress through Public Law 99-445 on October 6, 1986 which amended the National Trail System Act of 1968 to designate the Nez Perce Historic Trail as a component of the National Trails System. The Nez Perce NHT was designated to commemorate the 1877 flight of the non-treaty Nez Perce from their homelands in eastern Oregon, Idaho, and Washington. Five Nez Perce bands, nearly 800 men, women, and children, struggled across 1,170 miles of rugged country. The course they chose on their epic journey has been memorialized in the Nez Perce NHT. In its entirety the, Nez Perce NHT covers 1,170 miles, 319 miles of which have been designated high potential segments.

The Nez Perce NHT follows a mixture of nonmotorized trails and motorized roads and generally follows the route depicted in the "Nez Perce (Nee-Me-Poo) Study Report", prepared by the Department of Agriculture in March, 1982 and the Environmental Assessment and Decision Notice signed by Assistant Secretary of Agriculture Peter C. Myers on July 1, 1985 (16 U.S.C.1244 [a][14]). Motorized use is allowed where the Nez Perce NHT overlaps an existing road and along the auto tour route. Where the Nez Perce NHT follows BLM system trails, the Nez Perce NHT is regarded as a simple facility for hikers and horsemen (USFS 1990).

Highways that roughly parallel the 1877 Nez Perce flight and have been designated as the official Nez Perce NHT Auto Route. Through the cooperative efforts of the USFS and the states of Oregon, Idaho, Washington, Wyoming, and Montana, 1,500 miles of selected roadway now display the Nez Perce Auto Route sign. In the Bighorn Basin Planning Area, the Auto Route travels from the Shoshone National

Forest boundary along the Chief Joseph National Scenic Byway (Wyoming Highway 296) where it trends north on Wyoming Highway 120 to the state line.

The portion of the Nez Perce NHT that passes through the Planning Area is one of the few segments where the "nontreaty" bands were successful in concealing their route of travel from the Army and its scouts. The Nez Perce separated into small groups and used a variety of routes, most of which remain unknown today. Warriors created false trails in hopes of gaining time for the main body of the tribe to travel north toward Canada. As a result of this history, there are no "High Potential Route Segments" or "high potential trail historic sites" identified in the *Nez Perce (Nee-me-poo or Nimi'ipuu) National Historic Trail Comprehensive Plan* within the Planning Area (USFS 1990). As a Congressionally designated historic trail, land management considerations include applying constraints such as no surface disturbance within 0.25 mile of the trail, or the visual horizon, whichever is closer. This results in a 0.5-mile-wide management corridor centered on the trail. Specific segments also have a no surface occupancy (NSO) stipulation.

The Nez Perce NHT corridor protects the historical values for which the trail was designated while providing a high quality scenic, primitive hiking, and pack and saddle stock experience. Activities within the Nez Perce NHT corridor will not preclude further management options for the Nez Perce NHT. A variety of compatible recreation opportunities are provided. Access to the Nez Perce NHT is primarily by foot and horseback. Roads and motorized trails are not present except at designated crossings.

The Nez Perce NHT corridor is characterized by a predominantly natural appearing environment. Improvements such as trailheads, trails, signs, bridges, and fences that enhance the recreation opportunities may be present. Evidence of past and present resource management may exist, but blends with the natural appearance of the landscape. Vegetation alterations may be present to enhance viewing opportunities.

The Nez Perce NHT is managed to protect its historical values while providing recreation opportunities in a natural appearing landscape consistent with *National Historic Trail Comprehensive Plan* within the Planning Area (USFS 1990) and any revisions therefore after.

A number of other trails and historic routes traverse the Planning Area. Other historic trails total 271.76 miles in the Planning Area, 69.08 miles of which travel across BLM-administered land (Maps 91 and 92). Trails dating to before contact between Native Americans and European Americans include the Bad Pass, or Sioux Trail. This foot trail is marked by a line of stone cairns of unknown age and might date from many thousands of years ago. Although the date of its earliest use is not known, records do establish that the trail was much traveled by peoples from pre-Columbian times up to the middle 1830s. Mountain men used the trail through Bighorn Canyon to bring furs from the Bighorn Basin east to the Missouri River. Portions of the Sioux Trail underlie a scenic byway in the eastern Bighorn Basin. Another such prehistoric trail network, the Bannock Trail, is thought to exist on the East Slope of the Absaroka Mountains, but its exact route is not known.

Routes from the historic period include the Bridger Trail, which Jim Bridger created in 1864 to connect with the Oregon Trail to the south (Maps 91 and 92). The route was an important alternative to the Bozeman Trail, which crossed the Powder River Country. Before the railroad was constructed, the Bridger Trail was an important freight route for wagons carrying supplies during the early settlement of the Bighorn Basin in the 1880s and 1890s. The trail connected the Bighorn Basin with Billings, Montana, to the north and Casper, Wyoming, to the southeast. Portions of the Bridger Trail along Kirby Creek were used on the later stage route connecting Thermopolis and Lost Cabin with Casper (Woods 1997). The BLM has installed interpretive signage along the Bridger Trail.

In 1881, Meeteetse became a terminus of the old Meeteetse Trail, which the military built as a stage and freight road. The Fort Washakie to Meeteetse to Red Lodge trail originally ran north from Fort Washakie to Meeteetse. Freight was shipped north from the Union Pacific Railroad to Fort Washakie and then on to Meeteetse; when the railroad reached Red Lodge the traffic pattern reversed, from north to south. The trail was the first road built in the Bighorn Basin. Red Lodge Road was later extended to Lander and Rawlins.

Although eclipsed in importance by railroads and other routes, the Bridger Trail was the predecessor to the increased system of roads connecting ranches and towns with expanding railheads in the Bighorn Basin. The Chicago, Burlington & Quincy Railroad completed its line from Toluca, Montana, to Cody, Wyoming, in 1901, and continued it south along the Bighorn River to Kirby by 1905. The rail line was completed through the Wind River Canyon to Casper in October 1914. The Chicago & North Western Railroad built into Casper by 1888 and expanded west to Shoshone, Riverton, and Lander by 1906 (Larson 1978).

Early automobile routes still in use today include the Yellowstone Highway (U.S. Highway 20) (part of the Park to Park Highway) and the Black and Yellow Trail (Highway 16), both examples of some of the earliest modern-era highways traversing the diverse geographical regions of Wyoming.

Management Challenges

Historic trails are among the most difficult resources to manage because of "their varying degrees of preservation and diverse range of environmental settings" (BLM 1986b). Trails in the region in general are under increased pressure as a result of the cumulative effects of energy development and large-scale projects. The area with the highest potential for wind farm development in the Bighorn Basin is close to the Nez Perce NHT. Current BLM management practices for NHTs include the following:

- Avoid surface disturbance within the viewshed of historic trails.
- Minimize the effect of trail crossing by utilizing existing ROWs crossing areas.
- Utilize VRM techniques to minimize effects to the setting of NHTs and other regionally important roads and trails.
- Limit surface disturbance within 0.25 mile or the visual horizon (whichever is closer) of historic trails.
- Avoid running a linear project parallel to a trail.
- Cross trails or historic routes at 90-degree angles using a dog-leg or an S-curve.
- Relocate the proposed disturbance where it will be less visible from the trail (e.g., behind a rise).
- Restrict the width of a working ROW within management corridor on either side of a trail.
- Avoid any blading on a ROW within management corridor if a track will suffice.
- Consider special rehabilitation measures (e.g., revegetation) that will help reestablish the visual integrity of the trail.
- Consider special interpretive measures (e.g., signing).
- Consider special preventive measures (e.g., fencing) to reduce the area affected by the project.

3.7.5 Wild and Scenic Rivers

The National Wild and Scenic River System (NWSRS) is a series of nationally designated waterways and their immediate environments (the land within the waterway corridors). Wild and Scenic Rivers (WSRs) are designated under the authority of the Wild and Scenic Rivers Act of 1968 (Public Law 90-542, as amended; 16 USC) for the purpose of preserving the stream or stream section in its free-flowing condition, preserving water quality, and protecting its outstandingly remarkable values (ORVs). ORVs are identified on a segment-specific basis and may include scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. Section 5(d)(1) of the Wild and Scenic Rivers Act directs federal agencies to consider potential wild and scenic rivers in their land and water planning process. To fulfill this requirement, the BLM evaluates streams for potential inclusion into the NWSRS when developing or revising its RMPs. The NWSRS consists of three types of rivers, as follows:

- *Recreational* — rivers or sections of rivers readily accessible by road or railroad and might have some development along their shorelines and might have undergone some impoundments or diversion in the past.
- *Scenic* — rivers or sections of rivers free of impoundments, with shorelines or watersheds still largely undeveloped but accessible in places by roads.
- *Wild* — rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted.

Of the 12,560 miles of waterways that are part of the NWSRS, approximately 2,423 miles of WSRs are on BLM-administered land (Interagency Wild and Scenic Rivers Coordinating Council 2008). BLM Manual 6400, Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation, and Management, provides guidance for implementing the Wild and Scenic River Act for these WSRs (BLM 2012e). The BLM is responsible for evaluating all rivers on BLM-administered land to determine if they are suitable for addition to the NWSRS and making recommendations to Congress accordingly. Ultimately, the BLM uses the RMP revision process, including comments received on the Draft RMP and Draft EIS to determine which if any of the waterways in the Planning Area to recommend as suitable to Congress for addition to the NWSRS.

At present, there are no designated WSRs in the Planning Area. However, the CYFO and WFO manage lands along 20 waterways that have been found eligible for WSR designation (Map 94). All contain ORVs, such as scenic and geologic (remarkable vistas due to the steep vertical canyon walls, some areas are more than 1,200 feet deep, immense spires, and riparian valley bottoms), cultural, historical, fish, recreational, sinking streams, and aquifer recharge zones. These waterways were identified during a review of all BLM-administered public lands along waterways within the Planning Area. This review was done to determine eligibility, assign a tentative classification, and screen for suitability factors, as identified in the Wild and Scenic Rivers Act of 1968, as amended. Along the 20 eligible waterways, 14 waterway segments were found to meet the suitability factors.

Step I – Eligibility Criteria

The BLM has assessed 297 waterways in the CYFO and WFO Planning Areas (BLM 2002a; BLM 2003a; BLM 2009p). There was a review of waterways in the CYFO Planning Area in 1993 (with an update to management prescriptions in 2003 and an addendum report in 2009) and a review of waterways in the WFO in 2002 (BLM 2003a; BLM 2002a). These reports are available on the Bighorn Basin RMP Revision Project website and contain detailed descriptions of the waterway identification and review processes. To begin these reviews, the BLM identified natural waterways (including both perennial and

nonperennial rivers and streams) in the Planning Area based on guidance in BLM Manual 6400. Following this initial inventory, BLM Interdisciplinary Team members reviewed the waterways to determine if they met eligibility criteria of being free-flowing and containing at least one of the ORVs described in BLM Manual 6400. These ORVs include scenic, recreational, geologic, fish, wildlife, cultural, historic, and other similar values (e.g., ecologic/biologic diversity, paleontologic, or botanic values). Of the 297 waterways reviewed, 277 were found to not meet the definition of free-flowing or to not possess ORVs. The BLM subsequently dismissed these 277 waterways from further consideration. The BLM preliminary determined that 20 waterways meet the WSR eligibility criteria, and tentatively classified all eligible waterway segments as wild, scenic, or recreational, based on the degree of development along the waterway and on adjacent lands at the time of the evaluation. Table 3-55 lists these waterways, their lengths, the acreage of BLM-administered land within their waterway corridors, their ORVs, and their tentative classifications.

Where necessary to protect the values that made them eligible for inclusion in the NWSRS, the BLM developed specific interim management prescriptions for the public lands along eligible waterway segments. These interim management prescriptions were designed to protect the identified ORVs and maintain the tentative classifications assigned to these waterways. Where specific interim management prescriptions were not developed, the BLM used case-by-case evaluations of discretionary actions (e.g., oil and gas leasing) to ensure activities that could degrade ORVs or free-flowing conditions would be avoided. Chapter 2 lists the current management of these eligible waterway segments.

Table 3-55. Characteristics for Wild-and-Scenic-River-Eligible Waterways in the Planning Area

Waterway	Total Length of Waterway Reviewed (miles)	Total Length of Segments on BLM-administered Lands (miles)	Tentative Classification	Outstandingly Remarkable Values	Waterway Segment (BLM-administered Land) Meets Suitability Screening Factors?
Clarks Fork of the Yellowstone[1]	14.08	8.51	Scenic	Cultural; Fish; Geologic; Historic; Other Values (whitewater); Recreational; Scenic; Wildlife	Yes (downstream 4.74 miles) No (upstream 3.77 miles)
Cottonwood Creek	4.05	4.05	Scenic	Geologic; Historic; Other Values (endemic/rare vegetation, aspen stands, riparian); Scenic; Wildlife	Yes
Cow Creek	2.01	1.92	Wild	Cultural; Geologic; Historic; Other Values (aspen stands, riparian, endemic/rare vegetation); Scenic; Wildlife	Yes
Deer Creek	1.46	1.45	Scenic	Cultural; Fish; Recreational; Scenic	Yes
Meeteetse Creek	3.31	2.78	Wild	Geologic; Historic; Other Values (riparian, alpine vegetation, volcanic-specialized vegetation); Wildlife	No
North Fork Shoshone River	4.87	0.85	Recreational	Cultural; Fish; Geologic; Historic; Recreational; Scenic; Wildlife	No
Oasis Spring Creek	2.40	2.07	Wild	Cultural; Fish; Recreational; Scenic	No
Pat O'Hara Creek	7.63	2.17	Scenic	Cultural; Historic	No
Porcupine Creek	10.80	10.80	Wild/Scenic	Cultural; Fish; Other Values (riparian); Recreational; Scenic	Yes
South Fork Shoshone River	19.15	1.99	Recreational	Cultural; Fish; Geologic; Historic; Recreational; Scenic; Wildlife	No
Trout Creek	1.30	0.96	Wild	Cultural; Fish; Other Values (riparian); Recreational; Scenic	Yes
Canyon Creek	1.30	1.30	Scenic	Cultural	No
Deep Creek	5.20	5.20	Wild	Fish; Recreational; Scenic	Yes
Dry Medicine Lodge Creek	10.61	10.59	Scenic	Cultural; Geologic; Other Values (caving, aquifer recharge); Recreational; Scenic	Yes
Kirby Creek	2.11	0.10	Recreational	Historic	No

Table 3-55. Characteristics for Wild-and-Scenic-River-Eligible Waterways in the Planning Area (Continued)

Waterway	Total Length of Waterway Reviewed (miles)	Total Length of Segments on BLM-administered Lands (miles)	Tentative Classification	Outstandingly Remarkable Values	Waterway Segment (BLM-administered Land) Meets Suitability Screening Factors?
Medicine Lodge Creek	5.77	5.70	Wild	Cultural; Geologic; Other Values (sinking streams, aquifer recharge); Recreational; Scenic	Yes
Paint Rock Creek Unit (Paint Rock Creek, South Paint Rock Creek, and Laddie Creek)	13.77	11.18	Recreational	Cultural; Fish; Geologic; Historic; Recreational; Scenic	Yes (Paint Rock Creek, South Paint Rock Creek, and portion Laddie Creek 10.57 miles) No (upstream portion of Laddie Creek 0.70 miles)
Powder River (Middle Fork)	2.53	1.12	Recreational	Fish; Recreational	Yes
Trapper Creek	10.91	10.91	Wild	Cultural; Geologic; Other Values (caving area); Recreational; Scenic	Yes
White Creek	11.26	6.98	Wild	Cultural; Geologic; Scenic	Yes (downstream portion 5.72 miles) No (upstream portion 1.26 miles)

Sources: BLM 2002a; BLM 2003a; BLM 2013a; BLM 2009p.

[1]Waterway segment revaluated as part of the 2009 Cody Field Office Wild and Scenic River Addendum Report.

Note: information in columns *Total Length of Waterway Reviewed* comes from BLM 2002a, BLM 2003a, BLM 2013a, BLM 2009p. Information in column *Total Length of Segments on BLM-administered Lands* was calculated using BLM 2013a.

BLM Bureau of Land Management

Step II – Suitability Factors

The BLM reviewed all waterway segments that meet the eligibility criteria to determine if they were also suitable for inclusion in the NWSRS. The Wild and Scenic River Act and BLM Manual 6400 list a number of factors that should be considered when assessing the suitability of waterways for inclusion in the NWSRS. Along the eligible waterways, the BLM found 14 that also met the suitability factors.

Several things caused eligible waterways to not meet suitability factors, including: management conflicts and/or challenges due to adjacent non BLM-administered lands or mineral estate, and the effectiveness of current non-WSR management in protecting the identified ORVs. Refer to the WFO and CYFO WSR Reports, available on the project website, and Appendix F of this document for additional detail on the WSR evaluation process.

3.7.6 Wilderness Study Areas

In 1964, Congress passed the Wilderness Act, thereby establishing a national system of lands for the purpose of preserving a representative sample of ecosystems in a natural condition for the benefit of future generations. Until 1976, the National Park Service and the USFS managed most land considered for and designated as wilderness. With the passage of FLPMA in 1976, Congress directed the BLM to inventory, study, and recommend which public lands under its administration should be designated as wilderness. Areas identified under this direction are WSAs. To be designated as wilderness, an area must have the following characteristics:

- **Size:** roadless areas of at least 5,000 acres of public lands or of a manageable size.
- **Naturalness:** generally appears to have been impacted primarily by the forces of nature.
- **Opportunities:** provides outstanding opportunities for solitude or primitive and unconfined types of recreation.

WSAs also often have special qualities such as ecological, geological, educational, historical, scientific, and scenic values. There are no congressionally designated wilderness areas in the Planning Area.

In the late 1980s and early 1990s, Wyoming BLM drafted an EIS analyzing the impacts of managing the areas that were identified as containing wilderness characteristics after the initial wilderness inventories in the mid-1970s, and the subsequent intensive inventories in the 1980s, which includes the areas within the Bighorn Basin. The final EIS, published in 1991, included the BLM's recommendations to Congress of which areas should be managed as wilderness. As mandated by the late Interim Management Policy for Lands under Wilderness Review, which was recently replaced by BLM Manual 6330, Management of Wilderness Study Areas, the areas analyzed in the EIS are to be managed by the non-impairment standard until Congress either designates an area as wilderness or releases it back to multiple use (BLM 2012a).

There are 10 WSAs in the Planning Area (Map 93 and Table 3-56). These areas contain important natural resources, special features, naturalness, and primitiveness to support eco-based tourism. With the increase in demand for consumptive and non-consumptive resources, and an increase in development in natural and primitive areas, the WSAs have natural recreational resources that provide unique niches that are still preserved. The following paragraphs identify the locations, important features, and original inventory numbers (assigned at the time of the BLM wilderness inventory) of the WSAs in the Planning Area.

Table 3-56. Wilderness Study Areas and Acreages in the Planning Area

Wilderness Study Area	Acres
Alkali Creek	9,475
Bobcat Draw Badlands	16,969
Cedar Mountain	20,425
Honeycombs	20,156
McCullough Peaks	24,531
Medicine Lodge	7,181
Owl Creek	668
Red Butte	10,805
Sheep Mountain	23,256
Trapper Creek	7,475
Total	140,940

Source: BLM 2013a

Alkali Creek Wilderness Study Area

The Alkali Creek WSA (WY-010-241) includes 9,475 acres of BLM-administered public lands surrounding private lands totaling 680 acres. The WSA is in Big Horn County, 7 miles north of Hyattville, Wyoming, along the west slope of the Big Horn Mountains. The WSA boundaries follow Alkali and Red Gulch Roads on the east and north, and a two-track trail along the western boundary. The southern boundary follows state and private property lines and Alkali Road.

The WSA is in and represents a rare pristine example of the transition zone between the lower west slopes of the Big Horn Mountains and the floor of the Bighorn Basin. Visual and geologic resource values enhance the wilderness characteristics of Alkali Creek WSA. On the rims of the canyons, scenic vistas provide an unencumbered view of the basin floor and the majestic mountains. The WSA is known to contain pictographs, rock shelters, and other important cultural values of early occupation.

Bobcat Draw Badlands Wilderness Study Area

The Bobcat Draw Badlands WSA (WY-010-126) includes 16,969 acres of BLM-administered public land and 13 acres of state-owned land. The WSA is in Washakie and Big Horn counties, approximately 25 miles west of Worland, Wyoming. The southern, western, and eastern boundaries of the WSA follow primitive roads. The northeast boundary follows a road and then detours around a state-owned section and continues along a road to the southeast to a two-track trail, which was used as a boundary to exclude an area lacking wilderness characteristics.

The western portion of the WSA is dominated by broad, grass-covered benches or ridges separated by deep, wide drainages running into the Big Draw drainage to the north or the Fifteenmile drainage to the east. Bare, rugged desert pockets of colorful badland scenery and geologic formations like hoodoos, spires, and mushrooms are predominant in the central and southern portions of the WSA and offer

interesting attractions to recreationists. The variable terrain and the rugged, colorful badland topography offer a unique and interesting wilderness and primitive recreation setting. Human intrusions in the Bobcat Draw Badlands WSA are minor and do not have an important impact on the natural character of the area.

Cedar Mountain Wilderness Study Area

The Cedar Mountain WSA (WY-010-222) includes 20,425 acres of BLM-administered public lands with 42 acres of private or state in-holdings. The WSA is in Washakie County, 2 miles east of Kirby along the east side of the Bighorn River. Part of the eastern boundary is along a natural gas pipeline ROW, roads, and state lands property lines. The southern boundary is mainly along a road and private property boundary.

The WSA is an area of rugged topography characterized by deep, steep-sided drainages flowing north or west toward the Bighorn River. The abrupt elevation difference in the area (from 4,200 to 5,500 feet amsl), combined with the belt of junipers on the top and sides of Cedar Mountain, creates a scenic and contrasting element against the other natural elements. Cedar Mountain is the dominant visual feature of the unit. The area is unusual because of its elevation, the vegetation growing on it, and the imposing rock escarpment that forms its southern side. Visual, paleontological, and geographic resource values enhance the wilderness characteristics of Cedar Mountain WSA. The soil, rock, and vegetation colors and the area's topography contribute to the visual features. Petrified wood and reptilian fossils are found in the southern portion of the area. Mammalian fossils are found north of Cedar Mountain.

Honeycombs Wilderness Study Area

The Honeycombs WSA (WY-010-221) contains 20,156 acres of BLM-administered public lands, and 13 acres of split-estate lands. The WSA is located in Washakie County, 16 miles southeast of Worland, Wyoming. The north and east boundaries are the BLM's Blue Bank Road, state, and private lands. The southern and western boundaries are two-track trails, one section of state lands, and Nowater Creek.

The WSA consists of two land forms. A central core area is comprised of sharply eroded, strongly dissected badlands. The area around the core is rolling to steep hills. The exposures of the Willwood Formation provide opportunities to study scenic erosion patterns. The soil colors vary from reds, pinks, and purples to numerous shades of browns to tans. The Honeycombs WSA is also known to have the potential for deposits of large mammalian fossils from the Tertiary period.

McCullough Peaks Wilderness Study Area

The McCullough Peaks WSA (WY-010-335) includes 24,531 acres of BLM-administered public land and a 640 acre in-holding of state land. The WSA is in Park County, 10 miles northeast of Cody, Wyoming, and 6 miles south of Powell, Wyoming. The boundary consists primarily of roads, property lines, and a powerline ROW.

The WSA consists of the badlands that form the north slope of the McCullough Peaks. The terrain is characterized by sharp ridges and deeply eroded drainages. There also are large expanses of open, gentle terrain. The area is scenic and provides opportunities for solitude and primitive recreation. The topography, scenic vistas, and wildlife attract visitors. Nationally important paleontological resources and cultural resources are present in the area. Locals use the area for a variety of recreational activities.

Medicine Lodge Wilderness Study Area

The Medicine Lodge WSA (WY-010-240) includes 7,181 acres of BLM-administered public lands with 4 acres of private or state in-holdings. The WSA is in Big Horn County, 5 miles northeast of Hyattville, Wyoming, along the west slope of the Big Horn Mountains. The WSA is bounded mainly by Cold Springs Road on the south, Black Butte Road on the north and the west, and the Bighorn National Forest on the east.

The WSA consists of canyon walls towering 1,000 feet above Medicine Lodge Creek. The remainder of the WSA consists of steeply sloping shrub-steppe and broken rugged areas with shallow canyons and unusual knobby rock outcrops. Bighorn sheep, which were reintroduced in the Paint Rock Canyon area several years ago but no longer inhabit the area, used the Medicine Lodge WSA as summer range. Outstanding ecological values include vegetative and wildlife communities that are essentially unaffected by human activity. Exposed geologic features provide the opportunity to study the geologic history of the area. The Madison Formation is a storehouse of fossils such as branchiopods, corals, bryozoans, and crinoid stems. Medicine Lodge Canyon rates extremely high in scenic value based on its rich color combinations, and the vertical or nearly vertical cliffs, spires and formations.

The Spanish Point Karst ACEC, which maintains and protects the cave and karst system, sinking stream segments, and groundwater quantity and quality, includes portions of the Medicine Lodge WSA. The extra management efforts to maintain the ACEC, cave systems, and travel management designations greatly enhance the efforts to maintain the wilderness characteristics of the Medicine Lodge WSA.

Owl Creek Wilderness Study Area

The Owl Creek WSA (WY-010-104 a, b, c) consists of three tracts totaling 668 acres. The WSA is in Hot Springs County in the upper foothills of the Absaroka Range near a peak called Washakie Needles. The boundary of Tract a is formed by the Washakie Wilderness to the north, the South Fork of Owl Creek and the Wind River Indian Reservation to the west, Klicker Creek to the south, and private land to the east. Tract b is adjacent to the Washakie Wilderness, which forms the north boundary, and private land surrounds the rest of the tract. The east boundary of Tract c extends along Rock Creek and the Washakie Wilderness on the west. The north boundary is formed by a short segment of private property and the south boundary is along the south section line of section 31.

The landscape is dominated by a ridge line that divides the main drainages of Rock Creek and the South Fork of Owl Creek. Several steep, rugged spur ridges extend laterally from the main ridge, and are sharply separated by a number of deep side-draws that drain into the relatively wide, flat bottoms of the main drainages. Evidence of modern human activity is virtually nonexistent in the WSA. The WSA is also influenced by Upper Owl Creek Area ACEC management, which protects overlapping and important big game habitats and migration corridors, fisheries habitat, shallow soils, alpine vegetation and rare plants, diverse cultural resources and Native American traditional values, primitive recreational opportunities, and high scenic quality.

Red Butte Wilderness Study Area

The Red Butte WSA (WY-010-131) is on 10,805 acres of BLM-administered public land and is in Big Horn County, approximately 15 miles northwest of Worland, Wyoming. All boundaries, except for approximately 1.5 miles of section on the west side of the WSA, are along improved dirt roads on BLM-administered land.

The WSA contains bare, rugged badlands created by peaks and ridges broken by irregular, sharply cut drainages radiating from the central portion of the area that is dominated by Red Butte. The bare, red-hued soils of this area are highly eroded, creating a dissected, rugged landform. The northeastern portion exhibits less rugged badlands intermixed with a series of small bench-like terraces overlooking the flat drainage bottom of Fivemile Creek. The western portion of the unit consists of badlands opening up to broad, shallow drainages and flat-to-rolling plains along the drainages of Reservoir Creek and the North Fork of Fifteenmile Creek.

Sheep Mountain Wilderness Study Area

The Sheep Mountain WSA (WY-010-130) includes 23,256 acres of BLM-administered public lands and 19 acres of split-estate lands. The WSA is located in Big Horn County approximately 20 to 25 miles northwest of Worland, Wyoming, and 18 to 20 miles west of Greybull and Basin, Wyoming. State and private lands and the Burlington Pass Road form the western boundary of the WSA. The eastern boundary is along a major oil pipeline ROW and the Dorsey Creek Road. The southern boundary is located along the township line to exclude areas lacking the wilderness characteristic of naturalness and a finger of land created by roads accessing livestock management facilities. The northern boundary follows a road and an oil pipeline.

The WSA contains bare, rugged badlands created by peaks and ridges broken by irregular, sharply cut drainages radiating from the central portion of the area that is dominated by Sheep Mountain. The bare, red-hued soils of this area are highly eroded, creating a dissected, rugged landform. Sheep Mountain and the eastern-most portion of Tatman Mountain are the dominant topographic features. Sharply incised drainages radiate from these mountains and combine to form moderately broad, flat, grassy bottoms separated by rounded badland ridges along the perimeter of the unit.

Trapper Creek Wilderness Study Area

The Trapper Creek WSA (WY-010-242) includes 7,475 acres of BLM-administered public lands with 17 acres of private or state in-holdings. The WSA is in Big Horn County, 5 miles southeast of Shell, Wyoming, along the west slope of the Big Horn Mountains. The boundary along the western and northern portions follows Black Mountain Road, physical boundaries, and state and private lands. The eastern and southern boundaries are Trapper Rim Road, private land, and legal boundaries.

Trapper Creek canyon contains some of the most valuable scenery on the west slope of the Big Horn Mountains. The canyon is characterized by the dramatic vertical relief of the cliffs, with a total depth of more than 1,200 feet from the rim to the creek. Other features include spires, and massive rock outcrops of the canyon walls, a rich variety of vegetation, a clear cascading stream, and rich color combinations. There is a riparian plant community along the length of Trapper Creek. The lower entrance to Great X Cave is in the WSA. Trapper Creek landscape has scenery of exceptional quality. The Spanish Point Karst ACEC includes portions of the WSA, which maintains and protects the cave and karst system, the sinking stream segments, and groundwater quantity and quality.

Other Wilderness Study Areas

The BLM Billings Field Office in Montana also manages two WSAs that lie predominately in Montana, but include some acreage in Wyoming. Neither the CYFO nor the WFO addresses management of these WSAs.

3.8 Socioeconomic Resources

The Socioeconomic Resources topic includes the individual resources of social conditions, economic conditions, health and safety, environmental justice, and tribal treaty rights. Each individual resource section provides a description of the resource and the current condition of the resource.

3.8.1 Social Conditions

Social conditions concern the human communities in the Planning Area, including towns, cities, and rural areas, and the custom, culture, and history of the area as it relates to human settlement, as well as current social values.

This section discusses population and demographics, custom, culture, and social trends. For information on the history of human settlement in the Planning Area, see Section 3.5.1 *Cultural Resources*.

Population and Demographics

Table 3-57 provides a summary of population for the Planning Area counties in 1970 and 2012, and Table 3-58 provides information on population in individual towns in the Planning Area. The most populous county in the Planning Area is Park County, with about 28,700 residents. Big Horn County contains approximately 11,800 residents, Washakie County contains approximately 8,500, and Hot Springs County contains approximately 4,800. The most populous cities in the Planning Area, in order of decreasing population, are Cody (Park County), Powell (Park County), Worland (Washakie County), Thermopolis (Hot Springs County), and Lovell (Big Horn County). Figure 3-18 provides additional detailed trend information for county populations from 1970 through 2012. The figure shows population generally increased from 1970 to the early 1980s in all four counties within the Planning Area, then generally declined through the mid to late 1980s. In Park County, population increased steadily from about 1990 to the present day. In Big Horn County, population remained relatively constant during the same period with a slight growth trend since 2005. In Hot Springs and Washakie counties, population decreased slightly from 1990 levels, particularly from the late 1990s to 2005.

Table 3-57. Population Change by County, 1970-2012

Area	Population in 1970	Population in 2012	Change 1970-2012	Average Annual Change 1970-2012
Big Horn County	10,264	11,794	15%	0.33%
Hot Springs County	5,023	4,822	-4%	-0.10%
Park County	17,805	28,702	61%	1.14%
Washakie County	7,557	8,464	12%	0.27%
State of Wyoming	333,795	576,412	73%	1.31%
United States	203,798,722	313,914,040	54%	1.03%

Sources: BEA 2010a; U.S. Census Bureau 2012; U.S. Census Bureau 2013a.

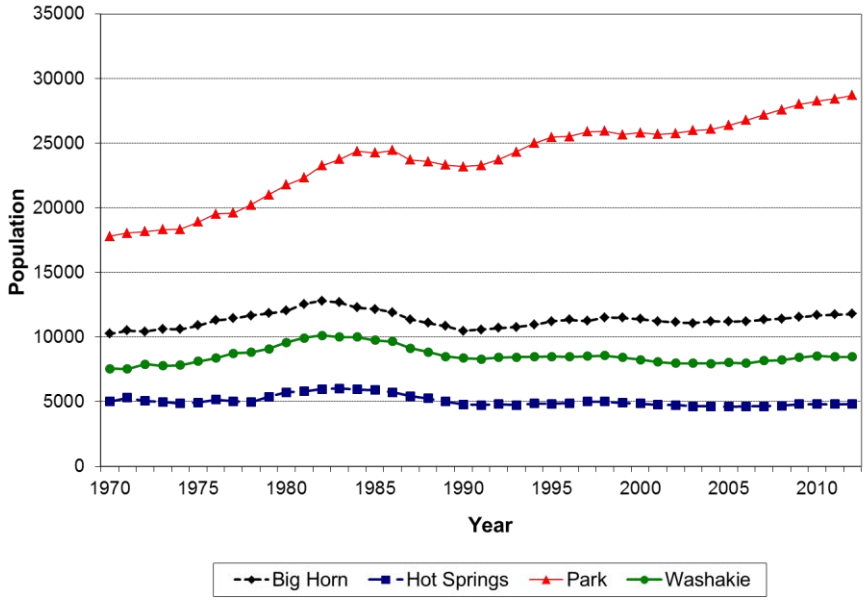
Table 3-58. Population of Towns in 2000 and 2012

Town	Population in 2000	Population in 2012	Change 2000-2012	Average Annual Change 2000-2012
Big Horn County	11,461	11,794	3%	0.2%
Basin	1,243	1,292	4%	0.3%
Burlington	250	309	24%	1.8%
Byron	557	599	8%	0.6%
Cowley	560	694	24%	1.8%
Deaver	177	182	3%	0.2%
Frannie[1]	209	161	-23%	-2.2%
Greybull	1,815	1,853	2%	0.2%
Lovell	2,361	2,381	1%	0.1%
Manderson	104	115	11%	0.8%
Hot Springs County	4,882	4,822	-1%	-0.1%
East Thermopolis	274	253	-8%	-0.7%
Kirby	57	93	63%	4.2%
Thermopolis	3,172	3,019	-5%	-0.4%
Park County	25,786	28,702	11%	0.9%
Cody	8,895	9,689	9%	0.7%
Meeteetse	351	330	-6%	-0.5%
Powell	5,367	8,308	55%	3.7%
Washakie County	8,289	8,308	0%	0.0%
Ten Sleep	304	264	-13%	-1.2%
Worland	5,289	5,569	5%	0.4%
State of Wyoming	493,782	576,412	17%	1.3%

Sources: U.S. Census Bureau 2000; U.S. Census Bureau 2013a.

[1]Includes portions of Frannie in both Big Horn and Park counties.

Figure 3-18. Population Trends by County, 1970-2012



Sources: BEA 2010a; U.S. Census Bureau 2013a; U.S. Census Bureau 2013b.

Table 3-59 presents information about the population distribution by various age groups in 2012. The table shows the median age was higher in all four Planning Area counties than in the state or nation, and was highest in Hot Springs County. The percentage of people aged 65 and over is higher in all four counties than the state or national average. However, in Big Horn and Washakie counties, the percentage of people under 18 was slightly higher than the national and state averages; in these counties, relatively low percentages of people aged 18 to 44 is reflected in the higher median age. In Hot Springs and Park counties, there is also a relatively low percentage of people under the age of 18, as well as a relatively low percentage of people aged 18 to 44.

Table 3-59. Age Distribution by County, 2012

Area	Median Age	Percent of People by Age Category				
		Under 18	18-24	25-44	45-64	65 and Over
Big Horn County	41.8	25%	8%	21%	28%	19%
Hot Springs County	49.2	19%	6%	20%	32%	23%
Park County	43.9	21%	9%	22%	30%	19%
Washakie County	42.0	25%	6%	22%	28%	19%
State of Wyoming	36.9	24%	10%	26%	27%	13%
United States	37.4	23%	10%	26%	26%	14%

Source: U.S. Census Bureau 2013c

Table 3-60 shows the same data for the year 2000, which helps establish the trend over time. The year 2000 and 2012 comparison shows that the population in all four counties is growing older, with an increasing median age and the expected changes in each age category (a smaller proportion of people in the younger categories, and a larger proportion in the older categories, in 2012 compared with 2000). At the national level, an aging population can create economic problems such as how to fund Social Security. At the local level, an aging population could reduce the supply of labor, particularly of young workers entering the labor market at relatively lower wages. Another concern would be that there would likely be an increased demand for hospital services; to the degree that people on fixed incomes contribute less to local tax revenues, this can create an imbalance of local government revenues and expenditures.

Table 3-60. Age Distribution by County, 2000

Area	Median Age	Percent of People by Age Category				
		Under 18	18-24	25-44	45-64	65 and Over
Big Horn County	38.7	29%	7%	23%	25%	17%
Hot Springs County	44.2	22%	6%	23%	29%	20%
Park County	39.8	24%	9%	25%	27%	15%
Washakie County	39.4	27%	6%	25%	25%	16%
State of Wyoming	36.2	26%	10%	28%	24%	12%
United States	35.3	26%	10%	30%	22%	12%

Sources: U.S. Census Bureau 2009a; U.S. Census Bureau 2009b; U.S. Census Bureau 2010a; U.S. Census Bureau 2010b; U.S. Census Bureau 2010c.

Table 3-61 provides a summary of educational attainment in each county within the Planning Area in 2011. The table shows that the percentage of high school graduates is comparable to the statewide level in all four Planning Area counties, and higher than the national average. Only Park County, however, has a level of 4-year college graduates that equals or exceeds the state or national average.

Table 3-61. Educational Attainment in 2011

Area	Percent of people age 25 and over:	
	With a high school diploma	With a 4-year college degree
Big Horn County	90%	19%
Hot Springs County	88%	20%
Park County	93%	28%
Washakie County	89%	23%
State of Wyoming	92%	24%
United States	85%	28%

Source: U.S. Census Bureau 2011a

Table 3-62 shows data on gender distribution by counties. Gender distribution is very close to 50 percent male and 50 percent female in all four counties.

Table 3-62. Gender in 2010

Area	Percent of people who are:	
	Male	Female
Big Horn County	50%	50%
Hot Springs County	49%	51%
Park County	50%	50%
Washakie County	50%	50%
State of Wyoming	51%	49%
United States	49%	51%

Source: U.S. Census Bureau 2013c

Because people of all ages and all levels of educational attainment, and both men and women, use BLM lands, the variation in these demographic groups is not a driver for BLM's management actions in the Planning Area. However, the demographic data provides a backdrop of the human communities that will be affected by BLM's decisions.

Transient and Seasonal Populations

Another demographic variable of interest relates to the transience and permanence of populations. Table 3-63 shows data from the 2000 Census on where people lived 5 years prior to the Census (i.e., in 1995). The data show the population of the study area counties is relatively stable: in all four counties, over half of the residents lived in the same residence 5 years prior, and about 75 to 80 percent of the residents lived in the same county. These percentages, which are comparable to state and national averages, show a substantial degree of stability in the population.

Table 3-63. Residence in 1995, as Tabulated in 2000

Residence	Big Horn County	Hot Springs County	Park County	Washakie County	State of Wyoming	United States
Same house	58%	54%	51%	59%	51%	54%
Different house, same county	19%	21%	23%	20%	24%	25%
Different county, same state	9%	11%	8%	11%	8%	10%
Other location	14%	14%	18%	10%	17%	11%

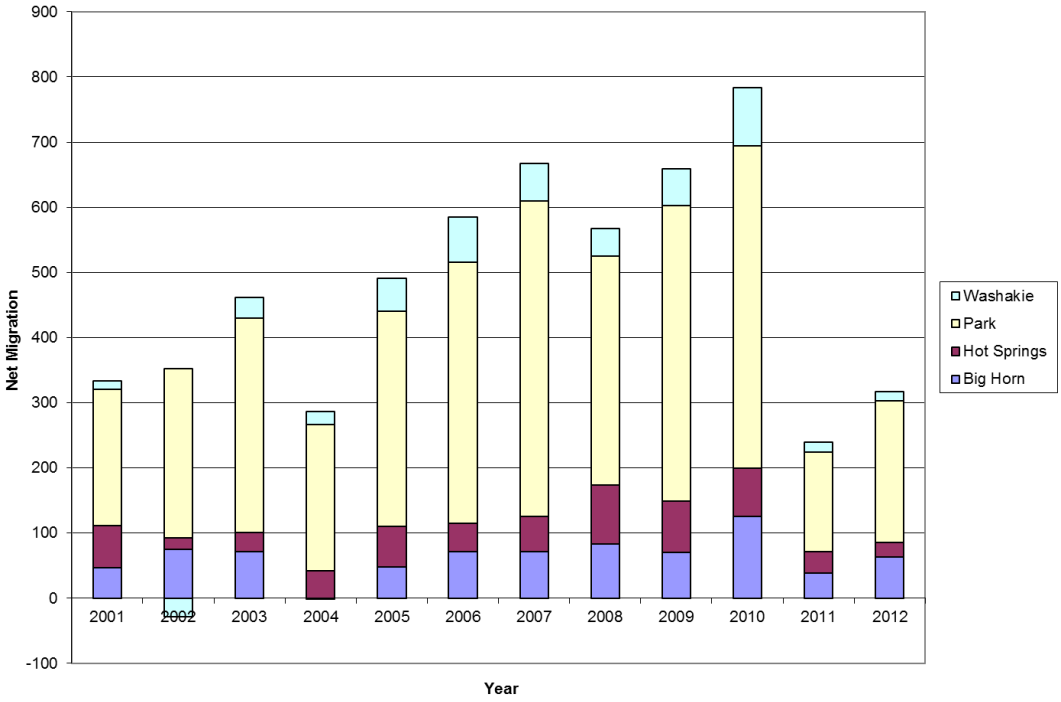
Source: U.S. Census Bureau 2000

The Wyoming Housing Database Partnership (WHDP 2013) analyzed data from driver's license exchanges to show the net movement of people into and out of the state. This data is more current than the Census data, and also shows the magnitude of net movements. The data account for people who transfer licenses from another state to Wyoming, and those who cancel their Wyoming license because they have moved out of state; however, it only tracks people with licenses, meaning that it does not include children. This analysis showed a net gain of about 56,000 people statewide from 2000

through the first half of 2012. The modal (i.e., most common) age bracket for in-migrants is between age 26 and 45. Driver's license transfer data shows that most individuals are coming from other western states and Michigan, with California accounting for the single largest share (about 21 percent).

The Wyoming Housing Database Partnership analysis shows that the largest share of migrants to the State of Wyoming from 2001-2012 moved to places other than the Planning Area. The counties that received the largest share of migrants are Laramie (15 percent), Campbell (12 percent), Natrona (11 percent), and Teton (9 percent). By comparison, Park County received 7 percent of the migrants (about 3,900 people from 2001 through 2012), and Big Horn, Hot Springs, and Washakie counties received between 0.8 and 1.4 percent each (761 people in Big Horn, 614 in Hot Springs, and 432 in Washakie, for a total of about 1,800 people). Figure 3-19 shows the trend of migration over time.

Figure 3-19. Net Migration 2001-2012



Sources: WHDP 2009a; WHDP 2013. Based on driver's license exchanges.

Note: In 2002, net migration to Washakie County was negative. In 2004, net migration to Big Horn County was negative.

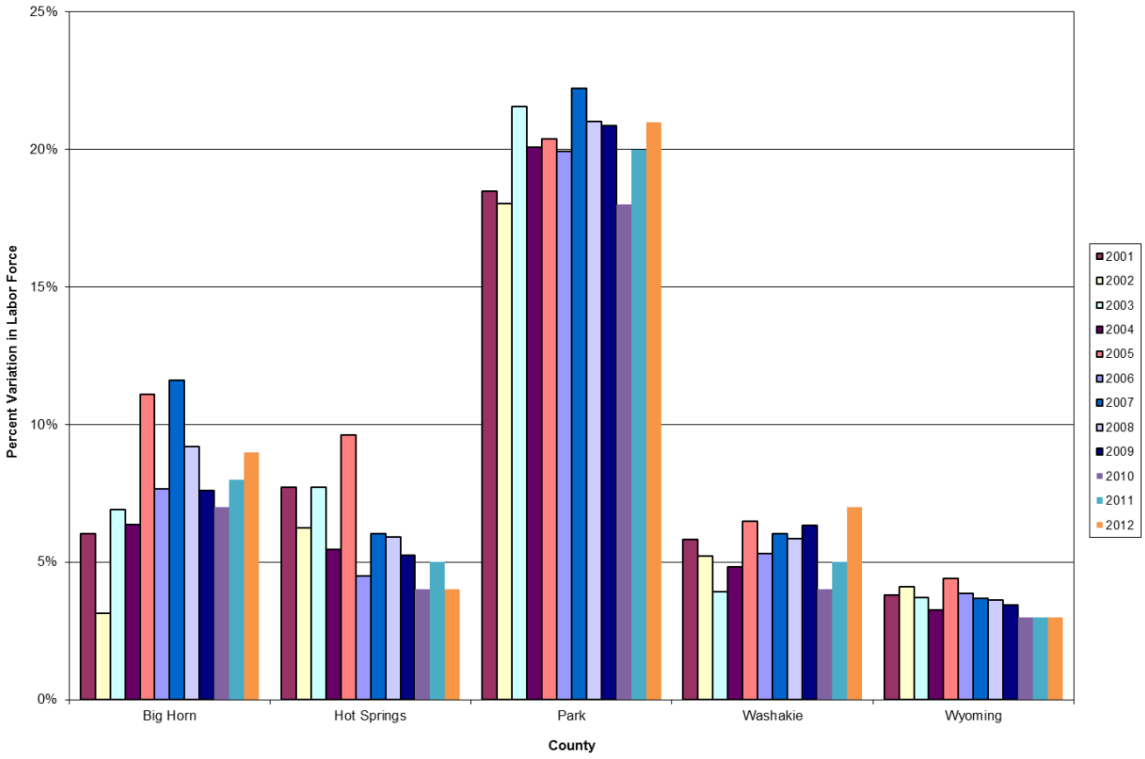
A common method for examining the degree of transience in the workforce is to analyze the variation in employment over a given year. If the size of the labor force (i.e., people with jobs or seeking jobs) does not change much over the year, this suggests the employment base is quite stable and few people move to the area on a temporary or seasonal basis to look for jobs. On the other hand, a relatively high magnitude of fluctuation in the labor force suggests an area undergoing change that is often marked by people moving temporarily from one area to another to seek employment.

Figure 3-20 shows the relative variation in the labor force for each county from 2001-2012. For each year and county, the values in the figure represent the difference in magnitude of the highest-month labor force versus the lowest-month labor force ("peak-to-trough"), divided by the average size of the labor force. For instance, in Park County in 2012, the labor force in the highest month (July) was 17,800,

in the lowest month (February) was 14,500, and the average for the year was 15,757. Thus, the relative variation in the labor force in Park County in 2007 was (17,800 – 14,500) / 15,757, or about 21 percent of the labor force (BLS 2013).

The figure shows that labor force fluctuations are greatest in Park County (between 20 and 22 percent of the labor force). Labor force fluctuations represent a smaller portion of the average labor force in Big Horn and Hot Springs counties (typically 5 to 10 percent) and Washakie County (about 5 percent). Labor force variations in Wyoming are typically on the order of 3 to 4 percent. Note, however, that the labor force variation at the county level includes people who move temporarily from one county to another seeking work (e.g., people who move from Laramie County to Park County seeking summer work would be included in the Park County labor force fluctuation, but not the statewide labor force fluctuation). For this reason, county-level variation is almost always greater than state-level variation.

Figure 3-20. Labor Force Variation, 2001-2012



Source: BLS 2013

Together, the three data sources presented above indicate that the residential population is quite stable, with about 75 to 80 percent of people who lived in the counties in 2000 having lived within the same county for at least 5 years. The Planning Area seems to attract net in-migration based on the driver's license exchange data, with Park County attracting the most by far. Seasonal variation in the labor force is largest in Park County and somewhat smaller in the other three counties. Because the highest labor force occurs in the summer months and the lowest in the winter months, it is reasonable to assume that most of the summer-month additional employment is related to outdoor work, either directly (e.g., outdoor guides) or indirectly (e.g., hotel workers supported by increased tourism). BLM management actions that affect the quality of and access to recreational resources, livestock grazing,

and oil and gas development areas therefore will affect the transient workforce as well as the permanent residents within the Planning Area.

Having a high proportion of transient workers can result in both beneficial and adverse effects on the social fabric of a community. Transient workers pay local sales taxes when they purchase goods and services, and help local business people by providing both a temporary workforce when needed and a consumer base for retail activity. They also fill rental housing, which helps landlords. However, transient workers can also contribute to social instability. If BLM actions were to contribute to an increase or reduction in the size of the transient workforce, whether this would be viewed as a beneficial or adverse impact would depend on individual perspective. Similarly, the fact that Park County is gaining population and attracting substantial in-migration is likely viewed as beneficial by some residents and adverse by others.

3.8.1.1 Custom, Culture, and Social Trends

This section describes the social development, culture, and history of the Planning Area to provide insight into how changes to the Planning Area might affect the livelihood and quality of residential life. The section addresses the history of human settlement in the Planning Area, with a particular focus on economic and social development; land use plans within the counties, focusing on issues the counties have identified that relate to new or planned infrastructure; and "non-market" economic and social values.

Economic and Social History

Throughout the history of the Planning Area, the use of natural resources on private, state, and federal land has provided the basis for continued social and economic stability in all four counties. Agriculture, mining, mineral development and production, and tourism are directly tied to the ability to use federal and state land. As a result, management decisions for federal (and state) land and natural resources will have a ripple effect throughout the social and economic climate of the Planning Area.

The communities of the Bighorn Basin emerged from ranching and agricultural centers; mining or oil field camps; stop over places between two larger communities; or unique recreational features, such as Thermopolis' hot springs. In general, the factors that contributed to the emergence of these communities are still evident and important in their current identities. Public lands and the policies exerted considerable influence on the formation of the communities in the Bighorn Basin and continue to play a large role in their social and economic fabric. The major uses of public land in these communities, both past and present, are open range grazing, development of irrigation waters, mining of minerals, drilling for oil and gas, and recreation.

The first known occupants of land in the Planning Area are members of various Native American tribes, including Shoshone, Crow, Blackfeet, A'aninin (Gros Ventre), Arapaho, Sioux, and Tsitsistas (Cheyenne) tribes. The first recorded European-American to enter the Bighorn Basin was John Colter, a member of the Lewis and Clark Expedition, who arrived in 1806 (Washakie County 2012). Other explorers and fur traders followed in the early and middle 1800s (Washakie County 2012, Hot Springs County 2002). Intensive European-American settlement began to occur to the 1870s and 1880s, primarily due to the development of cattle ranches and homesteads (Hot Springs County 2002).

By 1884, the Bighorn Basin was well stocked with cattle. From the time cattle ranches started in the Basin until the Extended Homestead Act of 1909 and the Taylor Grazing Act of 1934, most of the area was open grazing. During this open range period, range wars were common as large scale ranchers vied for control of the area. With passage of the Homestead Act, the range was divided and large ranchers

would homestead, using various methods, to ensure access to water sources and to landlock public lands with their own lands. The Taylor Grazing Act established grazing permits to combat range wars and overgrazing.

A number of factors contributed to the rapid deterioration of western agricultural lands during the early 1930s. The application of poor farming procedures, misuse of range, and extreme lack of moisture were probably foremost in creating these adverse conditions. Recognizing the need to stop further degradation of these valuable lands, Senator Earl Bower, of Washakie County, introduced a bill establishing the Wyoming Soil Conservation Act in February 1941. This Act authorized the establishment of Soil Conservation Districts. These newly formed bodies were given the responsibility of natural resource conservation within their respective districts. As more resource conflicts arose, the role of conservation districts continued to expand. With the enactment of Federal Land Policy and Management Act of 1976, which included the term "multiple use" management and defined it as "management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people," the role of the conservation districts became even broader. Acting as local governments, the conservation districts strived to ensure sustainable use and conservation of local resources.

After the arrival of the cattle in the Basin, irrigation projects furthered the development of the Bighorn Basin. There have been both public land projects and private projects; however both have relied on access to public lands. The first attempt at large-scale irrigation using the waters of the Bighorn River in the southern portion of the Planning Area was first made in 1886. A group dug a diversion ditch about four miles south of Worland. However, no crops were grown as a result of this effort (Washakie County 2012). In what is now Park County, Colonel William F. "Buffalo Bill" Cody and some business partners established the Shoshone Irrigation Corporation in 1894. The federal government took over the project and began construction in 1904. The first water was available for irrigation in 1908, in the vicinity of Powell.

Development of the Shoshone Project continued through 1947 and provided irrigation water and other benefits to an increasing area of the Bighorn Basin. In addition to irrigation, the project provides hydroelectric power, recreation opportunities in the Buffalo Bill Reservoir, and flood control. The U.S. BOR and other governmental agencies also dug several large ditches around Worland, and eventually developed the Boysen Reservoir to provide reliable irrigation water in Washakie County (Washakie County 2012).

Private irrigation developments, such as the Sidon canal, the Lower Shoshone River irrigation, the Greybull River system, and developments along the creeks coming out of the Big Horns, cover as much or more of the Basin than federal irrigation projects. These private irrigation projects depended on availability of federal land to start, and still depend on federal land or involvement in many ways (Kelso pers. comm.). Today, the Bighorn Basin is one of two irrigated cash crop regions in Wyoming, the other being Goshen and Platte Counties (Big Horn County 2009).

At about the same time as the construction of the irrigation projects, the railroad was also being developed through the Bighorn Basin. In 1906 the Chicago, Burlington, and Quincy railroad was completed. The railroad brought various changes, including the physical movement of the town of Worland from the west to the east side of the Bighorn River (Washakie County 2012).

Eight years after the completion of the railroad an "oil rush" in the Bighorn Basin started with the discovery of the Grass Creek Field in 1914. Grass Creek, Little Buffalo Basin and Elk Basin were all established as commercially important oil fields. The Hidden Dome field, which was discovered in 1917, was the earliest major oil field in Washakie County (Washakie County 2012). Petroleum quickly became

a central economic contributor: for instance, by 1916, 70 percent of the property taxes in Hot Springs County were paid by oil.

County and District Land Use Plans

The county and conservation district land use plans highlight the continued importance of the interrelationship between the local communities and public lands. The continued ability to pay to lease public lands is vital to the industries that create stability within the communities. Each county and associated conservation district is described briefly below and portions of their Land Use Plans are included to demonstrate the interconnectedness of their communities and public lands. In addition, the information below includes some county-specific history (in addition to the overall Planning Area history presented above) to provide context for the county and district land use plans.

All four counties in the Planning Area have comprehensive land use plans that address existing and planned or hoped-for future conditions of community infrastructure and other elements. The land use plans for the counties contain abundant information about policies and goals affecting development of industrial, residential, and commercial infrastructure, but they all generally support the continuation of balanced economic development along with the preservation, to the degree possible, of natural landscapes, wildlife habitat, and open space (Hot Springs County 2002; Hot Springs County 2005; Big Horn County 2009; Washakie County 2012; Park County 1998).

Big Horn County, Shoshone Conservation District, and South Big Horn Conservation District

Big Horn County, in the northeastern portion of the Bighorn Basin, is the oldest of the four counties in the Bighorn Basin. When it was originally formed in 1890 from portions of Fremont, Johnston, and Sheridan counties, it contained the entire Bighorn Basin. Portions were carved out to create Park County in 1909 and Washakie and Hot Springs Counties in 1911. Out of the four counties, Big Horn County has the largest number of small communities (Big Horn County 2009). There are thirteen communities, nine incorporated towns, and four unincorporated towns. The nine incorporated towns are: Basin, Burlington, Byron, Cowley, Deaver, Greybull, Frannie, Lovell, and Manderson. The largest community is the town of Basin, which is the county seat.

In 1879 Otto Franc brought a herd of cattle to the Greybull River Valley, about the same time Henry T. Lovell trailed two herds to the No Wood area. In 1881 John Luman trailed a herd to the Paint Rock Area (Grant pers. comm.). In 1895, the first irrigation project under the Carey Act was started on the Greybull River by the Bighorn Basin Development Company. The towns of Burlington and Otto were established that same year. In the spring of 1900, the Big Horn Colonization Company was formed and in the summer of 1900, construction of the Sidon Canal began and the town sites of Byron, Cowley, and Lovell were formed. Buffalo Bill Dam in Park County, completed in 1910, provided a more reliable source of water for irrigation.

The flanks of the Big Horn Range are one of three areas of bentonite production in Wyoming. With Wyoming containing 70 percent of the world's bentonite, this industry is economically important to Big Horn County, the state of Wyoming, and the nation. Wyo-Ben is one of the region's bentonite producers and provides an example of the impact that public land use of the industry has on the local communities. Wyo-Ben's first plant went into production in 1951 at Greybull. The Lovell plant opened in 1970. Thermopolis, in Hot Springs County, opened in 1980, but has operated only intermittently until recently. Their claims (which include BLM lands) go back to the 1940s. The Greybull plant directly employs 57 people, the Lovell plant employs 30, and Thermopolis employs 23. Mining is all by contract through GK Construction, which provides mining services for several bentonite companies (Magstadt

pers. comm.). In addition to direct employment and contract services, there are general construction contractors, environmental contractors, and others who provide services to the industry intermittently.

The Big Horn County plan, which was adopted in January 2010, suggests that the county's physical infrastructure is generally adequate for the relatively slow pace of development that the county expects in the near future. For instance, discussing water supply and distribution infrastructure in detail for each of the county communities, the plan concluded that while localized problems such as undersized or antiquated water lines can hamper development in specific locations, overall supplies are adequate for the future (Big Horn County 2009). Similarly, the plan notes that electricity, high-speed internet, telephone, and cable television are available for every incorporated community, though not for all homes in unincorporated areas. The plan does note the need to protect its agricultural industry, for instance by adjusting county land use programs and policies to support sustained agricultural profitability. The plan notes an increase in the number of hobby farms and ranchettes and notes that these operations may not have the same level of profitability of larger operations, and may compete with larger operations for the same land and water resources. However, the plan notes, these operations do contribute to the agricultural character of the county (Big Horn County 2009). The Big Horn County land use plan also identifies a need to diversify the region's economy, as it relies relatively heavily on mining and public sector activities: education, government, and health care (Big Horn County 2009).

There are currently two conservation districts in Big Horn County, the Shoshone Conservation District and the South Big Horn Conservation District. The initial conservation districts in each of these areas were established in 1945. The Shoshone Conservation District is located in the Northern Portion of Big Horn County. The Shoshone Conservation District's 2006-2011 Land Use Plan describes the natural resources of the area and the importance of conserving natural resources for the stability of the economy. The Land Use Plan states that most of the rangeland in the district is controlled by the BLM and USFS, and ranchers are authorized grazing use through a grazing permit/lease. Therefore, continued access to these grazing lands is crucial to the economic viability of the ranch operations (Shoshone Conservation District 2005). The Land Use Plan also states the importance of wildlife to recreation (hunting and wildlife observation) and thus to economic conditions in the district. In addition, the presence of bentonite, oil, natural gas, gypsum, and uranium have contributed significantly to the economy of Big Horn County (Shoshone Conservation District 2005).

The South Big Horn Conservation District's 2007-2012 Land Use Plan explains that over 80 percent of the land within the district is federal land (South Big Horn Conservation District 2006). The Land Use Plan also states: "Generally, the Big Horn Basin is an economically depressed area of the state with agriculture, mining, oil and gas development and limited industry the primary land uses within the district. Cattle and sheep, sugar beets, malt barley, alfalfa seed and hay are the main crops produced here. Mineral production consists of mining of gypsum, gravel and bentonite. Recreation-based tourism, including hunting and fishing, is of great importance too."

Hot Springs County

Located in the southern portion of the Bighorn Basin, and formed in 1911, there are three main communities in Hot Springs County: Thermopolis, East Thermopolis, and Kirby. Hot Springs County is named for the hot springs located in Hot Springs State Park, which was Wyoming's first state park, established in 1897.

Mineral production has played a significant role in the culture and economy of Hot Springs County, starting with the discovery of coal in the late 1800s and of crude oil in the early 1900s. At one time, coal production was an important component of economic activity: the largest town in the county in 1920,

Gebo (population over 2,000), was the major work camp for coal mines in the northern portion of Hot Springs County (Wyoming Tales and Trails no date). However, the coal market collapsed after World War II with the advent of diesel-powered locomotives. By 1960, most of Gebo was abandoned. It has since been mostly demolished in an attempt to restore the land to its original condition (Hot Springs County 2002). Today, Hot Springs County produces a very small amount of coal, and none of the other counties produce any; however, petroleum production continues to this day in all four counties. The 2002 land use plan for the county indicated that crude oil production accounted for more than two-thirds of assessed county valuations since 1977 (Hot Springs County 2002).

The Hot Springs County plan notes a number of issues related to present and future desired infrastructure, including the need to develop an industrial park and a new airport to attract greater diversity of industries (Hot Springs County 2005). The plan also expresses concern about growing federal and state regulation, including on public lands, which may slow or hinder economic development. The plan also specifically identifies several needs for new or improved public infrastructure. These include improved hospital services, motivated partly by the need to ensure that the aging county population has access to excellent health care; enhancement of highways to promote recognition of historical and cultural landmarks (although the plan notes that the physical condition of government roads in the county is generally excellent); improved public transportation; and the development of a new airport, funded substantially by state and federal contributions (Hot Springs County 2005).

Park County, Cody Conservation District, Meeteetse Conservation District, and Powell-Clarks Conservation District

Park County, in the northwestern portion of the Bighorn Basin, is so named because most of Yellowstone National Park is located within its boundaries; Yellowstone National Park became the first national park in 1872. The county was formed in 1909 from portions of Big Horn County and communities of Park County, including Cody, Powell, Frannie, Meeteetse, Garland, and Ralston.

One of the purposes of Park County's Land Use Plan is to "Establish policies for greater County involvement in public land use decision making" (Park County 1998). Under the public land section, the plan notes that "The economy and aesthetic environment of Park County are dependent largely on its public lands, which comprise 85 percent of the county."

The Park County plan focuses primarily on goals and policies related to planning and, compared to the other county land use plans in the area, does not have as great a focus on identifying specific needs for physical infrastructure. However, the Park County plan does identify some key policies as being important for future planning, such as the revision of subdivision procedures and standards to facilitate minor subdivisions (i.e., those smaller than 35 acres). The plan also recommends various policies to promote the county's assets, such as incentives to developers to design projects that preserve scenic views (Park County 1998).

There are currently three conservation districts in Park County. The Cody Conservation District contains the western half of the county and the central portion of the eastern half of the county (Cody Conservation District 2007). The Meeteetse Conservation District (MCD) is located in the southeast portion of the county and the Powell-Clarks Fork Conservation District is in the northeast portion of the county (Powell-Clarks Fork Conservation District 2006). The MCD recently completed their Land Use Management and Resource Conservation Plan. This plan is intended to be a guide for the citizens of the MCD, and others, for identifying and respecting the customs, culture, economic viability, social stability and quality of life found in this unique area (Meeteetse Conservation District 2011).

One of the stated goals in the Meeteetse Conservation District Land Use Plan is to "support an agribusiness and agricultural science perspective for individual agricultural producers, agricultural communities and other agricultural entities, and other stakeholders involved with governmental agencies in the process of natural resource management and planning in order to provide for the economic and social stability of the MCD, the region, and the State of Wyoming." This goal is supported by the policies of the Plan, one of which is to "facilitate efforts to bring together individual agricultural producers, agricultural communities and other agricultural entities, other stakeholders, and governmental agencies to view natural resource management and planning from an agribusiness and agricultural science perspective in order to provide for the economic and social stability of the MCD, the region, and the State of Wyoming" (Meeteetse Conservation District 2011).

With respect to mining and the mineral industry, the MCD "recognizes the importance of the mineral industry, especially oil and gas, to its tax base and economy," including employment, flows of services and consumables, and custom and culture (Meeteetse Conservation District 2011).

With respect to culture and economic stability, the Plan states that "The economic stability of the MCD rests upon continued multiple use management of the federally or state managed lands…. The MCD relies on a one mill tax levy. While Park County and the town of Meeteetse receive a share of sales tax receipts, the MCD does not." The MCD Land Use Plan states that because the amount of private property is limited (approximately 23 percent of the county in 2008), the continued vitality of the private tax base depends upon continued multiple use of federal and state lands. The MCD Land Use Plan expresses concern that "if multiple use is restricted, business income will suffer and sales and property taxes will be affected. If grazing is restricted, financial pressure will be placed on the rancher, which may even result in his going out of business. When that happens, the tax base of the County suffers, and the business income is also reduced" (Meeteetse Conservation District 2011).

Washakie County and Washakie County Conservation District

Washakie County, formed in 1911, has two main communities, Worland and Ten Sleep. Worland is primarily a farming community and is the principal population center within Washakie County (Washakie County Conservation District 2010). However, the main source of revenue for Worland comes from oil and gas production on BLM lands. In 1903, a pioneer camp was established and Charles H. Worland selected the location as a halfway point between Basin City and Thermopolis and was an overnight stop for stagecoaches and freighters and provided them with supplies (Dietz pers. comm.).

Ten Sleep is primarily a ranching community whose ranchers utilize BLM lands for grazing in Washakie County, and also Big Horn, Hot Springs, and Park Counties. The first permanent settlement of the Ten Sleep area was around 1880 by cattlemen. The first large herds of cattle were brought in to the area by a group of local ranchers in 1886. During the 1890s, large numbers of sheep were brought into the area (Dietz pers. comm.).

Infrastructure needs identified in the Washakie County land use plan include several transportation related improvements, such as improvement of the Worland airport and upgrades to U.S. Highway 16; improved health care facilities; enhanced infrastructure for recreational opportunities; and improved infrastructure to accept the increasing amount of septic waste, due to increased residential construction in unincorporated areas. The plan also describes the recent history of the county's development, noting that the boom years of the late 1970s and early 1980s brought a steady increase in per capita income, and a number of rural subdivisions were laid out in response to the County's rapid growth. Since the boom years, the county's growth has been slower and the county has especially lost population between the ages of 25-34, which has resulted in lower school enrollment levels as well as an

increasingly aging population. This aging demographic, along with other trends, has resulted in static home values, which also affects the local tax base (Washakie County Conservation District 2010).

The Washakie County Conservation District was formed from two of the oldest conservation districts in Wyoming – Nowood Soil Conservation District, established in 1941, and Washakie County Conservation District, established in 1943. The Washakie County Conservation District 2010 Natural Resource Land Use Plan highlights the interrelationship between BLM public lands and the private landowners in the community (Washakie County Conservation District 2010). The plan states that "The County's custom and culture has been significantly influenced by the relationship of the citizenry to public land, and the economic benefits that derive from public land. The public lands and the rights and privileges residents have come to rely on in all of the public lands, are central to the custom and culture of the WCCD. The WCCD finds public land and natural resources management practices are both relevant and substantive to its custom and culture, its economy, its environment, its quality of life, and its ability to protect and enhance local resources in spite of potentially detrimental outside influences."

The plan describes a 1994 report prepared by the Department of Agricultural Economics of the College of Agriculture at the University of Wyoming on the economic contributions of the federally managed lands within the four county region of Johnson, Big Horn, Sheridan, and Washakie counties. As described in the plan, the report "…provided an in-depth view of the economic and fiscal interdependencies coexisting among the private land-users and public land-managers and the local governments. The report analyzed the economic effects of federal lands grazing, timber production, mineral development, and production of (oil, natural gas, bentonite, coal and uranium, mining and production of sand and gravel), irrigation water/crop value, tourism, and historical and recreational industries. The summaries of each section of the report provides the reader with an undeniable vision of the direct and indirect negative economic effects of reduced grazing opportunities and oil/gas seismic, exploration, development, and production opportunities. The report also depicted a continued reliance on the overall price controlled irrigated agricultural industry." The land use plan concludes that the "use of public lands for grazing, mineral development and other multiple uses by the Cooperators of the WCCD must be continued or steadily increased in the WCCD to sustain a viable natural resource and economic/fiscal future for the cooperators of the WCCD" (Washakie County Conservation District 2010).

Understanding land use plans in the counties and conservation districts is important for BLM's decision making in the RMP process, in part because federal law (43 CFR 1610.3) requires the BLM to prepare plans that are consistent with officially adopted local land use plans (to the extent consistent with federal laws and policies), identify inconsistencies with proposed BLM plans and local plans to the Governor, and take practical steps to resolve conflicts between federal and local plans. These requirements apply only if local governments notify BLM that a local land use plan has been adopted.

Population Forecasts

The Wyoming Economic Analysis Division (Wyoming Economic Analysis Division 2011) provides forecasts of population for Planning Area counties and some towns (Table 3-64). The data suggest that Park, Hot Springs and Washakie counties are all expected to grow at a 0.6 percent annual rate, and Big Horn will grow at a slightly slower rate of 0.4 percent a year.

Table 3-64. Population Forecasts through 2030

Area	Population (Actual or Forecasted)				Change 2012-2030	
	2010	2012	2020	2030	Overall	Average Annual
Big Horn County	11,668	11,794	12,350	12,740	8%	0.4%
Basin	1,285	1,292	1,360	1,403	9%	0.5%
Burlington	288	309	305	314	2%	0.1%
Byron	593	599	628	647	8%	0.4%
Cowley	655	694	693	715	3%	0.2%
Deaver	178	182	188	194	7%	0.4%
Frannie[1]	157	161	167	173	7%	0.4%
Greybull	1,847	1,853	1,955	2,017	9%	0.5%
Lovell	2,360	2,381	2,498	2,577	8%	0.4%
Manderson	114	115	121	124	8%	0.4%
Hot Springs County	4,812	4,822	5,310	5,390	12%	0.6%
East Thermopolis	254	253	280	285	13%	0.7%
Kirby	92	93	102	103	11%	0.6%
Thermopolis	3,009	3,019	3,320	3,370	12%	0.6%
Park County	28,205	28,702	30,440	32,080	12%	0.6%
Cody	9,520	9,689	10,274	10,828	12%	0.6%
Meeteetse	327	330	353	372	13%	0.7%
Powell	6,314	8,308	6,814	7,181	-14%	-0.8%
Washakie County	8,533	8,308	9,130	9,240	11%	0.6%
Ten Sleep	260	264	278	282	7%	0.4%
Worland	5,487	5,569	5,871	5,942	7%	0.4%
State of Wyoming	563,626	576,412	622,360	668,830	16%	0.8%

Sources: U.S. Census Bureau 2013a; Wyoming Economic Analysis Division 2011.

[1]Includes portions of Frannie located in Big Horn and Park counties.

Non-Market Economic and Social Values

Consistent with the social, economic, and cultural development of the area, many residents of the Planning Area continue to place high value on the open spaces and vistas, continuing operation of farms and ranches, livestock grazing, and the wide variety of recreational opportunities available in and near the Planning Area. Based on the information in county land use plans as well as the scoping comments the BLM has received during the RMP revision process, the value of these features may not be fully represented in the marketplace. There is thus a reasonable argument for the consideration of "non-market values" in the analysis. Well established in economic theory, non-market values refer to the "utility" or "happiness" that people obtain from tangible or intangible goods or services, but that is not reflected in the market price of those goods or services. Non-market values include some forms of direct use – whether consumptive, such as recreational fishing and hunting, or non-consumptive, such as hiking, boating, wildlife viewing, and viewing scenic vistas. Non-market values also include "indirect"

values, such as ecosystem services that support ecological resources, and "non-use" values, which include altruistic values (for others' enjoyment), bequest values (for the ability of future generations to use the resource), and existence values (satisfaction from knowing that a resource exists, independent of any predicted use of the resource by any human being).

The scoping comments from the RMP and EIS process suggest that non-market values are an important component of value for many residents of the Planning Area. Many individuals submitted comments suggesting that the BLM should prioritize actions that maintain open space, preserve unique landscapes, and protect scenic viewsheds. Several commenters mentioned specific areas and vistas, such as the McCullough Peaks area and the approach to the Big Horn Mountains through Ten Sleep that are most important to them. At least two commenters specifically stated concerns about nighttime visibility, which they feel is being degraded due to development in all forms (industrial, urban, and rural) contributing light pollution and air emissions. Some individuals recommended that the BLM minimize industrial development on public lands, such as oil and gas drilling, so as to preserve archeological and paleontological resources, open space, roadless areas, WSAs, and sagebrush steppe environment – even as some of these people also acknowledged the direct economic benefits of such industrial development. Several individuals commented that livestock grazing contributes to various values such as open space, wildlife habitat, buffers between federal lands and developed areas, and the traditional image and heritage of the historic rural landscapes of Wyoming and the Western United States. All of these comments can be considered as statements indicating non-market values that people hold.

In the context of the RMP and EIS, non-market values are implicitly included in the decision making context in the sense that market economic considerations, such as employment and tax revenues, are just one element affecting the development of the RMP alternatives, including the Agency Preferred Alternative. The RMP and EIS presents information about current conditions and potential impacts on a multitude of resources, including all of the resources that people value in a non-market context, such as open space, preservation and conservation of wildlife, and air quality. The present condition of these various resources, and the impacts on them from each of the alternatives, are evaluated within the RMP and EIS context, in concert with the analysis of market values as measured by employment, income, earnings, and tax revenues. Thus, although this RMP and EIS does not attempt to quantify the non-market values in dollar terms, the concepts that support non-market analysis – and the non-market values people hold – are built in to the RMP and EIS process and ultimately the development of the Proposed RMP.

3.8.2 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. It also identifies and describes major economic sectors in the Planning Area that can be affected by BLM management actions.

Economic Activity and Output

This section provides detailed information about the industries that have the greatest potential to be directly affected by BLM policies and programs in the Planning Area. These industries include mining (including oil and gas); travel, tourism and recreation; and livestock grazing. The sections below on personal income, employment, and tax revenues provide information and data about jobs, earnings, and tax revenues contributed by these economic sectors, as well as other economic sectors, such as construction and manufacturing, that may be indirectly affected by BLM actions.

Economic Activity: Mining, Including Oil and Gas

Table 3-65 provides a summary of the quantity and value of mining production in the counties in the Planning Area, and for the state as a whole. Economically, the largest contributors to mining activity in all four counties are oil and gas; bentonite is also important in Big Horn County. Of the Planning Area counties, Park County has the greatest value of mineral production. Park County produces over 10 percent of the state's oil, while Big Horn County produces over half the bentonite in the state. Section 3.2 *Mineral Resources* contains additional information about mineral resources in the Planning Area.

Table 3-65. Mineral Production and Value by County in the Planning Area

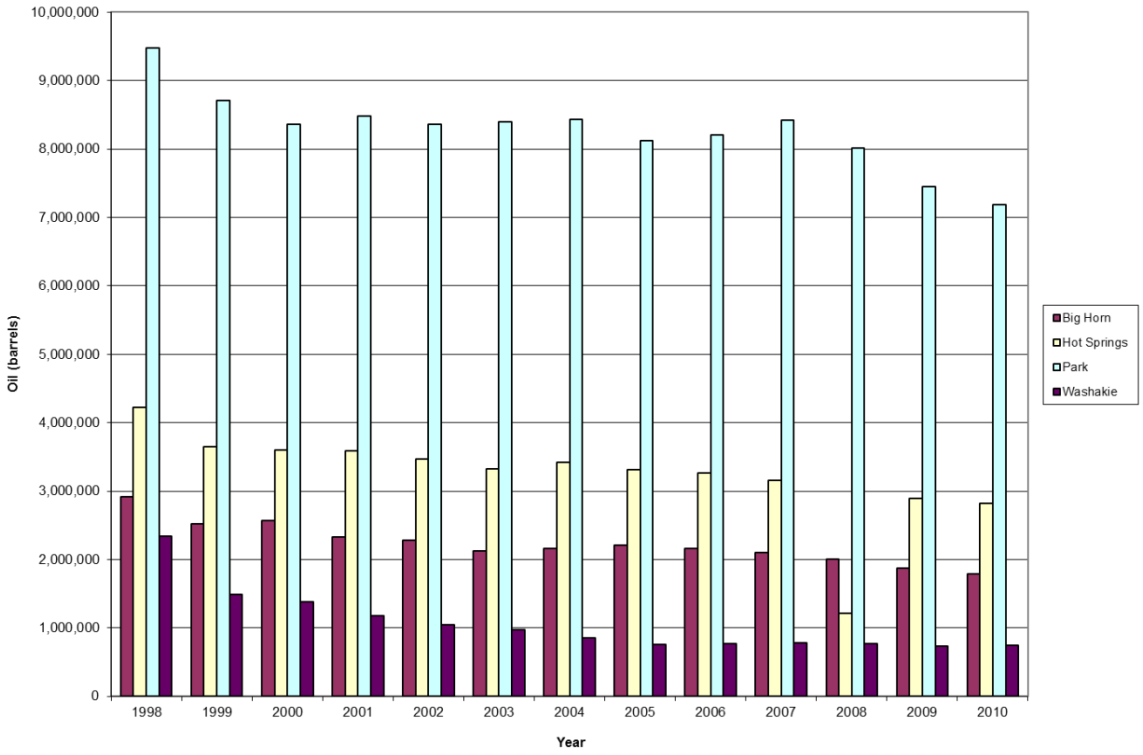
Mineral	Big Horn County	Hot Springs County	Park County	Washakie County	State of Wyoming
Production or Sales (units)					
Oil (barrels sold)	1,787,640	2,824,859	7,190,490	744,250	52,220,583
Gas (mcf sold)	2,126,856	128,975	9,616,074	1,991,028	2,429,249,686
Coal (tons)	0	25,913	0	0	438,751,440
Gypsum (tons)	283,755	0	42,126	0	325,881
Sand and Gravel (tons)	164,568	32,079	427,880	92,801	11,993,124
Bentonite (tons)	2,476,862	154,018	0	131,831	4,453,282
Taxable Valuation ($ millions)					
Oil	$114	$168	$440	$45	$3,273
Gas	$7	$1	$31	$7	$7,601
Coal	$0	$0.39	$0	$0	$4,020
Gypsum	$1	$0	$0.8	$0	$1.8
Sand and Gravel	$0.3	$0.05	$0.7	$0.1	$22.9
Bentonite	$35	$1.3	$0	$3.1	$64

Source: Wyoming DOR 2012. Data are for production year 2010.

mcf thousand cubic feet

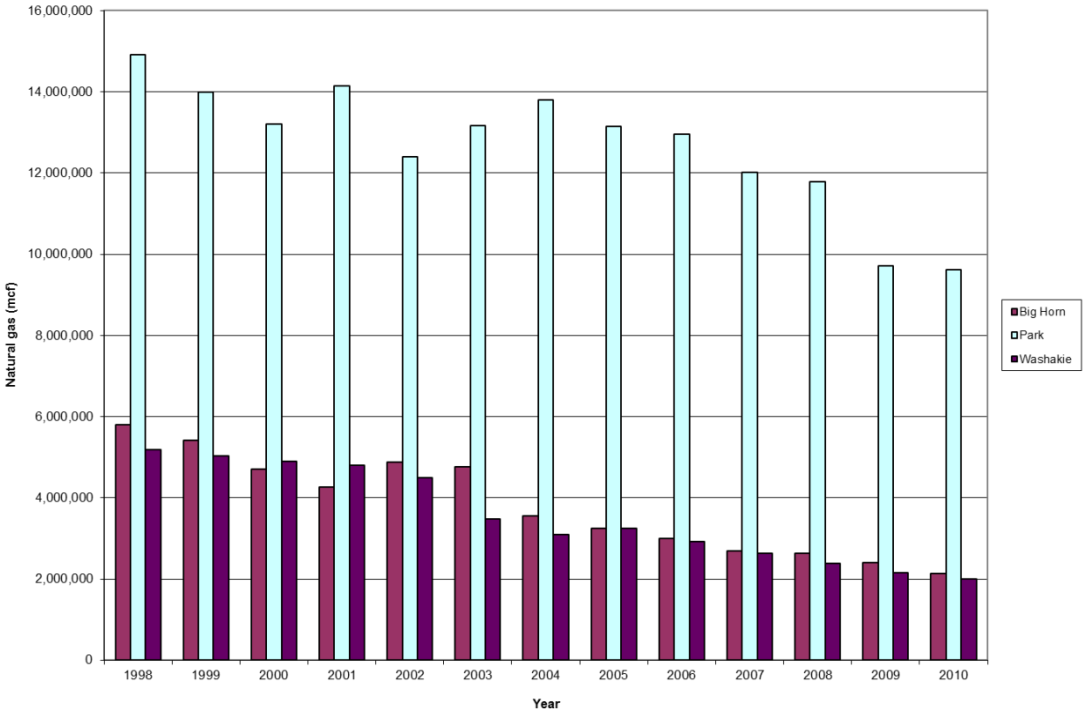
A trend analysis of production data suggests that oil and gas production generally decreased from 1998 to 2010, while bentonite production generally increased from 2002 to 2007 and dropped somewhat after 2007. Figures 3-21, 3-22, and 3-23 provide production trends for 1998-2010 for each of these.

Figure 3-21. Oil Production Trend, 1998-2010



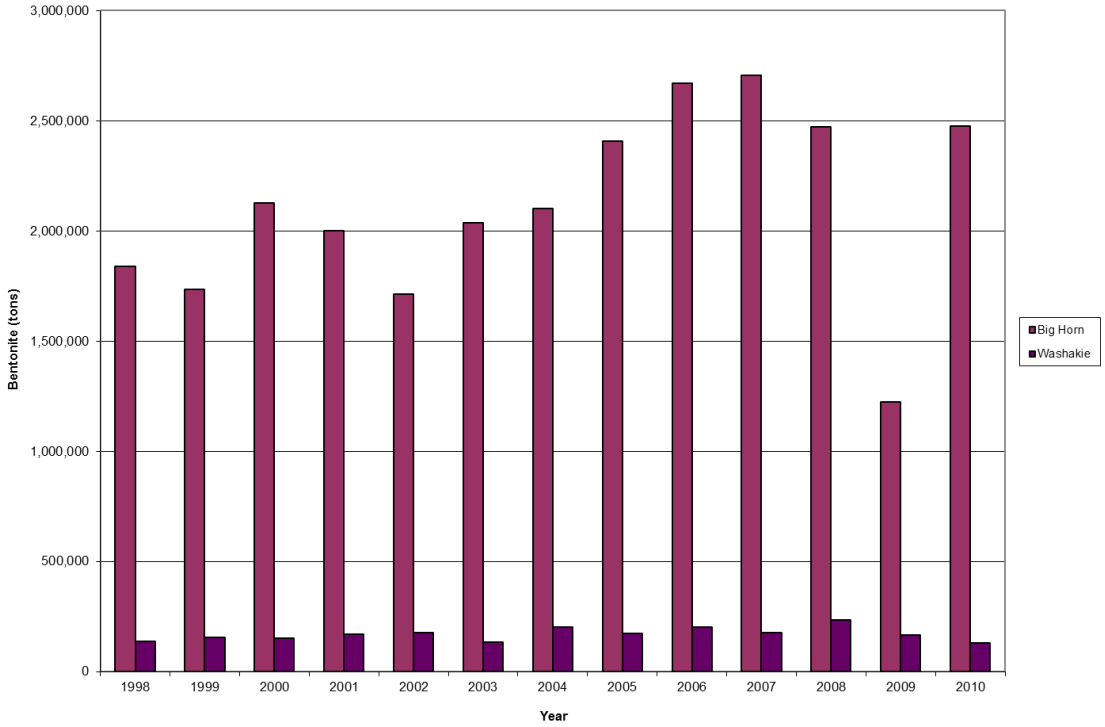
Sources: Wyoming DOR 1999; Wyoming DOR 2000; Wyoming DOR 2001; Wyoming DOR 2002; Wyoming DOR 2003; Wyoming DOR 2004; Wyoming DOR 2005; Wyoming DOR 2006; Wyoming DOR 2007; Wyoming DOR 2008; Wyoming DOR 2009; Wyoming DOR 2010; Wyoming DOR 2011; Wyoming DOR 2012.

Figure 3-22. Natural Gas Production Trend, 1998-2010



Sources: Wyoming DOR 1999; Wyoming DOR 2000; Wyoming DOR 2001; Wyoming DOR 2002; Wyoming DOR 2003; Wyoming DOR 2004; Wyoming DOR 2005; Wyoming DOR 2006; Wyoming DOR 2007; Wyoming DOR 2008; Wyoming DOR 2009; Wyoming DOR 2010; Wyoming DOR 2011; Wyoming DOR 2012. Note: Hot Springs County is not shown due to very low production.

Figure 3-23. Bentonite Production Trend, 1998-2010



Sources: Wyoming DOR 1999; Wyoming DOR 2000; Wyoming DOR 2001; Wyoming DOR 2002; Wyoming DOR 2003; Wyoming DOR 2004; Wyoming DOR 2005; Wyoming DOR 2006; Wyoming DOR 2007; Wyoming DOR 2008; Wyoming DOR 2009; Wyoming DOR 2010; Wyoming DOR 2011; Wyoming DOR 2012. Note: Only Big Horn and Washakie counties are shown; production is zero in Park County and very low in Hot Springs County.

Because the BLM manages subsurface mineral resources in excess of the surface lands it administers, its decisions can have a potentially large effect on mining in the Planning Area (see Section 3.2 *Mineral Resources* for more detail). From an economic perspective, mining is a key contributor to the economic well-being of the Planning Area, and therefore BLM's management decisions in this area could have a potentially large effect on economic conditions.

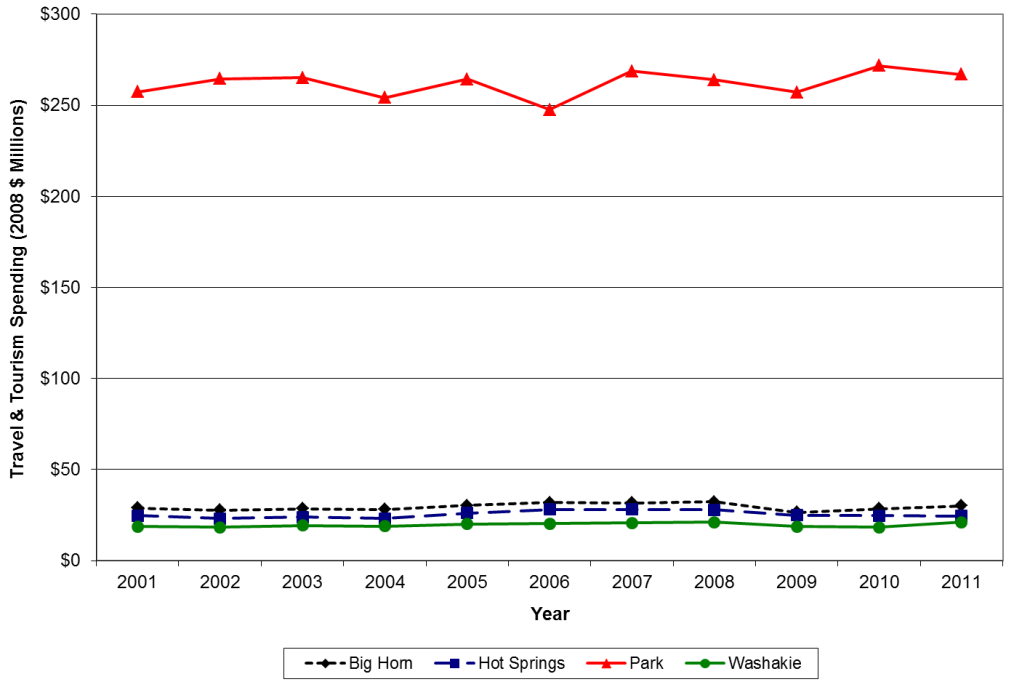
Economic Activity: Recreation

Federal lands within the Planning Area provide a broad spectrum of outdoor opportunities for Planning Area residents and visitors. Recreation on public lands also provides economic benefits. Recreation service providers (hotels, outfitters, equipment manufacturers and dealers, restaurants) depend on public lands, in part, for their livelihood.

Recreation visits are commonly measured in recreation visitor-days (RVDs). For several years, the WGFD estimated recreation patterns on BLM-administered land by field office, statewide. Based on the latest data available (2007), the WGFD estimated that the WFO received 123,600 RVDs for hunting and fishing on BLM-administered lands, and the CYFO received 60,034, for a total of 183,634 for the Planning Area. This represents about 18 percent of the hunting and fishing RVDs on BLM-administered land in Wyoming, and 5 percent of the hunting and fishing RVDs in Wyoming as a whole. Other popular recreation activities include camping and picnicking, driving for pleasure, nonmotorized travel, and motorized vehicle use (BLM 2009a). These recreational opportunities on BLM-administered lands contribute to economic values in the Planning Area in terms of both providing income from outsiders (visitors from outside the region who spend time and money in the region) and local residents.

Figure 3-24 shows travel and tourism spending in the Planning Area. In real terms, travel and tourism spending was essentially steady from 2001 to 2011 in all four counties in the Planning Area. Spending was much higher in Park County than the other three counties, presumably due to its proximity to Yellowstone National Park. The figure does not distinguish travel for business from travel for pleasure; however, a study by the Wyoming Office of Travel and Tourism indicates that statewide the great majority of trips (e.g., 98 percent, in 2006) are due to tourism for pleasure (Wyoming State Office of Travel and Tourism 2007). According to a report prepared by Dean Runyan Associates for Wyoming Travel and Tourism, travel and tourism related spending reached $364 million in the Planning Area in 2011 supporting over 4,400 jobs (Dean Runyan Associates 2012).

Figure 3-24. Travel and Tourism Spending in the Planning Area



Sources: Dean Runyan Associates 2007; Dean Runyan Associates 2008; Dean Runyan Associates 2010; Dean Runyan Associates 2012; adjusted for inflation using Wyoming Economic Analysis Division 2012a.

Economic Activity: Livestock Grazing

The BLM is responsible for administering livestock grazing on public lands across the Planning Area. Livestock grazing on public lands consists primarily of cattle, but also includes sheep, domestic horses, and small numbers of bison. In addition, goats and sheep are sometimes authorized for the purpose of suppressing weeds. The BLM administers 687 grazing allotments covering 3.2 million acres in the Planning Area. The majority of the allotments in the Planning Area operate under grazing strategies incorporating rest, seasonal rotations, deferment, and prescribed use levels that provide for adequate plant recovery time to enhance rangeland health (BLM 2009a).

According to data from the Rangeland Administration System, there are 78,324 active (use) AUMs in the Cody Field Office Planning Area and 226,522 active (use) AUMs in the Worland Field Office Planning Area, for a total of 305,264 active (use) AUMs. Whereas active (use) AUMs represent the maximum amount of forage generally available in any given year under a permit or lease, authorized AUMs

represent the total forage the BLM will allow the permittee to use in a given year. The BLM adjusts grazing use on an annual basis to account for the actual forage value of the land in a given year, based on climatic conditions (e.g., drought), as well as taking into account the needs of the land and the ranch operators. The number of AUMs actually used varies every year; from 1988 through 2012, the lowest number was 131,346 and the highest was 241,333. The average for these years was 194,672 AUMs, which is about 64 percent of the authorized AUMs (BLM 2010a, BLM 2014c).

BLM-administered grazing fees are calculated annually using a formula established by the Public Rangelands Improvement Act of 1978. These fees are lower on average than state or private lands because of the formula established by Congress. In addition, state and private land lease rates reflect the amount of control over the leased land exercised by the lessee, responsibility for maintenance of facilities, and services provided by the lessor. Federal grazing fees in Wyoming were $1.35 per AUM in 2013 and 2014 (BLM and USFS 2014). For comparison, grazing fees on state land were $5.13 in 2013 and 2014 (Wyoming SBLC 2014). The average grazing rate on privately owned nonirrigated land in Wyoming was $16.60 per AUM in 2010, $17.60 in 2011, and $18.70 in 2012 (NASS 2013).

Taylor et al. (2004) analyzed the importance of BLM-administered land for livestock grazing in nearby Fremont County using a simulated enterprise level ranch budget. They pointed out that most ranches are typically only partially dependent on federal land grazing for forage, but this forage source is a critical part of their livestock operation because of the seasonal dependency, even when the proportion of acres of AUMs contributed by federal land grazing is relatively small for the operation. Much of a ranch's private land is used as hay ground to produce hay for winter feeding. Using hay acreage to feed cattle during the summer means a ranch has to purchase hay for the winter. The rigidity of seasonal forage availability means that the optimal use of other forages and resources are impacted when federal AUMs are not available (Taylor et al. 2004). These authors, as well as many others in studies they reviewed from 1975 through 2002, found that potential reductions in income and net ranch returns are greater than the direct economic loss from reductions in federal grazing.

The USDA conducts a comprehensive national survey of agricultural operations every 5 years, the Census of Agriculture, which provides a rich source of data on agricultural operations down to the county level. The USDA maintains on an ongoing basis a list of agricultural operators who receive the Census of Agriculture survey in the mail, and follows up with various forms of outreach to ensure a high response rate. Data from the 2012 Census of Agriculture were released at the state level in February 2014, but the latest county-level information is still from 2007. The response rate for the 2007 survey was 85.2 percent. The USDA also adjusts the data to account for non-response, using well-established statistical methods (USDA 2009).

In 2007, there were 1,797 agricultural operations in the Planning Area counties according to the Census of Agriculture, which defines an agricultural operation (or "farm") as a place from which $1,000 worth of agricultural products is sold within a year (USDA 2009). Together, these farms and ranches encompassed about 2.3 million acres. The combined gross revenue of these operations, including agricultural products sold, government support payments, and other farm-related income, was $200 million. (This figure does not include income generated by employment or business activities which are separate from the farm business.) The net income aggregated across the 1,797 operations in the four Planning Area counties, according to the Census of Agriculture, was about $37.5 million.

Table 3-66 provides these data for individual counties in 2007, as well as data from the two most recent prior Census of Agriculture surveys (2002 and 1997). The table also provides state-level data for comparison. Table 3-66 shows a trend of increase in the number of farms with decrease of land in farms.

Table 3-66. Number of Farms, Land in Farms, Revenue, and Income, 1997-2007

Variable/Year	Big Horn County	Hot Springs County	Park County	Washakie County	State of Wyoming
Number of farms, 2007	621	180	782	214	11,069
Number of farms, 2002	501	147	711	184	9,422
Number of farms, 1997	495	147	588	205	9,232
Land in farms, 2007 (acres)	438,033	547,084	881,736	469,804	30,169,526
Land in farms, 2002 (acres)	411,782	876,560	810,302	426,500	34,402,726
Land in farms, 1997 (acres)	443,434	944,205	1,011,425	450,036	34,088,692
Total farm revenue, 2007	$57.2	$15.0	$85.9	$41.9	$1,245.8
Total farm revenue, 2002	$41.4	$8.9	$55.8	$26.8	$933.6
Total farm revenue, 1997	$45.0	$9.7	$67.9	$29.3	$932.6
Net farm income, 2007	$8.3	$4.5	$11.3	$13.3	$275.7
Net farm income, 2002	$4.4	$0.8	$9.0	$5.2	$115.3
Net farm income, 1997	$13.3	$2.1	$18.7	$8.6	$242.2

Sources: USDA 2009; USDA 2004; USDA 1999.

Note: Farm revenue and net farm income are in millions of current-year dollars (that is, not adjusted for inflation).

The U.S. Bureau of Economic Analysis (BEA) also provides data on farm income, which is presented below in Table 3-67. The most recent BEA data are from 2011, but 2007 data are also included in the table to facilitate comparison with the Census of Agriculture data. The 2007 data from BEA is somewhat different from that provided by the Census of Agriculture; for example, BEA's figures for gross income and net income are somewhat lower than those from the Census. For two of the four counties, this difference results in a negative value for net income reported by BEA, even as the Census reports a positive value for net income. However, the percentage breakouts for percent of income from livestock, crops, other farm-related sources, and government payments are very close to those from the USDA data.

Table 3-67. Farm Income in 2007 and 2011 from the U.S. Bureau of Economic Analysis

Data Item	Big Horn County	Hot Springs County	Park County	Washakie County
Farm Income in 2007 (2007 $ thousands)				
Gross Income	$53,944	$14,052	$78,848	$37,333
Percent of Income from Livestock	46%	77%	56%	58%
Percent of Income from Crops	38%	9%	35%	36%
Percent of Income from Other Sources[1]	12%	12%	7%	4%
Percent of Income from Government Payments	4%	2%	1%	2%
Net Income	-$6,465	$312	-$8,490	$3,199
Net Income Including Inventory Change	-$10,800	-$1,683	-$13,047	$442
Farm Income in 2011 (2011 $ thousands)				
Gross Income	$92,937	$17,456	$118,910	$55,773
Percent of Income from Livestock	32%	74%	43%	46%
Percent of Income from Crops	58%	14%	50%	49%
Percent of Income from Other Sources[1]	8%	11%	5%	3%
Percent of Income from Government Payments	2%	1%	1%	2%
Net Income	$16,771	$445	$9,234	$13,242
Net Income Including Inventory Change	$18,639	$1,803	$11,051	$15,561

Source: BEA 2012

[1]Includes the value of home consumption and other farm related income components, such as machine hire and custom work income and income from forest products. This category also includes royalty payments from oil and gas producers to farmers when oil/gas development occurs on farm lands (Kennedy 2008).

The difference between the BEA and Census (USDA) gross and net income estimates is attributable to different methods and data sources. USDA's Census data are based on the comprehensive survey of all farm operations that is conducted every 5 years, as described above. BEA annual farm income data (and also farm employment data) are based on county data from the 2002 and 2007 Censuses of Agriculture, annual county data from state offices that are affiliated with the NASS, and data from other sources within the USDA, such as the Farm Service Agency. The BEA generally uses the most detailed information available from the USDA Census of Agriculture; sometimes, this means beginning with data that is tabulated at the state level for a detailed range of commodities, and apportioning it to the county level using data for a less detailed range of commodities, because the county-level data is not available for the more detailed range. Where necessary, the 2003-2006 BEA data use interpolation between the 2002 and 2007 Census of Agriculture, and the data after 2007 are based partly on extrapolation (BEA 2010b).

Table 3-68 provides additional information from the 2007 Census of Agriculture on the estimated number of farm employees. The Census of Agriculture provides data on the number of farms with hired workers and, for those farms, the total workers hired and worker payroll. However, the Census does not attempt to calculate total farm employment. The table below shows a series of calculations to estimate farm employment; it makes the key assumption that farms without hired workers have one employee (that is, the farmer). Based on this method, total estimated farm employment in 2007 ranges from about 250 workers in Hot Springs County to 1,700 in Park County. This method produces employment

estimates that are greater than those provided in the annual BEA data release for 2007. As described in the paragraph immediately above, this is in part due to different methods and data sources. However, it may also be partly due to different definitions of employment: for instance, people employed for as little as 1 week during the year may be counted as employees for USDA purposes, whereas this arguably should not be considered a job per se. Finally, the assumption that every farm has at least one employee may be somewhat misleading. For instance, some people may argue that the proprietor of a very small operation, such as a market garden or home processing facility, with annual sales just over $1,000 should not be considered to have an employee.

Table 3-68. Estimated Number of Farm Employees, 2007

Variable	Big Horn County	Hot Springs County	Park County	Washakie County	State of Wyoming
Number of farms, 2007	621	180	782	214	11,069
Farms with hired labor	170	35	240	85	2,716
Farms without hired labor	451	145	542	129	8,353
Total workers hired, on farms with hired labor	621	106	1,158	315	9,826
Estimated total farm employment1	1,072	251	1,700	444	18,179
Worker payroll (for farms with hired labor)	$6.2	$1.2	$10.3	$3.8	$97.8

Source: USDA 2009, plus additional calculations to estimate total farm employment.

Note: Farm revenue and net farm income are in millions of current-year dollars (that is, not adjusted for inflation).

[1]Total farm employment is estimated based on the assumption that farms without hired labor have one employee (the farmer). See text for additional information.

Personal Income

This section describes personal income within the Planning Area. Table 3-69 provides a summary of the sources of personal income by place of work and county in the Planning Area. The table highlights county-level differences in the importance of various economic sectors, as well as the contribution of nonwage income, specifically dividends, interest, and rent, to personal income.

The BEA data that are used to create Table 3-69 do not readily distinguish recreation earnings because these earnings can occur in a variety of sectors, including retail trade, accommodation and food services, and hunting, fishing, and trapping (included in the same row as logging and agricultural services). Subsequent tables and text provide available information on expenditures and sales tax receipts from activities related to travel and tourism, which serve as the closest approximation for recreation.

Table 3-69. Personal Income and Earnings by Place of Work, 2011

Item/Sector	Big Horn County	Hot Springs County	Park County	Washakie County	State of Wyoming	United States
Population	11,759	4,799	28,592	8,487	568,158	311,591,917
Total personal income ($ millions)	$396	$209	$1,309	$355	$27,214	$12,949,905
Dividends, interest, and rent as a proportion of total personal income[1]	19%	21%	29%	23%	24%	16%
Dividends, interest, rent, and net transfer payments as proportion of total personal income[1]	33%	38%	39%	33%	30%	27%
Earnings by place of work ($ millions)[1]	$265	$124	$822	$241	$19,112	$9,454,199
Percent of total earnings by place of work (by sector)						
Farming	8%	2%	2%	6%	1%	1%
Fishing, logging, and related activities, including agricultural services[2]	N/A[3]	N/A[3]	0%	N/A[3]	0%	0%
Mining	17%	N/A[3]	10%	7%	16%	1%
Utilities	1%	N/A[3]	1%	2%	2%	1%
Construction	9%	4%	11%	9%	9%	5%
Manufacturing	5%	2%	3%	12%	4%	10%
Wholesale trade	3%	N/A[3]	2%	2%	3%	5%
Retail trade	N/A[3]	4%	8%	5%	6%	6%
Transportation and warehousing	5%	4%	2%	5%	5%	3%
Information	2%	1%	1%	2%	1%	3%
Finance and insurance	2%	2%	3%	4%	3%	8%
Real estate and rental and leasing	1%	1%	1%	2%	2%	2%
Professional and technical services	N/A[3]	N/A[3]	4%	3%	4%	10%
Management of companies and enterprises	N/A[3]	N/A[3]	1%	N/A[3]	1%	2%
Administrative and waste services	3%	N/A[3]	1%	N/A[3]	2%	4%
Educational services	0%	0%	0%	1%	0%	2%
Health care and social assistance	2%	10%	10%	11%	7%	11%
Arts, entertainment, and recreation	0%	2%	2%	1%	1%	1%
Accommodation and food services	1%	4%	6%	2%	4%	3%
Other services, except public administration	3%	3%	3%	3%	3%	4%
Government and government enterprises	30%	24%	26%	21%	24%	18%
Categories for which data were not disclosed	9%	37%	0%	4%	0%	0%

Source: BEA 2013

[1]Earnings by place of work differs from total personal income by the exclusion of dividends, interest, and rent, as well as adjustments to account for net transfer payments (e.g., unemployment benefits and Social Security taxes and payments) and the residential adjustment.
[2]"Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.
[3]Data were not disclosed due to confidentiality reasons (Bureau of Economic Analysis does not report data when there are three or fewer employers in a sector). The line item "Categories for which data were not disclosed" shows the total income attributable to these categories for each county.

N/A Not available

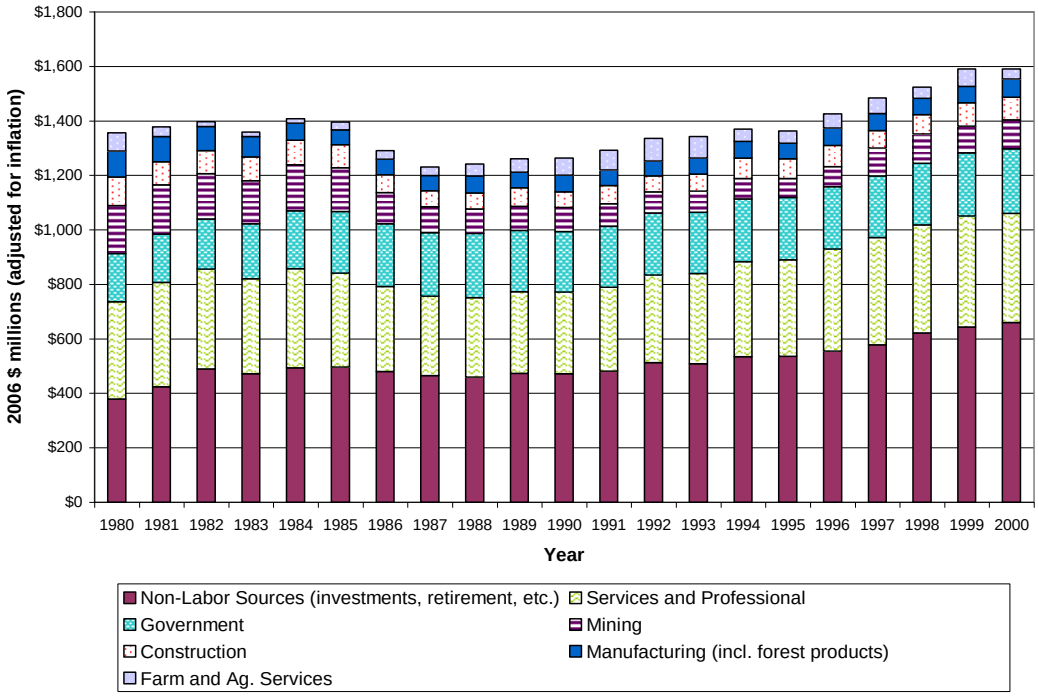
Figure 3-25 shows historic trend information on sources of income for the four Planning Area counties, aggregated. (Historic trend information for individual counties is available in the profiles from Headwaters Economics [Headwaters Economics 2007a, Headwaters Economics 2007b; Headwaters Economics 2007c; Headwaters Economics 2007d], which are on the RMP website.) The figure shows trends for 1980 through 2000. Because of a change in the industrial classification system in year 2000, it is not possible to construct a single continuous data set that would provide sector-level data both before and after year 2000.

Figures 3-26 through 3-29 show trend information on sources of income for the Planning Area counties from 2001 through 2011. The counties are not aggregated together for this trend data because of the issue of non-disclosure of data. Federal non-disclosure policies prohibit the BEA from releasing earnings data for counties where there are three or fewer employers in a given sector. If there is only one sector in this situation, BEA must also hide data for another sector so as to avoid effective disclosure of the data of concern (since BEA provides sum-of-sectors data as well as individual sectors). The problem of non-disclosure for individual sectors is compounded when attempting to assemble a series across different years and different counties. For instance, while BEA disclosed data for sixteen of the 21 main sectors for Big Horn County in 2001, it disclosed data for only twelve of the 21 sectors for Big Horn County continuously from 2001-2011. With similar disclosure policies applied to the other counties, there are only five sectors for which BEA disclosed data continuously from 2001-2008 for all four counties. Thus, the figures shown here are for each individual county and show the magnitude of the sectors for which BEA did not disclose data in each year.

(Note that the Headwaters Institute has developed a special algorithm to estimate earnings for these "non-disclosed" sectors for the data series between 1980 and 2000, but has not developed an algorithm to estimate earnings for the data series after 2000).

Figure 3-25 shows that the change in income from 1980 to 2000 (adjusted for inflation) is largely driven by changes in non-labor income, such as investment income and Social Security payments. The magnitude of income from other sources, adjusted for inflation, remained relatively constant within each sector from 1980 to 2000.

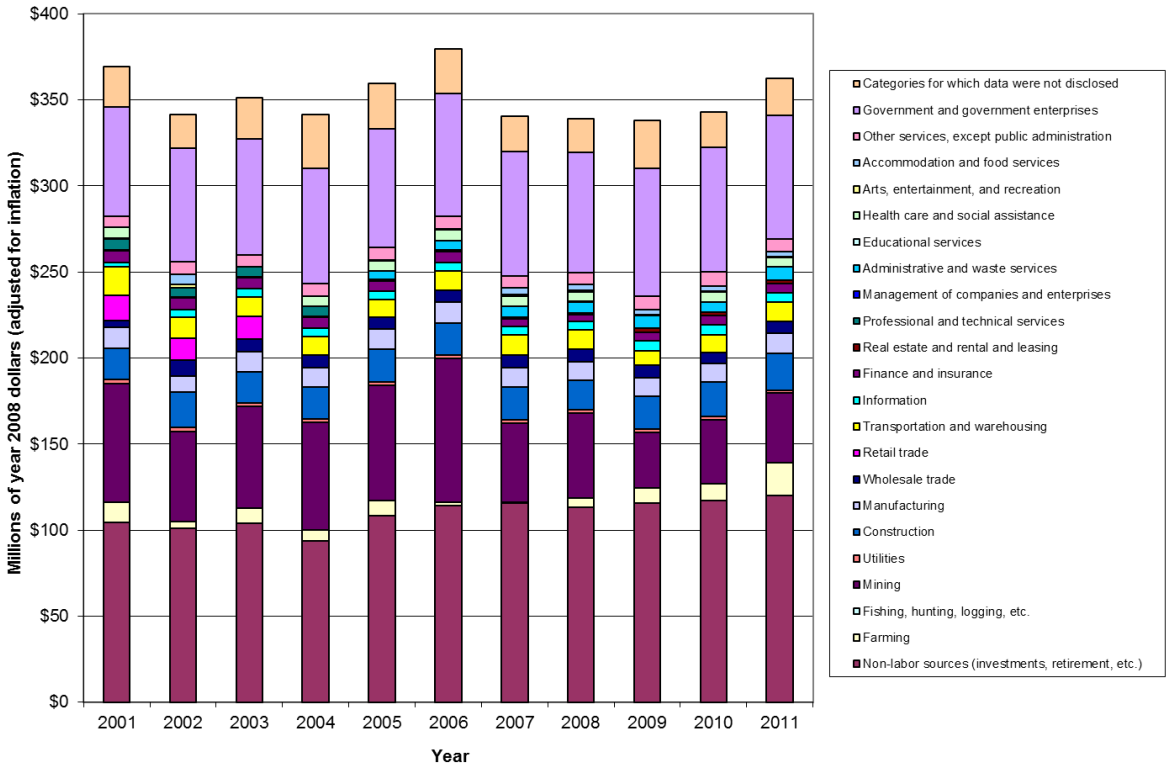
Figure 3-25. Income by Sector within Planning Area Counties, 1980-2000



Source: BEA 2010a

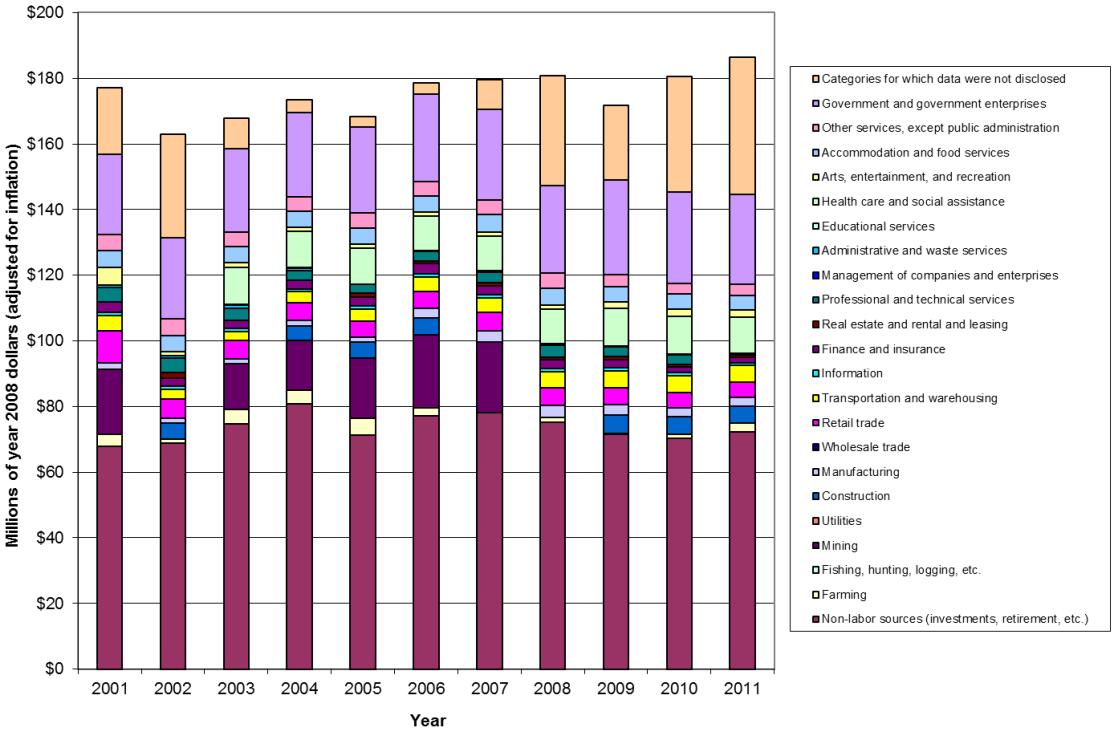
Ag. Agricultural
incl. including

Figure 3-26. Income by Sector within Big Horn County, 2001-2011



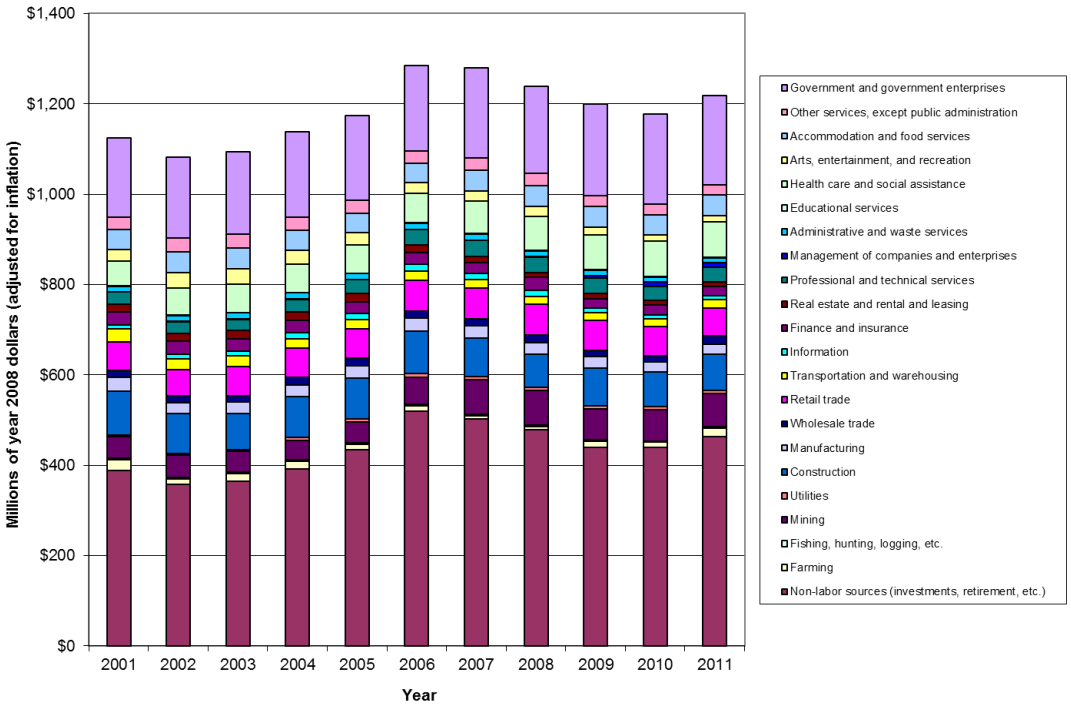
Sources: BEA 2010a; BEA 2012; adjusted for inflation using Wyoming Economic Analysis Division 2012a.

Figure 3-27. Income by Sector within Hot Springs County, 2001-2011



Sources: BEA 2010a; BEA 2012; adjusted for inflation using Wyoming Economic Analysis Division 2012a.

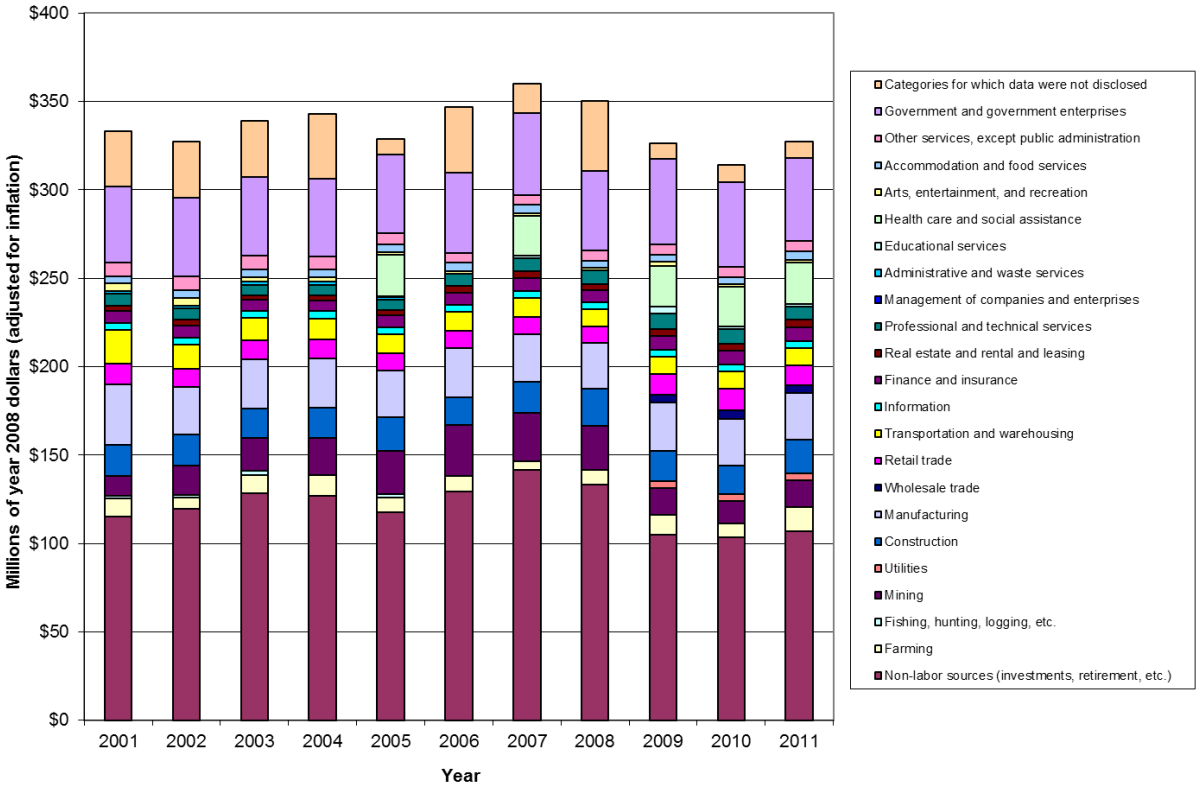
Figure 3-28. Income by Sector within Park County, 2001-2011



Sources: BEA 2010a; BEA 2012; adjusted for inflation using Wyoming Economic Analysis Division 2012a.

Note: Data were disclosed for all sectors in Park County continuously from 2001 to 2011.

Figure 3-29. Income by Sector within Washakie County, 2001-2011



Sources: BEA 2010a; BEA 2012; adjusted for inflation using Wyoming Economic Analysis Division 2012a.

Although there are particular circumstances in each county, there are some common threads in the four figures above showing income data from 2001 through 2011. Non-labor income sources represent a substantial share of income in all four counties. The variation in non-labor income over time is generally the biggest influence on total income. Mining is also a sector for which there is both a substantial amount of variation over time, and the mining sector contributes to changes in total income in all four counties. Other sectors, most notably construction, retail trade, health care and social assistance, accommodation and food services, and government, contribute a noticeable share in all or virtually all years, but these tend to be fairly steady over time. Note that the effects of non-disclosure are readily visible in the charts above: for instance, mining earnings were not disclosed in Hot Springs County in 2002 or 2008. These and other variations in disclosure are evident when a sector has widely divergent earnings in different years in the same county.

Table 3-70 provides a summary of mining-related earnings and employment for the Planning Area counties for detailed sub-industry sectors, for the latest year these data are available (2011). The table shows that oil and gas mining and support activities related to oil and gas contribute the majority of mining employment and payroll in Hot Springs, Park, and Washakie counties. In Big Horn County, a sizable amount of mining-related employment is also attributable to the mining of non-metallic minerals (e.g., bentonite). The data in Table 3-70 reflect workers by their place of employment, which means that employees within "general contracting" industries – such as construction workers or environmental contractors who sometimes work for mining companies, but also have other clients – are not included in the category of support activities. Thus, the regional contribution of the mining industry is somewhat more than is shown in the table.

Table 3-70. Earnings and Employment for Mining Activities (2011)

Source	Big Horn County		Hot Springs County		Park County		Washakie County	
	Employees	Payroll ($000)[1]	Employees	Payroll ($000)[1]	Employees	Payroll ($000)[1]	Employees	Payroll ($000)[1]
Mining	418	22,712	228	15,072	250-499	N/A[2]	100-249	6,617
Oil and Gas Extraction	0-19	N/A[2]	20-99	N/A[2]	100-249	N/A[2]	20-99	N/A[2]
Mining (Except Oil and Gas)	250-499	N/A[2]	0	0	0-19	N/A[2]	0-19	N/A[2]
Coal Mining	0-19	N/A[2]	0	0	0	0	0	0
Metal Ore Mining	0	0	0	0	0-19	N/A[2]	0	0
Nonmetallic Mineral Mining and Quarrying	250-499	N/A[2]	0	0	0	0	0-19	N/A[2]
Mining Support Activities	100-249	N/A[2]	187	12,002	252	15,200	20-99	N/A[2]
Drilling Oil and Gas Wells	0-19	N/A[2]	100-249	9,374	100-249	N/A[2]	22	963
Oil and Gas Operations Support Activities	100-249	N/A[2]	20-99	N/A[2]	20-99	N/A[2]	20-99	N/A[2]
Support Activities for Coal Mining	0	0	0	0	0	0	0	0
Support Activities for Metal Mining	0	0	0	0	0	0	0	0
Nonmetallic Minerals Support Activity (Except Fuels)	0	0	0	0	0	0	0-19	N/A[2]

Source: U.S. Census Bureau 2011b. Number of employees is for week ending March 12, 2011. Payroll data (in thousands of dollars) are for the entire year.

[1]For most sectors, the data source reveals a range rather than an exact number of employees so as not to disclose confidential business information (because there are relatively few employers in the sector).
[2]The data source does not reveal data on payrolls for this sector due to confidentiality requirements.

$000 $ thousands
N/A not available

Employment

Table 3-71 provides a summary of employment by sector for the counties in the Planning Area. The breakout is comparable to the earnings table above; in most of the counties, substantial portions of employment are derived from mining, construction, retail trade, and government. However, the differences between the two tables highlight the divergence in earnings per job in different sectors. For example, whereas mining contributes 17 percent of earnings in Big Horn County, it contributes proportionally fewer jobs (10 percent), which illustrates the relatively high wages per job in the mining sector. Similarly, retail trade accounts for 11 percent of jobs in Park County and 8 percent of jobs in each of Hot Springs and Washakie counties, but contributes just 8 percent of earnings in Park County, and 4 to 5 percent in Hot Springs and Washakie. This divergence indicates that wages per job in this sector are relatively low, either because of lower wages per hour or because some jobs in the sector are seasonal or part-time. For information on seasonal variations in employment, see the discussion of Transient and Seasonal Populations in Section 3.8.1 *Social Conditions*.

Note that the data in the table below are from BEA. As noted above under the "Economic Activity: Livestock Grazing" header in this section, BEA's data on agricultural operations differ from USDA Census of Agriculture data. As relates to employment, the number of farm employees reported by BEA is generally lower than that reported in the Census of Agriculture. According to the estimates in Table 3-68, Big Horn County had 1,072 farm employees, Hot Springs had 251, Park had 1,700, and Washakie had 444, in 2007. As noted, the 2012 Census of Agriculture is still being conducted and the latest data available are for 2007.

Table 3-71. Employment by Sector, 2011

Sector	Big Horn County	Hot Springs County	Park County	Washakie County	State of Wyoming	United States
Farm employment	11%	6%	5%	5%	3%	1%
Fishing, hunting, logging, and related activities, including agricultural services[1]	N/A	N/A	1%	N/A	0.7%	0.5%
Mining	10%	N/A	5%	4%	9%	0.8%
Utilities	0.3%	N/A	0.4%	0.8%	0.7%	0.3%
Construction	7%	4%	8%	7%	7%	5%
Manufacturing	4%	3%	3%	8%	3%	7%
Wholesale trade	2%	N/A	2%	2%	3%	3%
Retail trade	N/A	8%	11%	8%	10%	10%
Transportation and warehousing	3%	4%	2%	4%	4%	3%
Information	2%	2%	1%	2%	1%	2%
Finance and insurance	3%	4%	4%	4%	4%	5%
Real estate and rental and leasing	3%	4%	5%	5%	5%	4%
Professional and technical services	N/A	N/A	4%	4%	4%	7%
Management of companies and enterprises	N/A	N/A	0.6%	N/A	0.3%	1%
Administrative and waste services	6%	N/A	3%	N/A	3%	6%

Table 3-71. Employment by Sector, 2011 (Continued)

Sector	Big Horn County	Hot Springs County	Park County	Washakie County	State of Wyoming	United States
Educational services	0.5%	1%	1%	0.8%	0.9%	2%
Health care and social assistance	4%	11%	8%	11%	7%	11%
Arts, entertainment, and recreation	1%	3%	3%	1%	2%	2%
Accommodation and food services	4%	9%	11%	6%	8%	7%
Other services, except public administration	4%	6%	5%	5%	5%	6%
Government and government enterprises	23%	18%	18%	16%	19%	4%
Categories for which data were not disclosed	12%	19%	0%	5%	0%	0%
Total employment (number of jobs)	**7,020**	**3,399**	**20,915**	**5,732**	**391,484**	**75,834,700**

Source: BEA 2012

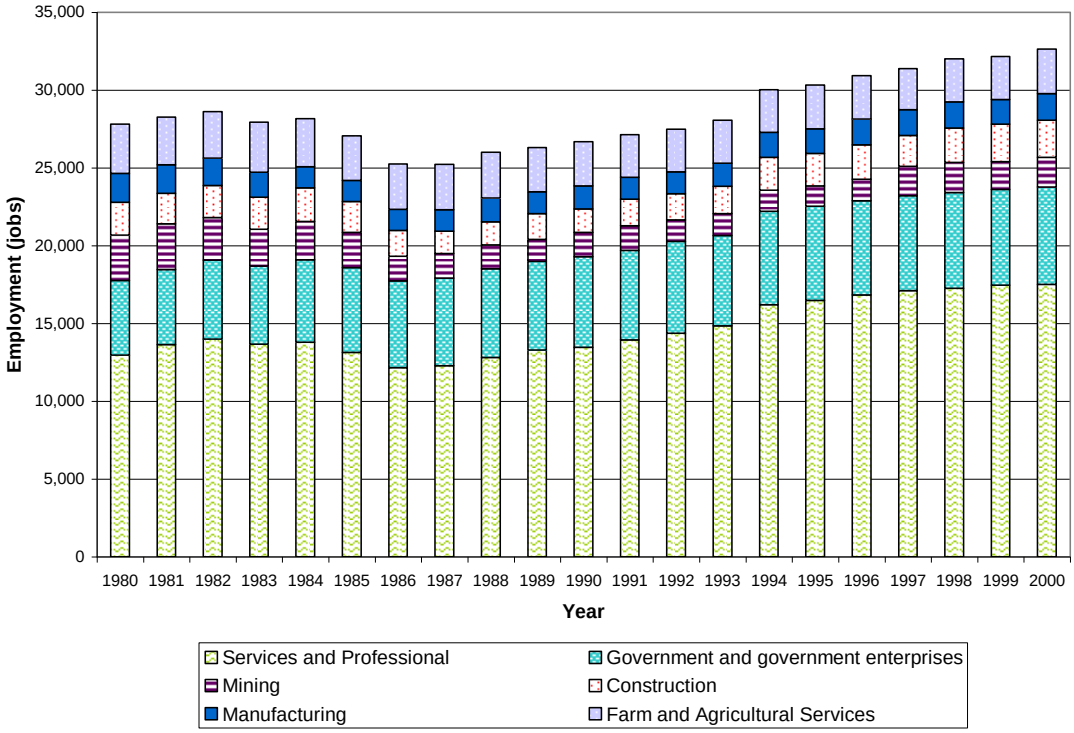
[1]Related activities includes hunting and trapping, as well as agricultural services such as custom tillage.

N/A not available

Figure 3-30 shows historical employment trends for the four Planning Area counties, aggregated. (Trend information for individual counties is available in the profiles from Headwaters Economics (Headwaters Economics 2007a; Headwaters Economics 2007b; Headwaters Economics 2007c; Headwaters Economics 2007d), which are on the RMP website.) The figure shows trends for 1980 through 2000. As noted above, due to a change in the industrial classification system in year 2000, and federal non-disclosure policies, it is not possible to construct a table or graph with meaningful trend information after year 2000. The data in the figure indicate that the number of jobs in the services and professional sectors accounted for the majority of changes in employment from 1980 to 2000. Mining jobs were higher in the early 1980s and mid to late 1990s, while government sector jobs grew somewhat starting in the mid to late 1980s. The number of jobs in other sectors remained relatively stable from 1980 to 2000.

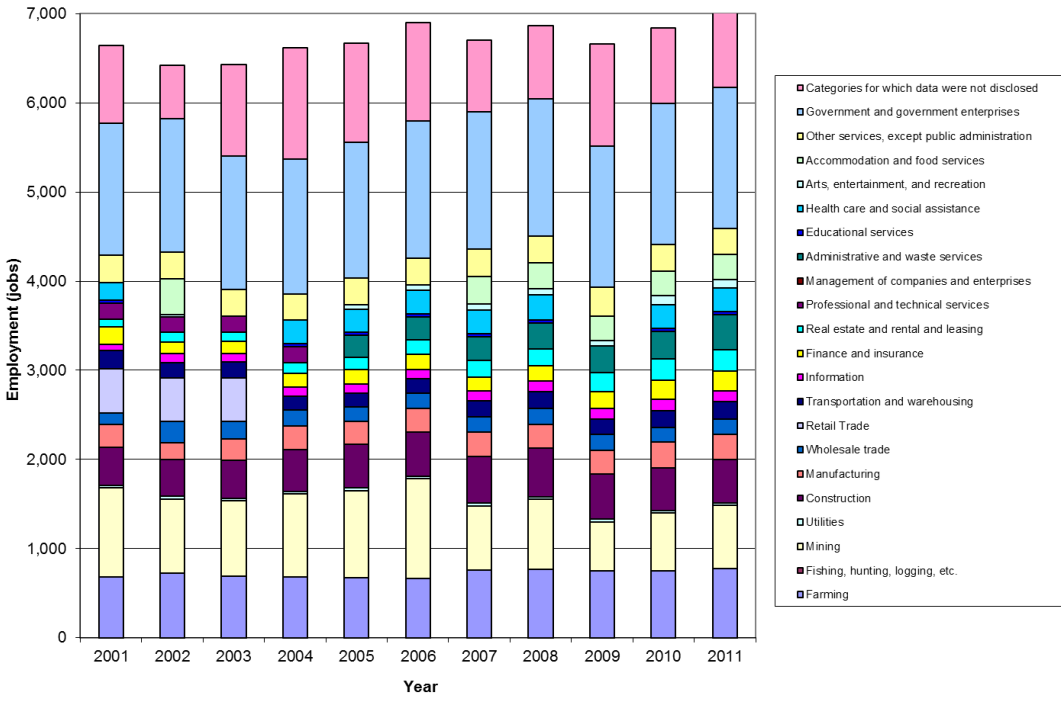
Figures 3-31 through 3-34 show trend information on sources of employment from 2001 through 2011. Similar to the income figures above, and for the same reasons, the counties are not aggregated for this trend data because of the issue of non-disclosure of data. The figures shown here are for each individual county, and show the magnitude of the sectors for which BEA did not disclose data in each year.

Figure 3-30. Employment by Sector within Planning Area Counties, 1980-2000



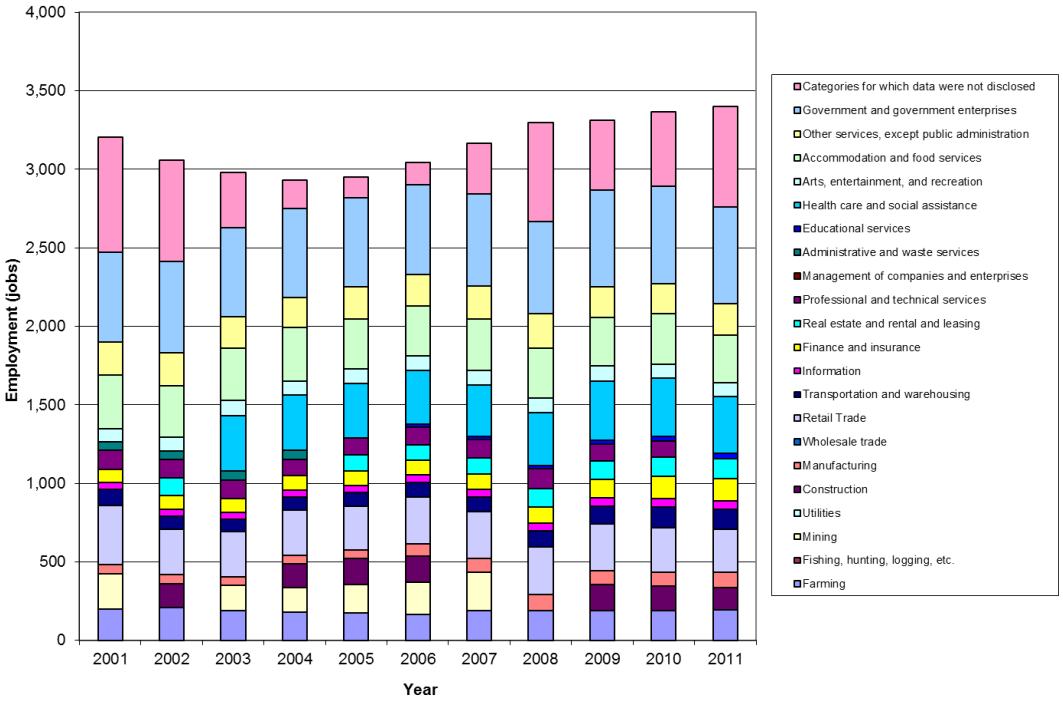
Source: BEA 2010a

Figure 3-31. Employment by Sector within Big Horn County, 2001-2011



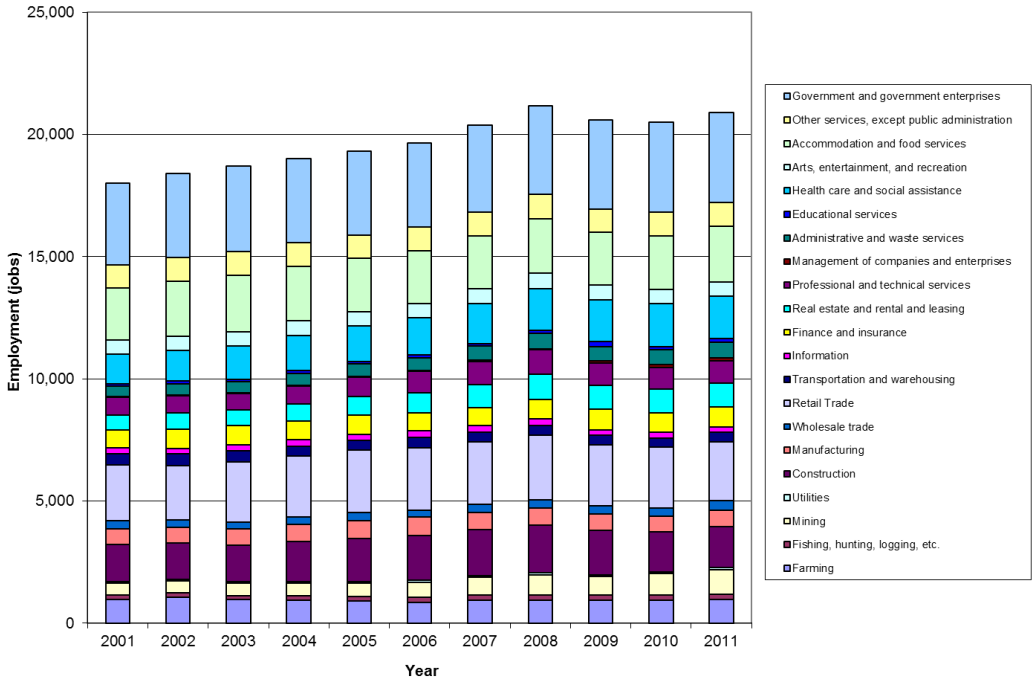
Sources: BEA 2010a; BEA 2012.

Figure 3-32. Employment by Sector within Hot Springs County, 2001-2011



Sources: BEA 2010a; BEA 2012.

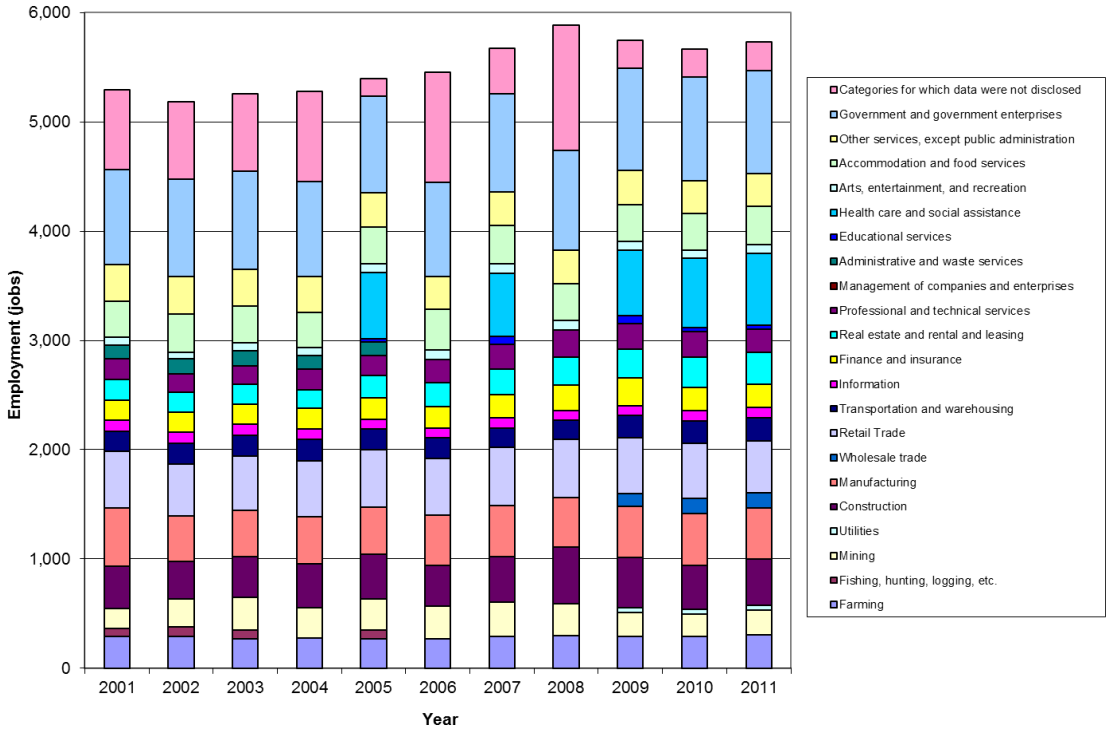
Figure 3-33. Employment by Sector within Park County, 2001-2011



Sources: BEA 2010a; BEA 2012.

Note: Data were disclosed for all sectors in Park County continuously from 2001 to 2011.

Figure 3-34. Employment by Sector within Washakie County, 2001-2011



Sources: BEA 2010a; BEA 2012.

Like the income figures, there are particular circumstances in each county but there are some common threads in the 2001-2011 employment trends. In general, certain sectors provide a steady source of employment with little variation over time: farming, accommodation and food services, retail trade, construction, manufacturing, and government. In Park County, the increase in employment over time is attributable to slight increases in construction, retail trade, and health care and social assistance. Park, Washakie, and Hot Springs counties all saw small, steady increases in employment for 2002-2008, but there is no obvious driver (partly because the intermittent nondisclosure makes it difficult to determine trends over time, but partly because there were no large jumps in employment for any sector during that period). In 2009, employment declined slightly a result of the housing market decline and the nationwide recession, but has returned to a trajectory of growth since then. Note that, like the income figures, the effects of non-disclosure are readily visible when a sector has widely divergent employment numbers in different years within the same county.

Table 3-72 shows three different measures of earnings and income for the Planning Area counties, using the most recent available data. On all three earning and income measurements, income and earnings in the Planning Area counties are lower than for the state as a whole. In addition, median household income and average earnings per job are lower in the Planning Area counties than in the United States. Per capita income is lower than the national average in Big Horn County, but greater than the national average in the other three counties. The relative difference between average earnings per job (which measures employment income only) and per capita income (which also includes dividends, interest, rent, and transfer payments such as Social Security) in Hot Springs, Park, and Washakie counties underscores the importance of nonwage income in these counties, which is also identified above in the earnings data.

Table 3-72. Average and Median Income; Average Earnings per Job

Area	Per Capita Income (2011)	Average Earnings Per Job (2011)	Median Household Income (2011)
Big Horn County	$33,682	$37,683	$49,929
Hot Springs County	$43,615	$36,580	$41,845
Park County	$45,799	$39,292	$50,141
Washakie County	$41,837	$41.972	$49,747
State of Wyoming	$47,898	$48,820	$56,044
United States	$41,560	$53,768	$50,502

Sources: BEA 2010a (per capita income and average earnings per job); BEA 2012 (median household income).

Table 3-73 shows the unemployment rate for counties in the Planning Area compared to state and national levels. As the table shows, unemployment in the Planning Area counties from 2006 through April 2012 has been lower than in the United States, though greater than the statewide rate in 2006-2008. While the national unemployment rate ticked up in 2008, unemployment remained steady in the Planning Area counties. Between 2008 and 2009, unemployment in the Planning Area counties increased, as in the State of Wyoming and in the country as a whole, declining slightly after 2010.

Table 3-73. Unemployment Rate in 2006-2012

Area	2006	2007	2008	2009	2010	2011	2012
Big Horn County	4.3%	4.2%	4.2%	8.7%	8.0%	7.1%	6.2%
Hot Springs County	3.7%	3.4%	3.4%	6.0%	5.6%	5.2%	4.7%
Park County	3.7%	3.2%	3.7%	6.2%	6.9%	6.3%	5.8%
Washakie County	3.7%	3.6%	3.7%	6.2%	6.6%	6.0%	5.4%
State of Wyoming	3.2%	2.9%	3.2%	6.4%	7.0%	6.1%	5.4%
United States	4.6%	4.6%	5.8%	9.3%	9.6%	8.9%	8.1%

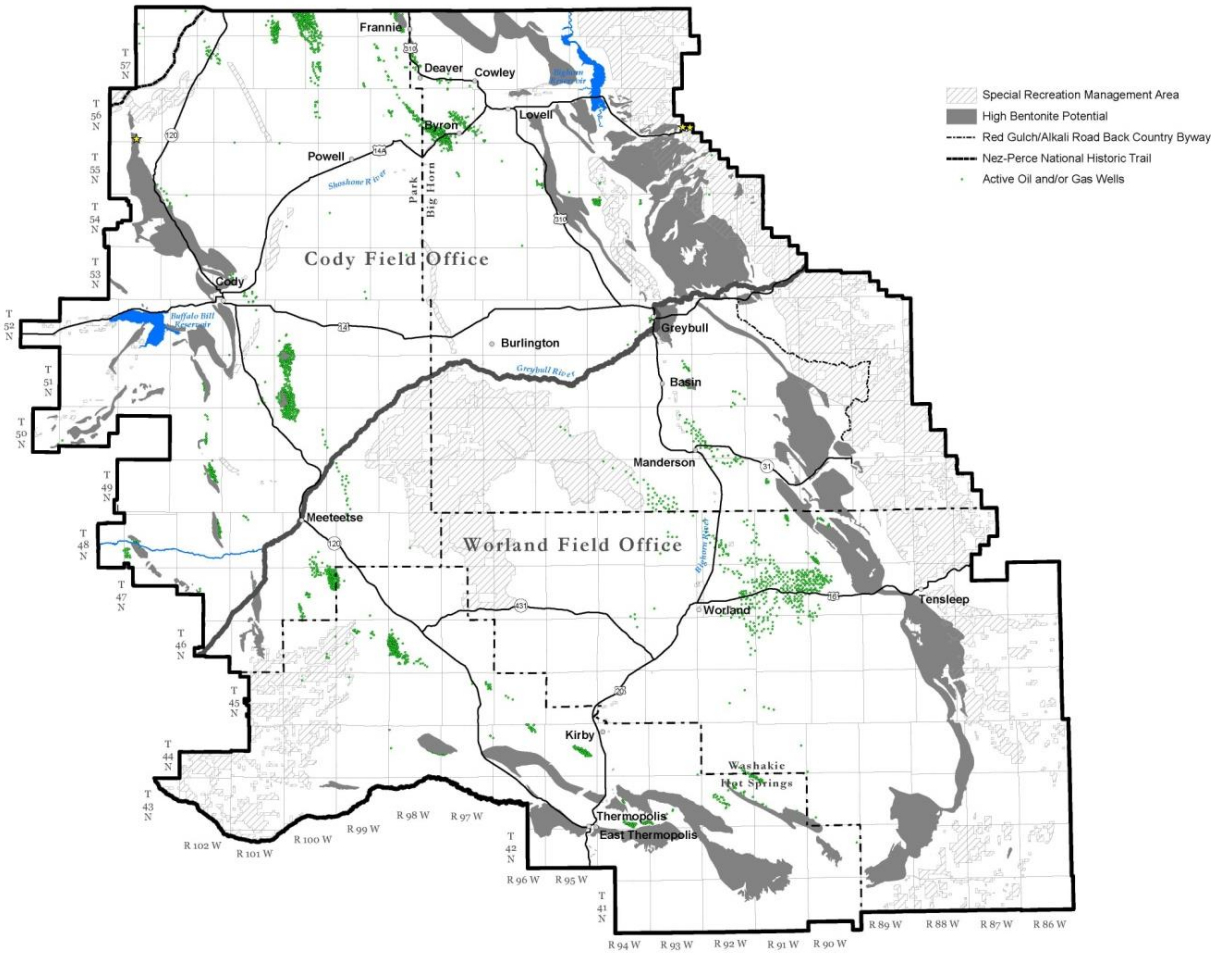
Sources: BLS 2010a; BLS 2010b; BLM 2013a.

Note: figures presented are annual averages.

Spatial Distribution of Employment

Some features of the economic landscape are common to the communities within the Planning Area, while in other ways the communities vary in their employment base. In all the communities, BLM land influences employment (directly, indirectly, or both) as well as other quality of life factors. To elucidate the geo-spatial employment patterns, Figure 3-35 shows the geographic dispersion of certain critical BLM uses, including SRMAs, areas of high bentonite potential, and active oil and gas wells. The Planning Area is authorized for livestock grazing, except for the areas shown on Map 81.

Figure 3-35. Geographic Dispersion of Selected Features



Source: BLM 2013a

Oil and gas deposits occur throughout the basin. Nearly every community lies within twenty miles from at least one cluster of active oil and gas wells; Powell and Burlington are the only exceptions. The largest clusters of oil and gas wells are proximate to Worland, Cody, and the towns in the northwest corner of Big Horn County (Byron, Lovell, Cowley, Deaver, and Frannie). Livestock grazing, as it is coterminous with BLM-administered surface, also occurs throughout the Planning Area, and all the communities are located very close to some area used for grazing. SRMAs, representing key recreational areas administered by the BLM, are concentrated in the center of the basin (near Burlington, Meeteetse, Manderson, and Kirby) and on the eastern edge (the Big Horn Mountains, near Lovell, Greybull, Worland, and Ten Sleep). Areas of high bentonite potential occur on the edges of the basin, particularly in Big Horn and Washakie counties (which together account for a large portion of the state's bentonite production).

To supplement the figure, Table 3-74 shows the distribution of employment for the larger communities in the Planning Area. Unfortunately, the only data source that provides information about sector-level employment at the resolution of individual communities is the 2000 Census, which means these data are relatively old. In addition, the Census tabulation for this data item is based on a 1-in-6 sample,

which means that data tabulated for very small communities has a substantial amount of error. For instance, a community with 300 residents would have about 50 people responding to the survey; if only 35 of those people are of working age, and they work in fifteen different employment sectors, then an aberration in the sample (e.g., three people who work in the construction industry, and none who work in mining) can suggest a population-level effect that does not actually hold true. For this reason, Table 3-74 shows only data for towns with greater than 600 employed people in the year 2000.

As expected, the data show some similarities in employment patterns. The service sectors, especially education, health care, and social assistance, and the retail trade sector contribute a sizable proportion of employment in all of the communities shown. Among sectors that are influenced directly by BLM actions, mining is most important in Greybull and Lovell; agriculture provides a small but important contribution to employment in all of the communities (with Worland and Powell having the largest shares), and recreation, accommodation, and food services, which is combined with arts and entertainment in the Census tabulation, provides a sizable share of employment in all of the communities (12 to 16 percent in all of the communities shown except Lovell).

Table 3-74. Employment by Sector, 2000

Sector	Cody	Greybull	Lovell	Powell	Thermo-polis	Worland
Agriculture, forestry, fishing and hunting	3%	2%	4%	5%	2%	5%
Mining	3%	9%	10%	3%	3%	8%
Construction	8%	8%	10%	4%	8%	6%
Manufacturing	7%	2%	9%	4%	3%	9%
Wholesale trade	1%	2%	1%	4%	1%	3%
Retail trade	15%	15%	11%	11%	7%	12%
Transportation and warehousing, and utilities	4%	9%	3%	5%	6%	4%
Information	2%	3%	1%	3%	3%	2%
Finance, insurance, real estate and rental and leasing	6%	6%	4%	6%	5%	4%
Professional, scientific, management, administrative, and waste management services	8%	3%	2%	6%	2%	5%
Educational services	7%	10%	12%	15%	13%	6%
Health care and social assistance	13%	8%	17%	15%	22%	13%
Arts, entertainment, recreation, accommodation and food services	13%	14%	7%	12%	16%	12%
Other services (except public administration)	6%	4%	6%	4%	6%	6%
Public administration	4%	5%	4%	2%	4%	5%
Total employment (number of jobs)	**4,266**	**808**	**959**	**2,413**	**1,525**	**2,422**

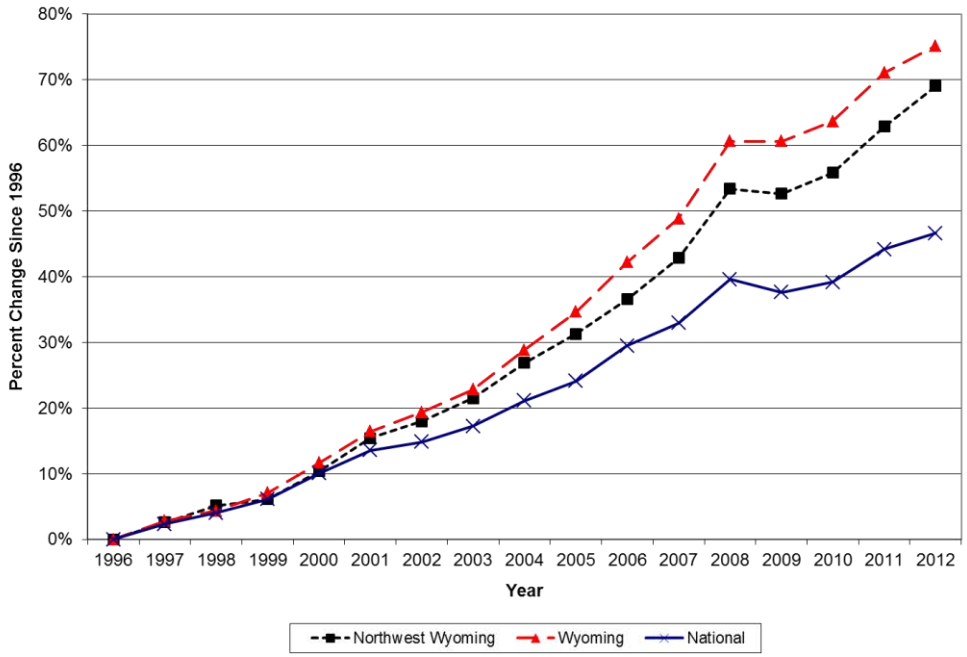
Source: U.S. Census Bureau 2000

Cost of Living

One factor that affects economic and social trends within the communities is the cost of living. The Wyoming Economic Analysis Division calculates relative changes in cost of living over time by estimating the cost of a set of goods and services that represents the average consumer's purchases for housing, food, health care, travel costs, and other items. If the cost of living for a particular area increases faster than average income, that may mean that long-time residents, especially those on fixed incomes, may find their lifestyle less affordable over time. Over a long period of time, a higher cost of living may encourage people to relocate from a community and discourage migration into a community by households not seeking to relocate in conjunction with employment opportunities. Overall migration into the area will likely decrease, and the demographic and socioeconomic characteristics of those who move in will be determined partially by the cost of living in the area.

The Wyoming Economic Analysis Division (Wyoming Economic Analysis Division 2012a) calculates the change in the cost of living over time for a five-county region in northwest Wyoming, consisting of Big Horn, Hot Springs, Park, Teton, and Washakie counties. Figure 3-36 shows how the cost of living in northwest Wyoming has changed relative to the cost of living in Wyoming generally and in the United States. Starting around 2000, the cost of living in the northwest region and Wyoming as a whole began to increase at a greater rate than the nation. The cost of living in the northwest region has risen slightly more slowly than for the state as a whole. By 2008, compared to 1996, the cost of living in northwest Wyoming had risen by about 55 percent, compared to 60 percent statewide and 40 percent for the United States. It is worth noting that the inclusion of Teton County in the five-county region may bias the results upward, due to the higher cost of living in Jackson and other portions of Teton County. In other words, the rise in the cost of living for the four counties of the combined Cody and Worland Planning Area is likely to be lower than that suggested by the five-county region that also includes the affluent Teton County. In 2009, the cost of living declined slightly for all three geographic regions shown in the figure, as a result of the housing market decline and the nationwide recession. Since 2010, the trend of increase in the cost of living has resumed.

Figure 3-36. Cost of Living Trends in the Planning Area



Source: Wyoming Economic Analysis Division 2012a

Housing

Housing stock within the Planning Area grew steadily in all four counties from 2001 to 2008, particularly in Park County, with a somewhat less steady growth after 2008 (see Table 3-75). Data on vacancy rates for all housing are presented in Table 3-76, which also provides data on the percentage of housing that is occupied by renters and owners. This section also presents, later, updated data on rental vacancy rates.

Table 3-75. Housing Units, 2001-2011

County	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Big Horn	5,131	5,144	5,163	5,196	5,227	5,227	5,240	5,253	5,278	5,378	5,376
Hot Springs	2,548	2,552	2,558	2,571	2,578	2,580	2,585	2,589	2,589	2,580	2,572
Park	12,041	12,151	12,310	12,499	12,716	12,881	13,108	13,320	13,491	13,588	13,666
Washakie	3,670	3,675	3,682	3,687	3,697	3,701	3,707	3,724	3,724	3,832	3,822

Sources: U.S. Census Bureau 2010d; U.S. Census Bureau 2013d.

Table 3-76 shows that about 70 to 75 percent of housing is owner occupied in all four counties. Vacancy rates in 2010 were highest in Big Horn and Hot Springs counties, where about one in six houses were vacant, and lowest in Washakie County, where about one in ten houses were vacant. The year 2010 vacancy rates suggest there was sufficient housing stock to accommodate new residents, at least in the aggregate.

Table 3-76. Housing Occupancy Status in 2010

County	Number of Housing Units	Percent Occupied	Percent Vacant	Percent Owner Occupied	Percent Renter Occupied
Big Horn	5,379	85%	15%	75%	25%
Hot Springs	2,582	85%	15%	70%	30%
Park	13,562	88%	12%	71%	29%
Washakie	3,833	91%	9%	73%	27%

Source: U.S. Census Bureau 2010e

Table 3-77 shows average housing prices for the Planning Area counties from 1998-2012, based on sales of existing, detached single family homes on 10 acres or less sold during the previous calendar year (WHDP 2009b; WHDP 2009a). Figure 3-37 shows the same information graphically. The table and figure show that housing prices in the Planning Area counties have increased in generally parallel fashion (i.e., growing at about the same rate) until 2008, although with prices consistently higher in Park County than the other three counties. The 2008 data show a dip in housing prices statewide due to the economic contraction. This dip continued in 2009, when it was also evident in Big Horn and Park counties, with less clear trends since then.

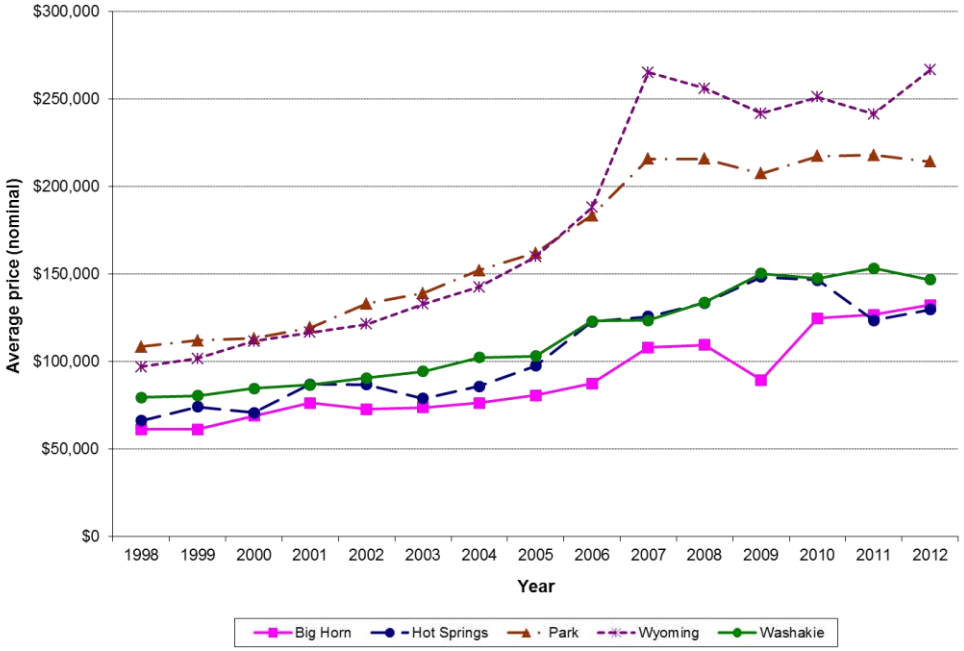
Table 3-77. Average Housing Price, 1998-2012

Year	Big Horn County	Hot Springs County	Park County	Washakie County	State of Wyoming
1998	$61,088	$66,044	$108,286	$79,433	$96,906
1999	$61,022	$74,022	$111,893	$80,338	$101,517
2000	$68,816	$70,625	$113,178	$84,564	$111,437
2001	$76,263	$86,840	$119,233	$86,412	$116,469
2002	$72,670	$86,625	$132,854	$90,405	$121,140
2003	$73,526	$78,705	$138,941	$94,206	$132,708
2004	$76,279	$85,615	$151,921	$102,144	$142,501
2005	$80,607	$97,453	$161,866	$102,948	$159,776
2006	$87,384	$122,544	$183,326	$123,072	$187,869
2007	$107,966	$125,576	$215,697	$123,363	$265,044
2008	$109,295	$133,421	$215,692	$133,754	$256,045
2009	$89,239	$148,296	$207,333	$150,202	$241,622
2010	$124,608	$146,474	$217,191	$147,467	$250,958
2011	$126,574	$123,438	$217,902	$153,093	$241,301
2012	$132,077	$129,612	$214,019	$146,557	$266,406
Number of Sales in 2012	13	45	188	81	662

Sources: WHDP 2009b; WHDP 2009a; WHDP 2013.

Note: Prices are the average for all existing detached single family homes on 10 acres or less sold during the previous calendar year, and are not adjusted for inflation.

Figure 3-37. Average Housing Price, 1998-2012



Sources: WHDP 2009b; WHDP 2009a; WHDP 2013.

Table 3-78 shows information about rental housing availability (i.e., rental vacancy rates) since 2001. Vacancy rates in all four counties were somewhat volatile between 2001 and 2012, with some low years and some higher years. In 2007, vacancy rates in Big Horn, Park, and Washakie counties were generally low, except in December in Washakie County, but in 2008 they rose again. This increase generally continued in 2009 and 2010, with some exceptions. As of 2012, vacancy rates were highest in Hot Springs County and lowest in Washakie County.

Table 3-78. Rental Housing Availability

Year	Big Horn County		Hot Springs County		Park County		Washakie County	
	June/July	December	June/July	December	June/July	December	June/July	December
2001	12.2	12.1	5.4	6.4	3.6	6.4	4.9	9.5
2002	4.4	4.7	11.0	11.7	5.8	4.5	10.2	6.3
2003	6.9	5.0	10.6	9.9	2.5	6.9	5.9	6.3
2004	8.6	11.0	6.8	4.7	5.4	10.7	1.6	1.1
2005	6.2	8.4	8.3	6.8	3.3	5.2	3.1	1.6
2006	6.8	3.3	4.4	8.5	1.6	3.3	1.5	0.0
2007	2.1	1.5	5.4	5.3	1.0	2.7	1.0	7.3
2008	3.0	4.7	9.3	5.9	2.9	3.4	3.7	2.7
2009	4.9	14.2	5.9	8.1	2.8	3.5	3.9	3.5
2010	10.0	13.7	8.3	5.5	2.8	4.2	3.7	5.0
2011	4.4	5.7	10.8	7.6	2.7	2.8	3.6	2.1
2012	6.1	6.8	8.2	2.8	2.6	3.6	2.5	2.3

Sources: WHDP 2009b; WHDP 2009a; WHDP 2013.

Note: Availability is measured in percentage terms (percent of units that are vacant) based on a survey of rental agencies.

Table 3-79 provides some additional economic variables of interest. The ratio of relatively low-income households to relatively high-income households, which provides an indication of income inequality, is higher in Big Horn and Hot Springs counties than the median for all U.S. counties (indicating a more unequal income distribution), and lower in Park and Washakie counties (indicating a more equal distribution of income). The index of employment specialization is substantially higher in Big Horn and Hot Springs counties than the median for all U.S. counties, which indicates that employment in these counties is relatively concentrated in a small number of industry sectors. The same index shows that employment in Park and Washakie counties is slightly more diversified than in the United States as a whole. This kind of diversification can help to moderate boom and bust cycles when those cycles affect particular industries more than others. Finally, the net residential adjustment shows the degree to which commuting across county borders affects work-related earnings. Hot Springs County had a positive residential adjustment in 2005, indicating that more people commuted out of the county to work (the county is a "bedroom community"). The other counties in the Planning Area had negative residential adjustments, indicating that more people commuted into the county to work.

Table 3-79. Poor-Rich Ratio, Employment Specialization, and Residential Adjustment

Area	Poor-Rich Ratio (1999)[1]	Employment Specialization Index (2005)[2]	Net Residential Adjustment (2005)[3]
Big Horn County	11.8	267	-2.0%
Hot Springs	11.9	321	4.2%
Park County	7.8	146	-1.0%
Washakie County	6.0	139	-1.1%
Median of United States counties[4]	9.0	155	N/A

Sources: Headwaters Economics 2007a; Headwaters Economics 2007b; Headwaters Economics 2007c; Headwaters Economics 2007d.

[1]Measures the ratio of households with income less than $30,000 to those with income exceeding $100,000 (in year 1999). For instance, a ratio of 10 indicates there are 10 households with income less than $30,000 for every household with income over $100,000.
[2]A relative measure of the diversity of the employment base of a county compared to the employment base of the United States as a whole. A lower index indicates a more diverse employment base; a higher index indicates greater specialization (employment is more concentrated in a few economic sectors).
[3]A positive residential adjustment indicates that more people commute out of the county to work, while a negative adjustment indicates that more people commute into the county to work. The numeric value is the net proportion of total personal income that is earned across county lines.
[4]Represents the median for all counties in the United States (not the median value for the United States as a whole).

Tax Revenues

Economic activities on BLM-administered land and mineral estate contribute to the fiscal well-being of local governments, as well as to state and federal governments. The BLM's management actions have the potential to affect tax revenues from mining and mineral production; travel, tourism, and recreation; and livestock grazing and ranching.

Mineral Severance Taxes

The mining industry contributes substantially to state and local tax revenues. For example, the Wyoming State Auditor (Wyoming State Auditor 2012) reported that state mineral severance taxes and federal mineral royalties returned to the state represented 37 percent of total state revenues in Fiscal Year 2012 – a total of $1.58 billion. Table 3-80 shows estimated state severance tax collections for the Planning Area counties and Wyoming for production year 2010.

Table 3-80. Estimated State Severance Tax Collections in the Planning Area Counties, for Production Year 2010

Mineral	Big Horn County	Hot Springs County	Park County	Washakie County	State of Wyoming
Crude and Stripper Oil	$5,139,113	$7,607,647	$20,318,620	$1,960,048	$151,674,247
Natural Gas	$424,737	$35,696	$1,846,938	$433,986	$456,086,175
Coal	$0	$27,459	$0	$0	$281,395,969
Gypsum	$19,886	$0	$16,491	$0	$36,376
Sand and Gravel	$5,499	$1,059	$13,926	$2,806	$457,265
Bentonite	$697,849	$26,681	$0	$61,073	$1,283,195
Additional Minerals	$0	$0	$0	$0	$19,927,798
Total	**$6,287,083**	**$7,698,541**	**$22,195,975**	**$2,457,912**	**$910,861,025**

Source: Wyoming DOR 2012

Note: The application of various tax incentive statutes resulted in a reduced severance tax collection for oil (Wyoming DOR 2012). The figure for oil was calculated using the average of the actual severance tax rate in the previous two years (4.89 percent).

Federal mineral royalties are levied at 12.5 percent of the value of current oil and gas and coal production, after allowable deductions. Half the royalties collected are returned to the state of Wyoming, and a portion of the royalties received by the state are disbursed to cities and towns (State of Wyoming 2004). According to the Wyoming Consensus Revenue Estimating Group (CREG), federal mineral royalties for production in the state were $879 million in Fiscal Year 2010, $942 million in Fiscal Year 2011, and $955 million in Fiscal Year 2012 (CREG 2013). This includes royalties from oil, gas and gas plant products, and coal, including coal lease bonuses. Royalty revenues were lower than in previous years due to reduced drilling activity from the national recession and other factors. CREG projects a slight increase in the next few years (CREG 2013).

Local counties and communities receive severance taxes and federal mineral royalties. Table 3-81 lists the federal mineral royalties disbursements received by the Planning Area counties between 2004 and 2009, and Table 3-82 lists severance tax disbursements to these counties between 2004 and 2012. Small amounts of state severance taxes are also distributed to towns, but are not included in these figures.

Table 3-81. Disbursements of Federal Mineral Royalties by Planning Area Counties, for Production Years 2004-2009

Fiscal Year	Big Horn County	Hot Springs County	Washakie County	Park County	Total
2004	$2,555,612	$3,327,735	$1,491,388	$9,220,666	$16,595,401
2005	$4,656,727	$4,470,292	$1,651,277	$12,243,560	$23,021,856
2006	$4,945,953	$6,025,658	$4,659,127	$19,098,545	$34,729,283
2007	$3,688,612	$7,249,080	$3,302,493	$15,814,298	$30,054,483
2008	$6,127,423	$11,510,917	$4,568,479	$24,614,706	$46,821,524
2009	$4,163,525	$7,614,451	$2,485,727	$15,301,272	$29,564,975

Source: Schaeffer 2010

Table 3-82. Disbursements of Severance Tax by Planning Area Counties, for Production Years 2004-2012

Fiscal Year	Big Horn County	Hot Springs County	Washakie County	Park County	Total
2004	$176,732	$133,476	$169,798	$289,455	$769,461
2005	$164,947	$106,791	$150,672	$303,648	$726,057
2006	$173,411	$115,818	$163,855	$312,518	$765,602
2007	$178,450	$117,265	$174,591	$317,072	$787,378
2008	$169,861	$108,850	$163,584	$306,868	$749,163
2009	$156,170	$94,806	$146,158	$291,446	$688,580
2010	$160,673	$92,283	$154,392	$299,481	$706,829
2011	$157,206	$89,636	$149,965	$291,595	$688,402
2012	$149,931	$84,085	$141,686	$277,107	$652,809

Sources: Wyoming State Treasurer's Office 2010; Wyoming State Treasurer's Office 2011; Wyoming State Treasurer's Office 2012; Wyoming State Treasurer's Office 2013.

Property Tax and Sales Tax Base (Tax Revenues)

Another way to look at the contributions of different industries in the Planning Area is to consider how different economic sectors contribute to local and state property values for the purpose of property tax levies, and also to local and state sales taxes. The fiscal stability of local and state government, as well as the economic viability of communities themselves, depends on the viability and stability of local industry and commerce. Table 3-83 shows local and state assessed property valuation in 2012 for the Planning Area counties and Wyoming. Table 3-84 shows local and state sales tax revenues by sector for each of the counties.

Table 3-83. Local and State Assessed Property Valuation, 2012

County	Total ($ millions)	Agricultural	Residential	Commercial	Mineral	Industrial
Local Assessed Valuation						
Big Horn County	$90	17%	59%	15%	5%	5%
Hot Springs County	$45	8%	58%	17%	15%	2%
Park County	$336	5%	73%	16%	4%	2%
Washakie County	$78	10%	59%	16%	5%	10%
State of Wyoming	$7,640	3%	55%	15%	24%	2%
State Assessed Valuation						
Big Horn County	$192	0%	0%	0%	94%	6%
Hot Springs County	$203	0%	0%	0%	95%	5%
Park County	$563	0%	0%	0%	97%	3%
Washakie County	$70	0%	0%	0%	84%	16%
State of Wyoming	$17,602	0%	0%	0%	92%	8%
Total (State and Local) Assessed Valuation						
Big Horn County	$282	5%	19%	5%	66%	5%
Hot Springs County	$248	1%	11%	3%	81%	4%
Park County	$899	2%	27%	6%	62%	3%
Washakie County	$148	5%	31%	8%	43%	13%
State of Wyoming	$25,243	1%	17%	5%	71%	6%

Source: Wyoming DOR 2012

Table 3-84. State and Local Sales Tax Collections by Sector, 2012

Sector	Big Horn County	Hot Springs County	Park County	Washakie County	State of Wyoming
Agriculture, Forestry, Fishing, and Hunting	0.03%	0%	0.1%	0.1%	0.04%
Mining	17%	12%	6%	9%	19%
Utilities	8%	9%	6%	7%	4%
Construction	2%	1%	1%	1%	2%
Manufacturing	3%	1%	3%	3%	3%
Wholesale Trade	15%	9%	6%	9%	11%
Retail Trade	27%	35%	41%	35%	31%
Transportation and Warehousing	0.1%	-1%	-0.1%	0.03%	0.1%
Information	4%	4%	2%	6%	2%
Financial Activities	3%	2%	3%	4%	5%
Professional and Business Services	1%	0.3%	1%	1%	1%
Educational and Health Services	0.01%	0.03%	0.1%	0.01%	0.1%
Leisure and Hospitality	5%	14%	18%	9%	10%
Other Services	6%	4%	3%	5%	5%
Public Administration	8%	9%	9%	10%	6%
Total ($ millions)	**$8.2**	**$4.6**	**$23.2**	**$8.2**	**$857.8**

Source: Wyoming Economic Analysis Division 2012b

Note: A negative value indicates a refund larger than collections.

Together, the data on sales tax collections and that on property tax valuations by sector provide insight into the economic base of the counties. Retail trade contributes the largest share of sales tax revenues in all four counties. Large shares are also contributed by several other sectors: wholesale trade, utilities, mining, leisure and hospitality, and public administration. Mineral and mining-related property provides the most important contributor to state and local assessed valuation for property taxes, with residential property the second most important contributor.

Separate data on sales tax revenues from retail trade, accommodation, and food sales (Table 3-85) provide some additional insight into the contribution from elements related to travel and tourism, specifically: eating and drinking places and lodging. (A portion of tax collections from eating and drinking places also accrue from local residents, and a portion of gasoline station tax collections would also accrue from tourists and business travelers.) These data suggest that travel and tourism provide an important contribution to sales tax collections in the Planning Area counties.

Dean Runyan Associates, working for the Wyoming Office of Travel and Tourism, estimated that statewide in 2011, travel and tourism from business and recreational visitors accounted for $68 million in state sales, use, and lodging tax revenues and $52 million in local sales, use, and lodging tax revenues, not including property tax collections related to recreation infrastructure (Dean Runyan Associates 2012). This estimate is based on the data above, as well as additional survey data from a variety of sources. Table 3-86 shows tax receipts due to travel and tourism for the counties in the Planning Area.

Local taxes include room taxes, local sales taxes, and the local share of state taxes. State taxes include the state share of the sales tax and the state motor fuel tax (Dean Runyan Associates 2012).

Table 3-85. Retail, Accommodation, and Food Sales: State and Local Sales Tax Collections, 2012

Sector	Big Horn County	Hot Springs County	Park County	Washakie County	State of Wyoming
Auto Dealers and Parts	10%	2%	5%	13%	10%
Building Material and Garden Supplies	19%	37%	14%	18%	15%
Clothing and Shoe Stores	1%	1%	3%	2%	3%
Department Stores	1%	0.2%	2%	0.4%	3%
Eating and Drinking Places	12%	16%	18%	14%	16%
Electronic and Appliance Stores	5%	2%	3%	4%	4%
Gasoline Stations	18%	6%	4%	4%	7%
General Merchandise Stores	5%	7%	14%	11%	13%
Grocery and Food Stores	9%	4%	5%	7%	3%
Home Furniture and Furnishings	2%	1%	2%	3%	2%
Liquor Stores	0.5%	1%	2%	1%	2%
Lodging Services	4%	11%	12%	5%	8%
Miscellaneous Retail	14%	11%	19%	18%	15%
Total ($ millions)	**$2.7**	**$2.2**	**$13.6**	**$3.6**	**$351.6**

Source: Wyoming Economic Analysis Division 2012b

Table 3-86. Local and State Tax Receipts Due to Travel and Tourism in Wyoming, 2012 ($ millions)

Locality	Local Tax Receipts	State Tax Receipts
Big Horn County	$0.3	$0.8
Hot Springs	$0.4	$0.7
Park County	$3.7	$5.6
Washakie County	$0.2	$0.5
State of Wyoming	$52.0	$68.0

Source: Dean Runyan Associates 2012

Table 3-87 provides trends of local and state tax receipts due to travel and tourism for the Planning Area counties from 2004 through 2011. Note that the data in the table are in current dollars, that is, are not adjusted for inflation. The table shows that local and state tax receipts rose slowly between 2004 and 2008 for all four Planning Area counties and for the state, then dipped slightly in 2009 for the state (but generally remained stable in the four Planning Area counties) and has remained relatively stagnant since, with the exception of a small increase in Park County. Among the four counties, tax receipts are also consistently highest in Park County.

Table 3-87. Local and State Tax Receipts Due to Travel and Tourism, 2004-2011 ($ millions)

County	2004	2006	2008	2009	2010	2011
Local Tax Receipts						
Big Horn	$0.2	$0.3	$0.3	$0.3	$0.3	$0.3
Hot Springs	$0.3	$0.4	$0.5	$0.4	$0.5	$0.4
Park	$2.4	$2.7	$3.3	$3.3	$3.6	$3.7
Washakie	$0.1	$0.1	$0.2	$0.2	$0.2	$0.2
Wyoming	$33.0	$41.0	$45.0	$43.0	$45.0	$52.0
State Tax Receipts						
Big Horn	$0.7	$0.7	$0.8	$0.8	$0.8	$0.8
Hot Springs	$0.5	$0.7	$0.7	$0.7	$0.7	$0.7
Park	$4.2	$4.4	$5.3	$5.3	$5.6	$5.6
Washakie	$0.4	$0.4	$0.5	$0.5	$0.5	$0.5
Wyoming	$53.0	$63.0	$71.0	$66.0	$65.0	$68.0

Source: Dean Runyan Associates 2012

Note: Data are in current dollars (i.e., are not adjusted for inflation).

3.8.3 Health and Safety

The BLM's Hazard Management and Resource Restoration Program addresses a variety of hazards on public surface to reduce risks to visitors and employees. Hazards may include hazardous materials; mine shafts and adits; abandoned equipments and structures; explosives and munitions; and spills from pipelines, tankers, and storage tanks. Activities directed toward health and safety concerns in the Planning Area primarily encompass AMLs, natural geologic hazards, and hazardous wastes and materials.

Natural geologic hazards include landslides and earthquakes. A wide range of permitted uses that occur on BLM-administered public lands have the potential to introduce hazardous substances and petroleum products into the environment.

Abandoned Mine Lands

Extreme physical hazards are common at abandoned mine sites, and for visitors, these hazards are not always apparent. Abandoned mine sites have proven to be a luring and sometimes life-threatening attraction for both children and adults. Serious injury or death can occur at these sites. The presence of such sites can compromise other land uses and land quality. The following paragraphs identify some of the common physical hazards posed by AML sites (Wyoming DEQ, Abandoned Mine Land Division 2009a).

Horizontal openings: The mine opening (known as a portal or adit) might seem stable, but rotting timbers and unstable rock formations make cave-ins a real danger. The darkness and debris in old mines make identification of the hazards difficult.

Vertical shafts: These can be hundreds of feet deep. At the surface, openings can be hidden by vegetation or covered by rotting boards or timbers. Inside old mines, shafts can be camouflaged by debris or hidden by darkness in the mine.

Explosives and toxic chemicals: Blasting caps, dynamite, and chemicals were often left behind when the mine workings were abandoned. Explosives become unstable with age, and can be detonated by the vibration of footsteps. Abandoned chemicals such as cyanide, arsenic, mercury, and other deadly toxins could be present in leaking and deteriorating containers.

Dangerous gases: Lethal concentrations of CH_4, CO, CO_2, and H_2S (to name a few) can accumulate in underground passages. Oxygen-deficient air can cause suffocation. People have died within a few feet of the mine openings.

Water: Impounded water can be highly alkaline or acidic (resulting in skin burns), and deep and cold (contributing to hypothermia).

Spoil (rock and dirt) piles: These loose piles can collapse or slide, burying an unsuspecting victim.

Equipment and buildings: Abandoned surface structures and old mine equipment can collapse on bystanders.

Highwalls: These are the excavated vertical cliffs in surface pits and quarries. They can be unstable and prone to collapse. Highwalls might not be visible from the top, presenting a danger to off-road drivers.

Radon: Radon is a natural radioactive decay product and is known to be a factor in some lung cancers. Radon can accumulate in high concentrations in poorly ventilated mines.

Wildlife: Rattlesnakes, bears, cougars, and other wildlife frequent old mine sites.

Disorientation: There is no natural light inside mine workings. Many mine workings meandered as miners followed an ore vein. It is easy to get lost and become disoriented in a maze of mine workings, especially if lighting equipment fails.

Mine fire areas: Mine fires create surface hazards in abandoned coal mine areas. As fires burn within the seam, fissures can open to the surface and deliver deadly gases into the atmosphere. The area around the fissure might not be capable of supporting the weight of a human or vehicle, and could collapse into the burning coal or the mine void.

Abandoned mines are a common feature on BLM-administered lands. Approximately 380 potential AML sites have been identified in the Planning Area based on site data from a Wyoming DEQ, AML Division, database; more than 30 of those sites were visited and found to have no trace of past mining activity (Wyoming DEQ, Abandoned Mine Land Division 2008). Map 95 identifies potential AML sites in the

Planning Area. Potential sites are identified using published information, maps, aerial photography, and reporting by the public and surface management agencies. The Wyoming DEQ, AML Division, is performing a quality assurance review to update information on AML sites that have undergone reclamation; therefore, the location and number of reclaimed sites in the Planning Area cannot be accurately assessed at this time.

The BLM Wyoming State Office has a prioritized list of AML sites that pose the greatest risk to people and the environment. AML sites affecting water quality are addressed using the watershed approach. Using this approach accomplishes the following objectives:

- Allows for mitigation to be risk-based by identifying priority sites first.
- Fosters collaborative efforts across federal, state, and private administrative boundaries.
- Considers all issues important to water resource protection.
- Reduces the cost of mitigation.
- Provides the most efficient method of remediating AML sites by utilizing a wide range of available resources.

Recently, several AML sites in the Planning Area were identified, inventoried, and reclaimed. Abandoned sulfur mine workings, and a dangerous embankment related to pre-law gypsum mining, were reclaimed in 2006 and 2007. A current AML project involves identifying and inventorying old coal mine workings in the Bighorn Basin. In 1999, the BLM and the Wyoming DEQ, AML Division, signed a cooperative agreement that further facilitated the reclamation of AML sites on BLM-administered lands. The state program, as required by the Surface Mining Control and Reclamation Act of 1977, focuses on public safety hazards. In addition, the BLM has received some funding for its soil, water, and air program to address site-specific environmental hazards and watershed concerns associated with abandoned mines. By combining available funding, the BLM can continue to comprehensively address safety hazards and environmental impacts to water quality and watershed function at priority AML sites. In this collaborative partnership approach, the BLM and the Wyoming DEQ, AML Division, are undertaking several AML reclamation projects on public lands in the Planning Area.

The Wyoming DEQ, AML Division, works closely with federal land management agencies, private land owners, and the general public to ensure that the views of all interested parties are considered in the reclamation process. According to an August 2007 fact sheet, the Wyoming DEQ, AML Division, operated with an approximately $109 million budget in 2008, and a projected $69 to $149 million annual budget for calendar years 2009 through 2015 (Wyoming DEQ, Abandoned Mine Land Division no date). The Wyoming DEQ, AML Division, will use these funds to identify and reclaim AMLs and to construct public works projects in communities adversely affected by mining activities. According to the Wyoming DEQ, AML Division, Coordinator, the state AML program will focus on abandoned coal mines in the foreseeable future (Wyoming DEQ, Abandoned Mine Land Division 2009b). The BLM will continue to identify and remediate the hazards of abandoned mines, in concert with the Wyoming DEQ, AML Division and on its own.

Natural Geologic Hazards

Natural geologic hazards (geo-hazards) include active fault or seismic zones; areas prone to landslides; subsidence due to coal fires; over-pressured subsurface oil, gas, or groundwater zones; and potentially toxic minerals and assemblages such as selenium; and shrinking and swelling clay soils. There are several naturally occurring geologic hazards in the Planning Area. These include primarily down-slope

movements such as slumps, landslides and rock-fall, and flood-related hazards, shrinking and swelling clays, and potentially seismic zones.

Earthquakes and landslides are generally identified and forecast through USGS earthquake and landslide hazards programs. The Wyoming Geological Survey Surficial Processes/Geological Hazards Section is dedicated to the study and publication of information about geologic hazards in the state of Wyoming. There is a large amount of information about the likelihood of numerous natural geological hazards on the Wyoming Geological Survey and USGS websites.

Gravity influences soils and loose rock or colluvium on slopes in the Planning Area. When these materials are saturated with water, they can creep slowly down slopes or move suddenly with devastating results. Rapidly moving landslides can be triggered by a rainstorm or a seismic event such as an earthquake. Earthquakes of varying magnitude have affected the Bighorn Basin over time. Other types of natural geologic hazards affecting the Planning Area include active faults, shrinking and swelling soils, and flooding.

The occurrence of landslides depends directly on slope stability and precipitation quantities (normal versus drought conditions). Therefore, the recent drought has led to a decrease in landslides in the Planning Area.

Hazardous Wastes and Materials

The BLM investigates spills, illegal dumping, and hazardous materials releases to determine the need for immediate cleanup or other long-term remediation actions. This often involves working with the EPA, the Wyoming DEQ, and potentially responsible parties to fund and expedite the cleanup of hazardous sites and disposal activities that result from recreational use and industrial activities such as oil and gas development. The field offices in the Planning Area have an effective hazard management and resource restoration program.

There have been 31 response actions on public lands in the Planning Area since 1993 – 8 incidents involving the illegal disposal of unknown substances, more than 12 incidents of wire burns, 5 incidents involving abandoned facilities with the potential for the release of hazardous substances, 1 polychlorinated biphenyl spill, 2 incidents involving the discovery of explosives, and 3 incidents involving potential unexploded seismic charges.

Landfill management also has been a health and safety priority for the last 20 years. Six permitted municipal landfills in the Planning Area (Burlington, Hyattville, Manderson, Thermopolis, Shell, and Westside) have closed during this period, as have three industrial landfills (two permitted to the Marathon Oil Company in Grass Creek and Gebo for oil field refuse and one permitted to Georgia-Pacific Corporation for a bentonite mine and sheet rock manufacturing facility near Lovell). Three operating landfills (Worland, South Bighorn, and Ten Sleep) have transferred from federal to local ownership. The Cody landfill is in the process of transfer to Park County. The Wyoming DEQ, Hazardous and Solid Waste Division, is investigating all operating and closed landfills for groundwater contamination.

Due to the pollution hazards associated with shooting ranges, ranges permitted on public lands in the Planning Area are also being transferred out of federal ownership. The Worland shooting range was transferred into private ownership in 2000. Additionally, the Cody Shooting Complex was transferred to Park County in 2010, and the Powell Shooting Complex was transferred to the Powell Recreation District in 2014.

Increased awareness has led employees and the public to report more hazmat incidents. This awareness and reporting has led to the cleanup of old dump sites and abandoned facilities.

3.8.4 Environmental Justice

Minority Populations

BLM IM 2002-164, Guidance to Address Environmental Justice in Land Use Plans and Related NEPA Documents provides policy and guidance for addressing environmental justice in BLM land use planning (BLM 2002b). IM 2002-164 defines minority persons as "Black/African American, Hispanic, Asian and Pacific Islander, American Indian, Eskimo, Aleut, and other non-white persons." Furthermore, IM 2002-164 states that an area should be considered to contain a minority population where the minority population of the affected area exceeds 50 percent, or the percentage of minority population in the affected area is meaningfully greater than the percentage in the general population.

Populations of the four counties in the Planning Area are predominantly white and non-Hispanic. Table 3-88 lists the percentage of minority population in the counties in the Planning Area in 2000 and 2010, and the percentage of people in poverty in 2000 and in the 2007-2011 five year period. This five year period was used because poverty data for towns (discussed further below) is only available from the five-year American Community Survey. Although minority populations increased slightly from 2000 to 2010, three of the four counties have a larger proportion of non-Hispanic white residents than do the state or the country. Washakie County is the sole exception; it has a slightly higher proportion of non-Hispanic white residents than the state, although a lower proportion than the United States. Poverty data are discussed later in this section.

Table 3-88. Minority Populations in 2000 and 2010; Low-Income Populations in 2000 and 2007-2011 by County

County	Percent Minority Population in 2000	Percent Minority Population in 2010	Percent in Poverty in 2000	Percent in Poverty in 2007-2011
Big Horn County	8	11	14	9
Hot Springs County	5	5	11	14
Park County	5	7	13	9
Washakie County	14	16	14	9
State of Wyoming	11	14	11	10
United States	31	36	12	14

Sources: U.S. Census Bureau 2000; U.S. Census Bureau 2010f; U.S. Census Bureau 2011c.

Table 3-89 lists population by race and ethnicity by town in the Planning Area in 2000 and 2010. The table shows that there is important variation in minority population percentages in the counties, because some individual towns have higher (and lower) percentages of minority residents compared to their respective counties. In 2000, Worland, Burlington, Powell, Greybull and Byron had the largest percentages of minority residents, and Ten Sleep, Meeteetse, and Kirby had the smallest percentages. The table also shows that in eleven of the seventeen towns in the Planning Area, the percent of minority residents increased between 2000 and 2010.

Table 3-89. Minority and Low-Income Populations in 2000 and 2010 by Counties and Towns in the Planning Area

County/Town	Percent Minority Population in 2000	Percent Minority Population in 2010	Percent in Poverty in 2000	Percent in Poverty in 2010
Big Horn County	8	11	14	9
Basin	5	9	12	6
Burlington	12	15	15	11
Byron	15	13	23	21
Cowley	4	5	7	5
Deaver	10	7	10	9
Frannie	8	12	7	28
Greybull	7	13	15	11
Lovell	11	13	15	7
Manderson	8	11	14	13
Hot Springs County	5	5	11	14
East Thermopolis	9	7	17	14
Kirby	9	4	12	0
Thermopolis	6	5	10	19
Park County	6	7	13	9
Cody	4	6	14	11
Meeteetse	4	4	11	10
Powell	8	13	20	11
Washakie County	14	16	14	9
Ten Sleep	1	3	7	13
Worland	16	19	15	11
State of Wyoming	11	14	11	10

Sources: U.S. Census Bureau 2000; U.S. Census Bureau 2010f; U.S. Census Bureau 2011c.

Table 3-90 lists population by race and ethnicity in the Planning Area for major racial and ethnic groups. The largest ethnic or racial group other than non-Hispanic whites in any of the counties is Hispanic or Latino (of any race). In all four counties in the Planning Area, the percent of people in this ethnic group is lower than for the state as a whole. Most ethnic and racial groups other than non-Hispanic white comprise a very small proportion of populations in Planning Area counties. Note that Hispanic/Latino denotes an ethnicity, and people of this ethnic background can be of any race.

Table 3-90. Racial and Ethnic Groups in Planning Area Counties and Wyoming, 2010 (percent)

Race or Ethnicity	Big Horn County	Hot Springs County	Park County	Washakie County	State of Wyoming
Non-Hispanic, White	89	95	93	84	86
Non-Hispanic, Black	0.2	0.2	0.2	0.3	1
Non-Hispanic, American Indian/ Alaska Native	1	1	1	1	2
Non-Hispanic, Asian, Native Hawaiian, or Other Pacific Islander	0.3	0.4	1	1	0.1
Non-Hispanic, two or more races	1	1	1	1	2
Hispanic or Latino (of any race)	8	2	5	14	16

Source: U.S. Census Bureau 2010f

Low-Income Populations

BLM IM 2002-164 states that low-income populations can be identified according to poverty thresholds published by the U.S. Census Bureau. In addition, the IM notes that "when considering these definitions, it is important to recognize that some low-income and minority populations may comprise transitory users of the public lands and thus not associated with a particular geographic area" (BLM 2002b).

The Council on Environmental Quality (CEQ) guidance for environmental justice analysis under NEPA defines a "low-income population" as "either a group of individuals living in geographic proximity to one another, or a set of individuals (e.g., migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect" (CEQ 1997a). Although CEQ guidance does not provide a quantitative threshold (e.g., a limit on the percent of persons in poverty) for determining whether a population should be considered low-income, typically the percent of persons in poverty in the Planning Area is compared to that in a larger area such as the state. CEQ and BLM guidance do not specify quantitative criteria for what constitutes a low-income population.

As Table 3-88 shows, the percentage of people with income below the poverty level ranged between 9 and 14 percent for all counties in the Planning Area in the 2007-2011 period, and three of the four counties saw a reduction in poverty from 2000 to 2007-2011 (all except Hot Springs, in which the percent of people in poverty increased). In all but Hot Springs County, the percentage of people in poverty in 2007-2011 was slightly lower than in the state as a whole. In Hot Springs County the percentage of people in poverty in 2007-2011 was higher than in the state as a whole and similar to that in the United States as a whole.

The town-level data in Table 3-89 also show reductions in the percentage of people living in poverty in most towns between 2000 and 2007-2011. Because town-level data have a considerable margin of error, these data must be understood as the best data available, but very imprecise indicators of the actual poverty levels in towns. Based on these data, concentrations of people living in poverty were present in Byron, Frannie, and Thermopolis where the percentage of people in poverty exceeded averages for both the United States and the State of Wyoming.

3.8.5 Tribal Treaty Rights

Tribal roles and responsibilities are not well defined in the Planning Area. The Wind River Reservation, Wyoming's only reservation, houses two federally recognized tribes, the Eastern Shoshone and the Northern Arapaho. Although the modern boundaries of the reservation do not coincide with the Planning Area, historically, reservation boundaries entered into the Planning Area. The Wind River Reservation formerly extended along Owl Creek to its confluence with the Bighorn River in what is now Hot Springs County. The Crow Reservation in Montana formerly extended south to Shell Creek in what is now Big Horn County. At present, there are no identified treaty rights in the Planning Area. The BLM is committed to working with tribes as cooperating agencies and in formal consultations.

Judicially established lands are defined based on information provided by the Indian Claims Commission and approximating tribal lands that are determined by ethnographic and historic literature. The National Park Service (NPS 1993) indicates that the Crow judicially established lands encompass the Planning Area. Other tribes have judicially established land near, but outside, Planning Area boundaries. Although tribes have not explicitly identified traditional use areas in the Planning Area, this does not mean that such areas do not exist. Some site types present in the Planning Area, including rock art, form an integral part of traditional practices.

The following tribal political entities have expressed interest in consulting with the CYFO and the WFO regarding Native American issues and concerns. In some cases, if the tribe is willing, the BLM is developing MOUs regarding consultation for activities in the Planning Area.

- Blackfeet, living on the Blackfeet Reservation, Browning, Montana.
- Crow, living on the Crow Reservation, Crow Agency, Montana.
- Nez Perce, living on the Nez Perce Reservation, Lapwai, Idaho.
- Northern Arapaho, living on the Wind River Reservation, Fort Washakie, Wyoming.
- Northern Cheyenne, living on the Northern Cheyenne Reservation, Lame Deer, Montana.
- Salish and Kootenai, living on the Flathead Reservation, Pablo, Montana.
- Shoshone, represented by two tribes (Eastern Shoshone, living on the Wind River Reservation, Fort Washakie, Wyoming; Shoshone Bannock, living on the Fort Hall Reservation, Fort Hall, Idaho).
- Sioux, represented by three tribes (Cheyenne River Sioux living on the Cheyenne River Reservation, Eagle Butte, South Dakota; Oglala Sioux, living on the Pine Ridge Reservation, Pine Ridge, South Dakota; Rosebud Sioux, living on the Rosebud Reservation, Rosebud, South Dakota).

There are no trust lands, reservation lands, or tribal properties in the Planning Area. A number of treaties and policies did affect tribes in the region, but existing conditions do not reserve any lands or rights in the Planning Area. Treaties and policies included the First Treaty of Fort Laramie, the Blackfeet Treaty of 1855, the Hellgate Treaty, the Homestead Act of 1862, the Second Treaty of Fort Laramie, the Sioux Act of 1888, the Dawes Act, and the Indian Reorganization Act of 1934.

Trust Responsibilities

Secretarial Order No. 3215, "Principles for the Discharge of the Secretary's Trust Responsibility" (April 28, 2000) defines trust responsibility as responsibility toward Indian trust assets, which it defines as "lands, natural resources, money, or other tangible assets held in trust for Indian tribes and individual Indians or restricted against alienation." Therefore, the BLM "has overall responsibility for establishing, implementing, and evaluating policy for meeting…tribal consultation responsibilities" (BLM 2004e). This obligation requires a reasonable and good faith effort to identify and consider, and to carry out programs in a manner sensitive to and consistent with, Native American concerns and tribal government planning and resource management programs.

Treaty Rights and Trust Responsibilities Policy

A treaty is a formal agreement between the U.S. Government and a Native American tribe or tribes that cede land or reserve rights to the tribe(s). Executive Order 13084, Consultation with Indian Tribal Governments, and Executive Order 13007, Indian Sacred Sites, provide the framework for involving Native American tribes in the BLM planning process. BLM Manual 8120, Tribal Consultation Under Cultural Resource Authority, provides additional guidance (BLM 2004e).

Although there are no tribal government lands in the Planning Area, the BLM consults with tribes who have expressed interest in or concerns about the Planning Area to determine which groups intend to continue with government-to-government consultations. This process is ongoing.

3.9 Climate Change

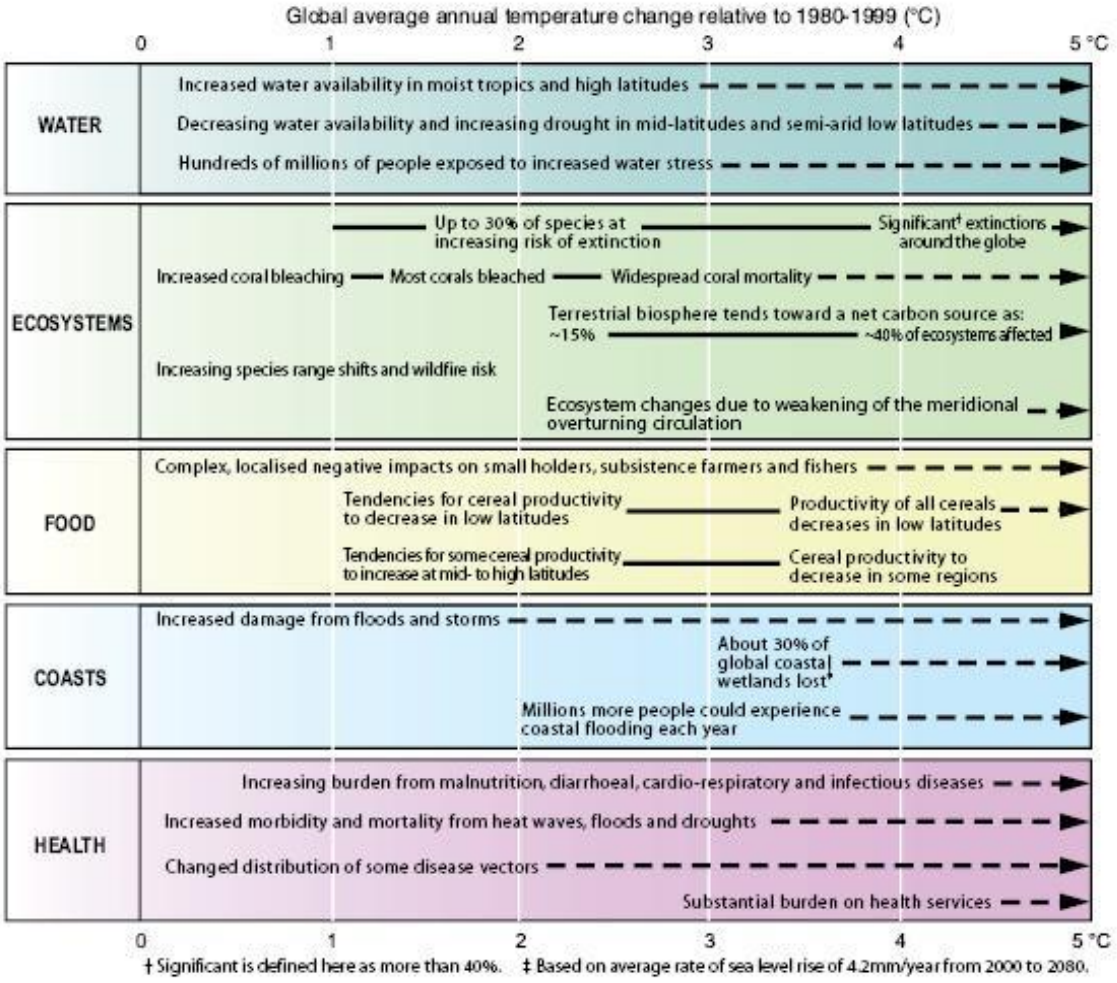
A growing body of evidence indicates that Earth's atmosphere is warming. Records show that surface temperatures in the Wyoming region have risen approximately 1.5°F since the 1960 to 1979 baseline years (Global Change Research Program 2009). The largest increase in average temperature has occurred in the winter months in the northern portions of the region. Relatively cold days in the region are becoming less frequent and relatively hot days are becoming more frequent (Global Change Research Program 2009). Observed changes in oceans, ecosystems, and ice cover are consistent with this warming trend (National Academy of Sciences 2006). Ongoing scientific research has identified the potential impacts of GHG emissions, including CO_2, CH_4, nitrous oxide (N_2O), water vapor and several trace gases, on global climate change. Through complex interactions at regional and global scales, these GHG emissions cause a net warming of the atmosphere (which makes surface temperatures suitable for life on Earth), primarily by decreasing the amount of heat energy Earth radiates back into space. Although GHG concentrations in the atmosphere and climatic conditions have varied throughout Earth's history, recent industrialization and burning of fossil fuels has caused global atmospheric CO_2 concentration to increase dramatically; this most recent CO_2 increase is likely to contribute to overall climatic changes (National Academy of Sciences 2006).

Global atmospheric concentrations of CO_2, CH_4, and N_2O have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values (as determined from ice cores spanning many thousands of years). The global increase in CO_2 concentrations is due primarily to fossil fuel use and land use change, while those of CH_4 and N_2O are due to agricultural soil management, animal manure management, sewage treatment, and mobile and stationary combustion of fossil fuels (IPCC 2007a, EPA 2009).

According to climate change researchers, the effects of climate change are expected to vary by region, season, and time of day (National Academy of Sciences 2006, Global Change Research Program 2009). Computer model forecasts indicate that increases in temperature will not be evenly or equally distributed, but are likely to be accentuated at higher latitudes. Warming during winter is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures (National Academy of Sciences 2006). Within a given region, increasing temperatures also could affect the amount of water vapor in the atmosphere, the timing and amount of precipitation, the intensity of storm systems, snow melt, and soil moisture. All of these factors can affect climate, day-to-day weather conditions, and air quality in the Planning Area.

Based on research compiled for the International Panel on Climate Change Fourth Assessment Report, 2007, (IPCC 2007a) potential effects of climate change on resources in the affected environment are likely to be varied. Figure 3-38, taken from the Fourth Assessment Report indicates varying responses of the natural world to increasing temperatures as a result of increasing global temperatures.

Figure 3-38. Examples of Impacts Associated with Global Average Temperature Change



Source: IPCC 2007a

Within North America, the report specifically forecasts that: warming in western mountains is projected to cause decreased snowpack, more winter flooding and reduced summer flows, exacerbating competition for over-allocated water resources; in the early decades of the century, moderate climate change is projected to increase aggregate yields of rain-fed agriculture by 5 to 20 percent, but with important variability among regions; major challenges are projected for crops that are near the warm end of their suitable range or which depend on highly utilized water resources; cities that currently experience heat waves are expected to be further challenged by an increased number, intensity and duration of heat waves during the course of the century, with potential for adverse health impacts; and coastal communities and habitats will be increasingly stressed by climate change impacts interacting with development and pollution. Specific modeling and/or assessments of the potential effects for the Bighorn Basin and for the state of Wyoming currently do not exist.

All of North America is likely to experience an increase in average temperature during the next 100 years, and annual mean warming is likely to exceed global mean warming in most areas (IPCC 2007a). Temperatures in the Planning Area are projected to increase substantially by the end of this century

(Global Change Research Program 2009). Summer temperatures in the Planning Area are expected to increase between approximately 7°F and 10+°F by 2080 to 2099. Overall, temperature in the region that includes the Planning Area is projected to increase between 2.5°F to more than 13°F compared to the 1960 to 1979 baseline, depending on future GHG emissions (Global Change Research Program 2009). This range of temperature increase reflects the current uncertainty in climate change modeling and represents the likely range of model projections, although lower or higher outcomes are possible.

The lack of scientific tools (models with sufficient spatial and temporal resolution) to forecast climate change even at regional scales limits the ability to quantify current and future impacts of climate change in the Planning Area. The following paragraphs describe potential future effects of climate change that can be reasonably anticipated for the Planning Area; however, some of these effects might already be occurring in the area.

Increasing temperatures in the Planning Area are likely to contribute to increased evaporation, drought frequencies, and declining water quantity. The warming of lakes and rivers will adversely affect the thermal structure and water quality of hydrological systems, which will add additional stress to water resources in the region (IPCC 2007b). The Planning Area depends on temperature-sensitive springtime snowpack to meet demand for water from municipal, industrial, agricultural, recreational uses and BLM-authorized activities. The USGS notes that mountain ecosystems in the western United States are particularly sensitive to climate change, especially in the higher elevations, where much of the snowpack occurs, which have experienced three times the global average temperature increase over the past century (USGS 2010). Higher temperatures are causing more winter precipitation to fall as rain rather than snow, which contributes to earlier snowmelt. Additional declines in snowmelt associated with climate change are projected, which would reduce the amount of water available during summer (Global Change Research Program 2009). Rapid spring snowmelt due to sudden and unseasonal temperature increases can also lead to greater erosive events and unstable soil conditions.

Increases in average summer temperatures and earlier spring snowmelt in the Planning Area are expected to increase the risk of wildfires by increasing summer moisture deficits (Global Change Research Program 2009). Studies have shown that earlier snowmelts can lead to a longer dry season, which increases the incidence of catastrophic fire (Westerling et al. 2006). Together with historic changes in land use, climate change is anticipated to increase the occurrence of wildfire throughout the western United States.

There is evidence that recent warming is impacting terrestrial and aquatic biological systems (IPCC 2007b). Warming temperatures are leading to earlier timing of spring events such as leaf-unfolding, bird migration, and egg-laying (IPCC 2007b). The range of many plant and animal species has shifted poleward and to higher elevation, as the climate of these species' traditional habitat changes. As future changes in climate are projected to be even greater than those in the recent past, there will likely be even larger range shifts in the coming decades (Lawler et al. 2009). Warming temperatures are also linked to earlier "greening" of vegetation in the spring and longer thermal growing seasons (IPCC 2007b). In aquatic habitats, increases in algal abundance in high-altitude lakes have been linked to warmer temperatures, while range changes and earlier fish migrations in rivers have also been observed (IPCC 2007b). Climate change is likely to combine with other human-induced stress to further increase the vulnerability of ecosystems to other pests, invasive species, and loss of native species. Climate change is likely to affect breeding patterns, water and food supply, and habitat availability to some degree. Sensitive species in the Planning Area, such as the sage-grouse, which are already stressed by declining habitat, increased development and other factors, could experience additional pressures as a result of climate change.

More frequent flooding events, erosion, wildfires and hotter temperatures all pose increased threats to cultural and paleontological sites and artifacts. Heat from wildfires, suppression activities and equipment, as well as greater ambient daytime heat can damage sensitive cultural resources. Similarly, flooding and erosion can wash away artifacts and damage cultural and paleontological sites. However, these same events may also uncover and lead to discoveries of new cultural and paleontological localities.

Climate change also poses challenges for many resource uses on BLM-administered land. Increased temperatures, drought and evaporation may reduce seasonal water supplies for livestock and could impact forage availability. However, in non-drought years, longer growing seasons resulting from thermal increases may increase forage availability throughout the year. Shifts in wildlife habitat due to climate change may influence hunting and fishing activities, and early snowmelt may impact winter and water-based recreational activities. Drought and resulting stress on vegetation could increase the frequency and intensity of mountain bark beetle and other insect infestations, which further increases the risk of fire and reduces the potential for sale of forest products on BLM-administered lands.

A variety of activities in the Planning Area currently generate GHGs. Fuels combustion, industrial processes and any number of other activities on public lands result in direct emissions of GHGs. Direct emissions in the Planning Area include those related to current and ongoing oil and gas and other minerals development, fire events, motorized vehicle use (e.g., OHVs), livestock grazing, facilities development, and other fugitive emissions. Indirect GHG emissions in the Planning Area include the demand for electricity generated outside the area. Contributions to climate change also result from land use changes (conversion of land to less reflective surfaces that absorb heat, such as concrete or pavement), and soil erosion (which can reduce snow's solar reflectivity and contribute to faster snowmelt).

Climate change science and projections of climate change is a continually growing and emerging science. Additional and recent information on climate change and regional projections of climate change for the Planning Area can be found through the following links:

- U.S. Global Change Research Program: http://www.globalchange.gov/
- Intergovernmental Panel on Climate Change (IPCC): http://www.ipcc.ch/

Several federal initiatives have been launched to improve the ability to understand, predict, and adapt to the challenges of climate change. The Secretary of the Interior signed Secretarial Order 3289 on February 22, 2010, establishing a Department-wide, scientific-based approach to increase understanding of climate change and to coordinate an effective response to impacts on managed resources. The order reiterated the importance of analyzing potential climate change impacts when undertaking long-range planning issues, and also established several initiatives including the development of eight Regional Climate Science Centers. Regional Climate Science Centers would provide scientific information and tools that land and resource managers can apply to monitor and adapt to climate changes at regional and local scales (DOI 2010). The North Central Climate Science Center, which will incorporate the Planning Area, has a target establishment date of 2011.

Given the broad spatial influence of climate change which requires response at the landscape-level, the DOI also established Landscape Conservation Cooperatives which are management-science partnerships that help to inform management actions addressing climate change across landscapes. These Cooperatives are formed and directed by land, water, wildlife and cultural resource managers and interested public and private organizations, designed to increase the scope of climate change response beyond federal lands.

Rapid ecoregional assessments are one of the tools the BLM uses to monitor and respond to the effects of climate change. Ecoregional assessments are geospatial landscape evaluations that are designed to identify areas of high ecological value within an ecoregion that may warrant conservation, adaptation, or restoration. These assessments can help to identify resources that are being impacted by climate change and provide information to facilitate the subsequent development of an ecoregional conservation strategy for plants, wildlife and fish communities on public lands. Ecoregional assessments can identify areas, species, and ecological features and services that are sensitive to ecosystem instability and changes in climatic conditions. One of the objectives of the BLM rapid ecoregional assessments is to provide guidance for adaptation and mitigation planning in response to climate change.

In addition to efforts being undertaken to better respond and adapt to climate change, other federal initiatives are being implemented to mitigate climate change. The Carbon Storage Project was implemented to develop carbon sequestration methodologies for geological (i.e., underground) and biological (e.g., forests and rangelands) carbon storage. The project is a collaboration of federal agency and external stakeholders to enhance carbon storage in geologic formations and in plants and soils in an environmentally responsible manner. The Carbon Footprint Project is a project to develop a unified GHG emission reduction program for the DOI, including setting a baseline and reduction goal for the Department's GHG emissions and energy use. More information about DOI's efforts to respond to climate change is available at: www.doi.gov/archive/climatechange/.