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DOI-BLM-WY-R000-2016-0001-EA

August 2016

BLM-Wyoming
August 2016 Competitive Oil & Gas Lease Sale
Wind River/Bighorn Basin District

Wind River/Bighorn Basin District, Wyoming



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

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**Wind River/Bighorn Basin District
August 2016 Lease Parcels
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1. Introduction

1.1 Introduction

This Environmental Assessment (EA) for the Wind River /Bighorn Basin District (WR/BBD) portion of the Bureau of Land Management (BLM) Wyoming State Office (WSO) quarterly competitive oil and gas lease sale has been prepared in conformance with Instruction Memorandum No. 2010-117 and the Wyoming Leasing Reform Implementation Plan of 2010. Parcels evaluated in this EA are within the BLM's WR/BBD, which includes the Lander Field Office (LFO), the Worland Field Office (WFO), and the Cody Field Office (CyFO). The WR/BBD participates in lease sales in February and August of each year.

Pursuant to 40 CFR § 1508.28 and § 1502.21, this EA tiers to and incorporates by reference the information and analysis contained in the Environmental Impact Statements (EIS), Records of Decisions (ROD) and Approved Resource Management Plans (RMP) for the Lander Field Office (LFO 2014), the Worland Field Office (WFO 2015), and the Cody Field Office (CyFO 2015).

The 2013 Lander Proposed Resource Management Plan and Final Environmental Impact Statement for the Lander Field Office Planning Area (RMP FEIS), and the 2015 Bighorn Basin Proposed Resource Management Plan and FEIS for the Worland and Cody Field Offices Planning Areas, formed the basis for the RMPs and RODs. Parcels offered for lease sale including the stipulations are provided in Appendix I., Lander, and Appendix B., Worland and Cody. References:

- Proposed Resource Management Plan and Final Environmental Impact Statement for the Lander Field Office Planning Area, February 22, 2013 (two volumes)
- <http://www.blm.gov/wy/st/en/programs/Planning/rmps/lander/docs/PRMP-FEIS.html>
- Lander Record of Decision and Approved Resource Management Plan for the Lander Field Office Planning Area, June 26, 2014
- Post ROD Changes
- <https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage¤tPageId=28453>
- Bighorn Basin Proposed Resource Management Plan and Final Environmental Impact Statement, May 28, 2015
- Rocky Mountain Region Record of Decision (ROD) Worland Field Office, September 22, 2015
- Worland Field Office Resource Management Plan, September 22, 2015
- Rocky Mountain Region Record of Decision (ROD) Cody Field Office, September 22, 2015
- Cody Field Office Resource Management Plan, September 22, 2015
- <https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage¤tPageId=19107>

The mineral estate for the parcels shown in Attachment 1 was identified through the RMPs as open to oil and gas leasing and identified stipulations to be applied. The FEIS for each Field Office analyzed the impacts of oil and gas development on lands open to leasing including impacts to other resource values.

This EA serves to verify conformance with the approved Land Use Plans and disclose the affected environment, the anticipated impacts, and proposed mitigation of impacts. The EA provides evidence for determining whether to prepare an environmental impact statement (EIS) or to support a “Finding of No Significant Impact” (FONSI). An EIS would be prepared for the project if the decision maker determines that this project has significant impacts not already disclosed and analyzed in other NEPA documents, such as RMP EISs, based upon the analysis in the EA. A FONSI documents the reasons why implementation of the selected alternative would not result in “significant” environmental impacts (effects). The RMP EISs have already evaluated potentially significant impacts arising from the BLM’s land use planning decisions. See 43 CFR § 46.140(c), therefore, the BLM anticipates a “finding of no new significant impacts” (FONNSI). When a FONNSI statement is reached, a Decision Record (DR) may be signed approving the selected alternative, which could be the proposed action, another alternative, or a combination thereof.

During the preparation of the RMPs, the BLM deferred leasing any parcels that would have limited the choice of reasonable alternatives in the RMP RODs. Parcels deferred from previous lease sales that are open for leasing in the approved RMPs may now be reviewed in this and future lease sales.

After careful review of the parcels, the BLM has determined that it was appropriate to defer certain parcels nominated for inclusion in the August 2016 oil and gas lease sale. These deferrals of certain nominated parcels were made consistent with the BLM's sage-grouse conservation plans and strategy, which direct the BLM to prioritize oil and gas leasing and development in a manner that minimizes resource conflicts in order to protect important habitat and reduce development time and costs.

In total, 62 parcels containing 76,296.81 acres located within the field offices in the WR/BBD were nominated through “Expressions of Interest” for the August 2016 Competitive Oil and Gas Lease Sale, which are available for leasing through the applicable RMPs. For the reasons identified above, the BLM exercised its discretion to defer 12 of those parcels containing 9,653.99 acres. As result of these deferrals, this EA analyzes 50 parcels containing 66,642.82 acres located within the WR/BBD.

Table 1-1 summarizes the number of parcels nominated through EOI, the number of parcels deferred, and the number of parcels which are analyzed further in this EA. The parcels which have been deferred are identified in Table 1-2.

Table 1-1 Parcel and Acreage Summary

Office	EOI Parcels	Deferred Parcels	Analyzed Parcels	EOI Acres	Deferred Acres	Analyzed Acres
Lander	20	10	10	15,307.550	8,534.670	6,772.880
Worland	22	1	21	25,943.160	799.320	25,143.840
Cody	20	1	19	35,046.100	320.000	34,726.100
WR/BBD Total	62	12	50	76,296.810	9,653.990	66,642.820

Table 1-2 Parcel and Acreage Deferred Summary

Parcel Number	Office	Acres Deferred
WY-1608-073	LFO	568.180
WY-1608-074	LFO	600.000
WY-1608-075	LFO	183.780
WY-1608-076	LFO	2,371.040
WY-1608-077	LFO	200.000
WY-1608-081	LFO	241.820
WY-1608-082	LFO	1,053.470
WY-1608-083	LFO	440.000
WY-1608-084	LFO	2,560.000
WY-1608-085	LFO	316.380
WY-1608-091	WFO	799.320
WY-1608-103	CyFO	320.000
Total Acres		9,653.990

1.2 Background

The Mineral Leasing Act of 1920, as amended [30 U.S.C. § 181 et seq.], and the Mineral Leasing Act for Acquired Lands of 1947, as amended, give the BLM responsibility for oil and gas leasing on about 564 million acres of BLM, national forest, and other federal lands, as well as State and private surface lands where mineral rights have been retained by the federal government. The BLM works to ensure that mineral resources are developed in an environmentally responsible manner.

As required by 43 CFR § 3120.1-2, the BLM WSO conducts a quarterly competitive oil and gas lease sales to sell available oil and gas leases. Interested parties file Expressions of Interest (EOIs) to nominate parcels for leasing by the BLM. Complete information on the competitive lease sale notices & results process is available on line at:

http://www.blm.gov/wy/st/en/programs/energy/Oil_and_Gas/Leasing.html

In the process of preparing a lease sale, the BLM WSO sends a draft parcel list to each District Office administering the nominated parcels. District and field office staff review the parcels to:

- verify the legal descriptions of the parcels and verify the parcels are in areas open to leasing;
- remove from further analysis any parcel in an area which is not available for leasing;
- ensure conformance with the approved RMPs by applying appropriate stipulations and lease notices to each parcel;
- determine if new information has become available since the approval of the RMP, which might change any analysis;
- conduct consultations, including consultation with the Wyoming Game and Fish Department (WGFD) and, as necessary, other federal agencies, state and local agencies, community stakeholders, and others.

Staffs conduct field visits of the nominated parcels as necessary to validate existing data or gather new information in order to make an informed leasing recommendation. Additional information obtained after the publication of the Nominated Competitive Lease Sale may result in withdrawal of certain parcels prior to the day of the lease sale. The BLM State Director retains the authority to withdrawal parcels prior to sale.

1.3 Purpose and Need

It is the policy of the BLM as derived from various laws, including the Mineral Leasing Act of 1920, as amended and the Federal Land Policy and Management Act of 1976 (FLPMA) to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs. Continued sale and issuance of lease parcels would allow for continued production of oil and gas from public lands and reserves.

The need is established by the Federal Onshore Oil & Gas Leasing Reform Act of 1987 (FOOGLRA) to respond to Expressions of Interest, the Federal Land Policy Management Act, and Mineral Leasing Act of 1920, as amended.

1.4 Conformance with BLM Land Use Plans

The Lander, Worland, and Cody RMPs identified the parcels nominated for the lease sale as available for leasing. The RMPs identify leasing stipulations for application to the parcels. As authorized in 43 CFR § 3101.1-3, all parcels are subject to three standard Lease Notices, one unnumbered Lease Stipulation, and three standard Lease Stipulations.

1.5 Relationship to Statutes, Regulations, or Other Plans

The proposed action and alternatives are consistent with other plans, programs, and policies of affiliated Tribes, other federal agencies, state, and local governments to the extent practical, including but not limited to the following:

- Federal Land Policy and Management Act of 1976, as amended [43 U.S. Code § 1701 et seq.]
- Mineral Leasing Act of 1920, as amended [30 U.S.C. § 181 et seq.]
- Federal Onshore Oil & Gas Leasing Reform Act of 1987 [30 U.S.C. § 181 et seq.]
- The National Environmental Policy Act [42 U.S.C. 4321 et seq.]
- Clean Air Act [42 U.S.C. § 1857 et seq.], as amended and recodified [42 U.S.C. § 7401 et seq.]
- Clean Water Act [33 U.S.C. § 1251 et seq.]
- Public Rangelands Improvement Act of 1978 [U.S.C. § 1901]
- Endangered Species Act [16 U.S.C. § 1531 et seq.]
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- Migratory Bird Treaty Act [16 U.S.C. § 703 et seq.]
- National Trails Systems Act [16 U.S.C. § 1241 et seq.]
- National Landscape Conservation System Act [16 U.S.C. § 7202]
- National Historic Preservation Act of 1966, as amended [16 U.S.C. § 470 et seq.]
- Protection of Historic Properties (36 CFR § 800)
- Native American Graves Protection and Repatriation Act of 1990 [25 U.S.C. § 3001 et seq.] and 43 CFR § 10
- American Indian Religious Freedom Act of 1978 [42 U.S.C. 1996]
- Native American Trust Resource Policy standards are presented in the Department of the Interior Comprehensive Trust Management Plan dated March 28, 2003
- Wild and Scenic Rivers Act of 1968, as amended [16 U.S.C. § 1271 et seq.]
- U.S. Fish and Wildlife Service, Bald and Golden Eagle Protection Act of 1940, as amended [16 U.S.C. § 668 et seq.]
- Paleontological Resources Preservation Act of 2009 [16 U.S.C. §470aaa et seq.]

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to take into account the effects of their undertakings on historic properties. Compliance with Section 106 of the NHPA is a non-discretionary action that all federal agencies must perform. The RMPs considered known important cultural sites in identifying stipulations.

The implementing regulations at 36 CFR § 800 allow for a phased approach to compliance with the NHPA. Since it is impossible to determine the type and extent of surface disturbance associated with oil and gas development at the leasing stage, BLM completes its compliance responsibilities when a proponent submits an Application for Permit to Drill (APD) or other application for surface-disturbing activities on the federal lease. Due to this approach, BLM may not be aware of all cultural resources that are located in proposed lease parcels. In order to address any lack of data at this stage, every fluid mineral lease issued by BLM includes the special lease stipulation, which reads:

This lease may be found to contain previously unknown historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and

Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.

Cultural resource specialists reviewed each parcel to determine if it contains known sites that are difficult or impossible to mitigate. Reviews included BLM and State Historic Preservation Officer (SHPO) record and file searches for known sites in or near each parcel. When BLM receives an APD, a site-specific cultural records review is completed to determine if there is a need for cultural inventory for areas affected by surface-disturbing activities. Cultural resource inventory is required prior to new surface disturbance. All sites that are determined to be historic properties (sites that are listed on or are eligible for listing on the National Register of Historic Places) are avoided or mitigated. If avoidance or mitigation is not possible, proposals may be modified or denied. A determination of a significant adverse effect could result in the need to prepare an EIS in order to authorize the proposal.

If a decision maker determines a resource is difficult or impossible to mitigate and wishes to apply lease stipulations or exclude the site from leasing, the RMP must be updated or amended prior to leasing.

1.6 Identification of Issues and Scoping

Scoping: A listing of parcels to be offered at the auction will be posted by the BLM WSO in the public room at least 90 days before the auction is held. A press release is submitted to the local newspapers for publication and other media outlets announcing the availability of the EA and Sale Notice, which is posted on the BLM leasing website for public review and comment. If the BLM owns the mineral estate within split estate lands, the BLM notifies the surface owner (as identified by the party submitting the EOI) of the lease nomination and a second notification that the EA is available for review and comment.

Issues: The Council on Environmental Quality (CEQ) regulations state: “NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail” (40 CFR § 1500.1(b)). 40 CFR § 1500.4(g) directs that the scoping process should be used “not only to identify significant environmental issues deserving of study but also to deemphasize insignificant issues narrowing the scope of the EIS process accordingly.” Significant issues directly influence the initiation, development, and technical design of the proposal; are disclosed in the analysis; and were used to develop alternatives to the proposed action. Issues are significant because of the extent of their geographic distribution, the duration of their effects, or the intensity of interest or resource conflict (BLM 2008).

Non-significant issues are identified as those:

- 1) outside the scope of the proposed action;
- 2) already decided by law, regulation, or other higher level decision;

- 3) unrelated to the decision to be made; or
- 4) conjectural and not supported by scientific or factual evidence.

CEQ NEPA regulations explain this delineation in 40 CFR § 1501.7, "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (40 CFR § 1506.3)..."

2. Description of Alternatives, Including Proposed Action

2.1 Introduction

Chapter 2 provides a description of each alternative to be analyzed in detail, a brief description of alternatives that were considered but not analyzed in detail, and a brief summary of the environmental effects of the proposed action and alternatives.

2.2 No Action Alternative

The No Action Alternative would mean that an Expressions of Interest to lease, a parcel nomination, would be denied or rejected at this time, and a lease would not be offered for that parcel in the August 2016 sale.

2.3 Proposed Action Alternative

The Proposed Action would offer for lease 50 parcels nominated through an EOI in the WR/BBD, covering 66,642.820 acres, with stipulations required by the respective RMPs. Attachment 1 to this EA identifies the parcels proposed for leasing with applicable lease stipulations.

In conformance with regulations in 43 CFR § 3120.1, sold oil and gas leases would be issued for a 10-year period and would continue for as long thereafter as oil and gas is produced in paying quantities. If a lessee fails to produce oil and gas, does not make annual rental payments, does not comply with the terms and conditions of the lease, or relinquishes the lease, the lease would terminate.

2.4 Alternatives Considered and Eliminated from Further Analysis

Offering Subject to Standard Lease Terms and Conditions

Offering all nominated parcels with only the lease terms and conditions on the lease form was considered as a means to reduce impediments to oil and gas development on public lands. Such an alternative is not in conformance with the approved RMPs where the applicable RMP prescribes stipulations in accordance with FLMPA's Section 102(8) mandate to manage the public lands to protect resource values. Therefore, this alternative was not analyzed in detail.

No other alternatives to the proposed action were identified that would meet the purpose and need of the proposed action.

3. Affected Environment and Environmental Effects

3.1 Introduction

This chapter characterizes the environment and environmental effects, resources, and uses that have the potential to be affected by the proposed action, followed by a comparative analysis of the direct, indirect and cumulative impacts of the alternatives. Aspects of the affected environment described in this section focus on relevant major resources and issues to determine if a significant impact may occur. Only those aspects of the affected environment that are potentially impacted are described in detail.

CEQ defines cumulative effects as:

The impact on the environment which results from the incremental impact of the action when added or other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7)

There are approximately 847 active, producible, serviceable federal wells in the Lander Field Office and approximately 2,598 active, producible, or service federal wells in the Worland and Cody Field Offices combined.

3.2 General Analysis Assumptions and Data Limitations

Direct effects of leasing are the creation of a valid existing rights, and the revenue generated by the lease sale receipts. The residual effects of leasing would only occur if or when the leases were developed. Such development requires additional analysis and decision making although the BLM's subsequent decisions could not conflict with the valid rights afforded by the lease. The level of development that might occur as an outcome leasing is unknown. A more precise description of environmental effects would be possible if the exact level of development were known. The BLM determined that any estimation of development at this time is too speculative to be analyzed as part of this EA. The BLM determined that the RMP resource protections provide adequate consideration of resource values and the potential for adverse impacts to be evaluated at the leasing stage.

Existing data are used to determine resource presence on each parcel. Resource presence may change after this analysis and prior to development. Site specific surveys and data gathering would occur prior to lease development, and conditions of approval may be added as necessary to protect resources.

Both the LFO FEIS and BB FEIS analyzed in detail the resources in the District. The following descriptions and subsequent analysis include information that has changed since the FEIS were written, new circumstances that have arisen, or new data that are available.

3.3 General Setting

Lander Field Office (LFO)

The LFO planning area encompasses 6.6 million acres in central Wyoming and includes most of Fremont County, the southwest corner of Natrona County, and small portions of Carbon, Sweetwater and Hot Springs counties. Of the 6.6 million acres, 2.4 million acres are public lands managed by the BLM and approximately 2.7 million acres of federal mineral estate.

Approximately 2.2 million acres of the planning area are within the Wind River Indian Reservation (WRIR). The BLM has a fiduciary trust responsibility for the management of minerals on the WRIR. The BLM does not make land management decisions for the WRIR, and duties associated with trust responsibilities are performed independent of the provisions of the Lander RMP.

Worland Field Office (WFO)

The WFO encompasses 3.4 million acres. This area includes Big Horn, Hot Springs, Washakie, and Park counties. The WFO manages over 2 million acres of public land and 2.7 million acres of federal mineral estate.

Cody Field Office (CyFO)

The CyFO encompasses 2.2 million acres of the Big Horn Basin in north central Wyoming, includes portions of Park and Big Horn counties, and is bordered by the Shoshone and Bighorn National Forests. CyFO manages 1.1 million acres of public land and 1.5 million acres of federal mineral estate within this area.

3.4 Resources Considered and Eliminated From Further Analysis

The BLM has determined that the recent analysis of the following resources in the FEIS was thorough and adequate and that no new circumstances or data, which would require additional analysis, has been identified. The BLM will revise these sections if additional information is provided that was not included in the RMP FEIS. Parcels offered for sale are subject to the stipulations shown in Attachment 1.

3.4.1 Lands with Wilderness Characteristics

No parcels were nominated in areas with lands with wilderness characteristics.

Reference:

LFO FEIS Section 3.1.6 and Decisions 1051-1054;

BB FEIS section 3.6.6, WFO Decisions 6194 – 6197, and CyFO Decisions 6122 – 6125.

3.4.2 Wild and Scenic Rivers

There are no designated Wild and Scenic Rivers in the District, and no parcels were nominated which include waterways that have been found eligible for Wild and Scenic Rivers designation.

Reference:

LFO FEIS Section 3.7.3 and Decisions 7039 - 7054;

BB FEIS Section 3.7.5, WFO Decision 7046, and CyFO Decision 7100.

3.4.3 Wilderness and Wilderness Study Areas

Wilderness Study Areas (WSAs) are managed to maintain their suitability as wilderness, and are closed to oil and gas leasing. No parcels were nominated within Wilderness Study Areas.

Reference:

LFO FEIS Section 3.7.2 and Decisions 7030 – 7038;

BB FEIS Section 3.7.6, WFO Decisions 7047 – 7059, and CyFO Decisions 7101 – 7110.

3.4.4 Livestock Grazing Management

At the leasing stage, there are no identified impacts to livestock grazing.

Reference:

LFO FEIS Section 3.6.7 and 4.6.5, and Decisions 6050 - 6075;

BB FEIS Section 3.6.7 and 4.6.7, WFO Decisions 6198 - 6214, and CyFO Decisions 6126 – 6142.

3.4.5 Air Quality & Climate Change

3.4.5.1 Air Resources

Air quality, air quality related values (AQRVs), such as visibility and atmospheric deposition, and climate change are the components of air resources which the BLM must consider and analyze to address the potential effects of authorized activities on air resources as part of the planning and decision making process.

The LFO RMP FIES 4.1.1 and 4.9, and the BB RMP FEIS 4.1.1 contain Air Resources Management Plans (ARMP) which evaluated air quality issues, impacts, and potential mitigations. The LFO FEIS evaluated air protections that were in the Proposed Plan which subsequently were incorporated in the ROD in Decisions 1001 – 1008(see Appendix D of the Lander Air Resources Management Plan). The BB FEIS also evaluated air protections that were in the Proposed Plan which subsequently were incorporated in the WFO RMP Decisions 1001 – 1006, and CyFO RMP Decisions 1001 – 1006 (see Appendix M of the Bighorn Basin Air Resources Management Plan).

There are no direct impacts to air quality or climate change through the administrative action of leasing. Indirect effects from leasing may occur to air quality or climate change if development were to occur. At the time of a site-specific application, such as an APD, air quality or climate change will be evaluated to conform with the State of Wyoming Department of Environmental Quality (WYDEQ) and BLM air quality standards. As new information is gathered, it will be

incorporated into BLM decisions and may require conditions of approval to mitigate adverse impacts to air quality or climate change.

Since the signing of the three RODs, two National Ambient Air Quality Standards (NAAQS) have changed. The 24 hour PM_{2.5} standard which was 15 µg/m³ is now 12, and the the ozone standard which was 75 ppb is now 70.

3.4.5.2 Air Quality

Regional air quality is influenced by the interaction of meteorology, climate, the magnitude and spatial distribution of local and regional air pollutant sources, and the chemical properties of emitted air pollutants.

Pollutant concentration can be defined as the mass of pollutants present in a volume of air and is reported in units of micrograms per cubic meter (µg/m³), parts per million (ppm), or parts per billion (ppb). The monitoring and enforcement of air-quality standards is administered by the Wyoming Department of Environmental Quality-Air Quality Division (WYDEQ). 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, and the state of Wyoming has used monitoring and modeling to determine compliance with WAAQS and NAAQS. Concentrations above the WAAQS and NAAQS represent a risk to human health that, by law, require public safeguards 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 (CAA). Currently, the WYDEQ-AQD does not regulate greenhouse gas emissions other than for permitted major stationary sources.

3.4.5.3 Criteria Air Pollutants

Criteria air pollutants are those for which national concentration standards have been established. If the air quality in a geographic area meets the NAAQS, it is designated an attainment area; areas that do not meet the NAAQS are designated nonattainment areas and must develop comprehensive state plans to reduce pollutant concentrations to a safe level.

Attainment/nonattainment status is determined separately for each criteria pollutant. Five of the six criteria pollutants for which the EPA has established NAAQs are:

- Carbon monoxide (CO): CO is an odorless, colorless gas formed during combustion of any carbon-based fuel, such as during the operation of engines, fireplaces, and furnaces. Because carbon monoxide data are generally collected only in urban areas where automobile traffic levels are high, recent data are often unavailable for rural areas.
- Nitrogen dioxide (NO₂): NO₂ is a highly reactive compound formed at high temperatures during fossil fuel combustion. During combustion, nitrogen monoxide (NO) is released into the air which reacts with oxygen in the atmosphere to form NO₂. NO plus NO₂ forms a mixture of nitrogen gases, collectively called oxides of nitrogen (NO_x). NO_x emissions can convert to ammonium nitrate particles and nitric acid, which can cause visibility impairment and atmospheric deposition. NO_x can contribute to “brown cloud” conditions and ozone

formation, and can convert to ammonium (NH₄), nitrate particles (NO₃), and nitric acid (HNO₃). Internal combustion engines are a major source of NO_x emissions.

- **Ozone:** Ozone is a gaseous pollutant that is not emitted directly into the atmosphere but is formed in the atmosphere from complex photochemical reactions involving NO_x and reactive volatile organic compounds (VOCs). Common sources of VOCs include automotive and heavy equipment emissions, paints and varnishes, oil and gas operations, and wildfires. Ozone is a strong oxidizing chemical that can burn the lungs and eyes and damage plants. Ozone is a severe respiratory irritant at concentrations in excess of the federal standards.
- **Particulate matter (PM):** PM is small particles suspended in the air that settle to the ground slowly and may be re-suspended if disturbed. Ambient air particulate matter standards are based on the size of the particle. The two types of particulate matter are:
 - PM₁₀ (particles with diameters less than 10 micrometers): small enough to be inhaled and capable of causing adverse health effects.
 - PM_{2.5} (particles with diameters less than 2.5 micrometers): small enough to be drawn deeply into the lungs and cause serious health problems. These particles are a primary cause of visibility impairment.
- **Sulfur dioxide (SO₂) and sulfates (SO₄):** SO₂ and SO₄ form during combustion from trace levels of sulfur in coal or diesel fuel. SO₂ also participates in chemical reactions and can form sulfates and sulfuric acid in the atmosphere.

The Wyoming DEQ has also established WAAQS, which are state-specific air quality standards for criteria pollutants. The standards and relevant averaging periods are summarized in Table 3-1 Summary of Ambient Air Quality Standards for Criteria Pollutants.

Table 3-1 Summary of Ambient Air Quality Standards for Criteria Pollutants

Pollutant (Units)	Averaging Period	NAAQS	WAAQS
Ozone (ppb)	8-hour ¹	70	75
NO ₂ (ppb)	1-hour ²	100	100
	Annual ³	53	53
SO ₂ (ppb)	1-hour ⁴	75	75
CO (ppb)	1-hour ⁵	35,000	35,000
	8-hour ⁵	9,000	9,000
PM ₁₀ (µg/m ³)	24-hour ⁶	150	150
	Annual ³	--	50
PM _{2.5} (µg/m ³)	24-hour ⁷	35	35
	Annual ⁸	12	12

µg/m³ micrograms per cubic meter

CO carbon monoxide

NAAQS National Ambient Air Quality Standards

NO₂ nitrogen dioxide

PM₁₀ particulate matter less than 10 microns in diameter

PM_{2.5} particulate matter less than 2.5 microns in diameter

ppb parts per billion

SO₂ sulfur dioxide

WAAQS Wyoming Ambient Air Quality Standards

1 The 3-year average of the fourth-highest daily maximum 8-hour average ozone concentration must not exceed this standard.

2 The 3-year average of the 98th percentile of the daily maximum 1-hour average NO₂ concentration is not to exceed this standard.

3 Not to be exceeded.

4 The 3-year average of the 99th percentile of the daily maximum 1-hour average SO₂ concentration must not exceed this standard.

5 Not to be exceeded more than once per year.

Pollutant (Units)	Averaging Period	NAAQS	WAAQS
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6 Not to be exceeded more than once per year on average over 3 years.

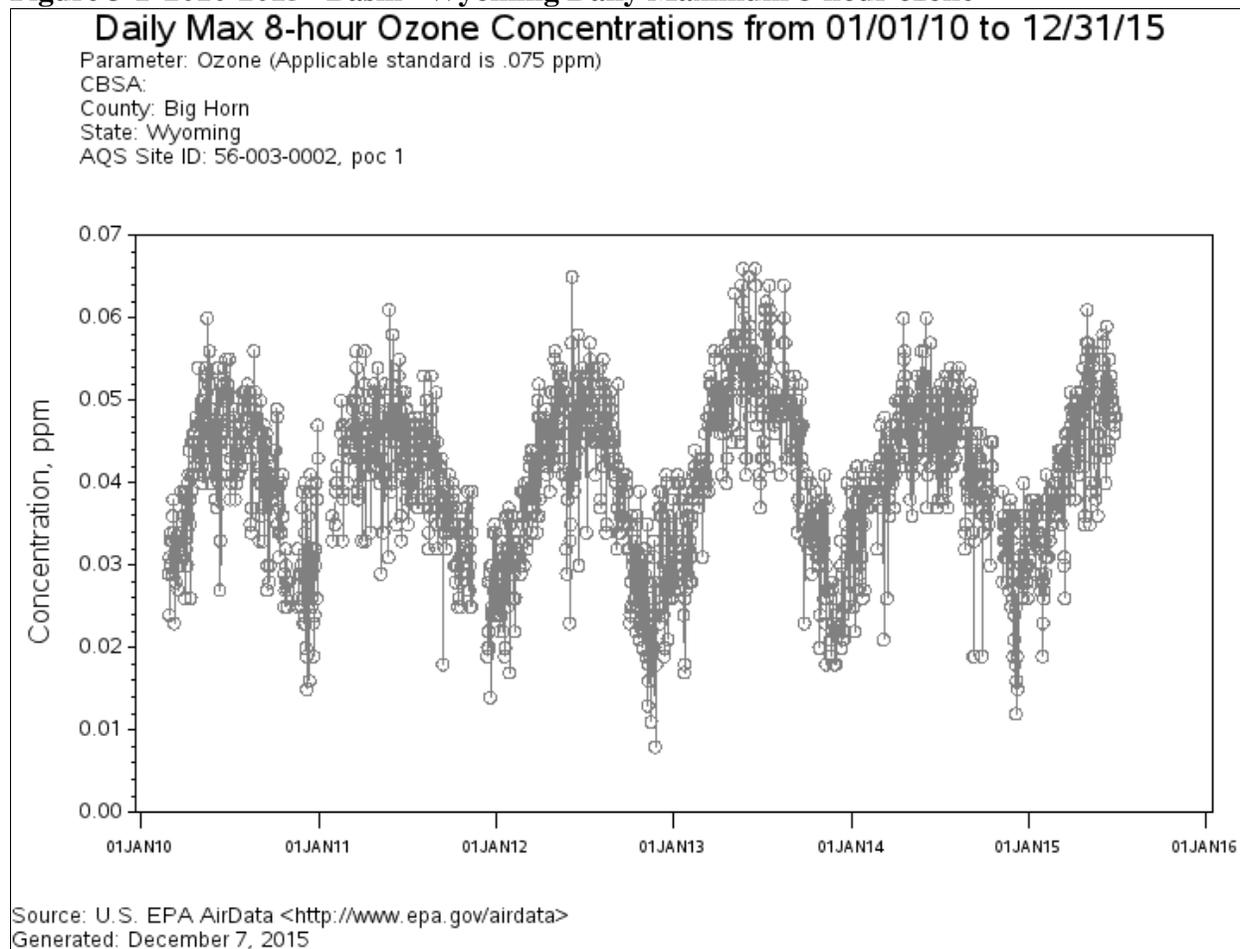
7 The 3-year average of the 98th percentile 24-hour average PM2.5 concentration is not to exceed this standard.

8 The 3-year average of the annual average PM2.5 concentration is not to exceed this standard.

3.4.5.4 Ozone

Ozone levels in the area meet the WAAQS and the NAAQS. The BLM-Wyoming Air Resource Monitoring System (WARMS) contains the “Basin” site (the site is located just east of U.S. 16 (State Road 789), approximately 4 miles northwest of the town of Manderson, Wyoming, and 7 miles south of Basin, Wyoming). Figure 3-1 shows ozone data from the “Basin” station from 2010-2015.

Figure 3-1 2010-2015 “Basin” Wyoming Daily Maximum 8-hour ozone



Reference: <http://www.epa.gov/airdata>

3.4.5.5 Visibility

The Clean Air Act includes “as a National Goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I federal areas in which impairment results from manmade air pollution.” The CAA gives federal managers the affirmative responsibility, but no regulatory authority, to protect air quality-related values, including

visibility, from degradation. A wide variety of pollutants can impact visibility, including PM, NO₂, NO₃, and SO₄. Fine particles suspended in the atmosphere decrease visibility by blocking, reflecting, or absorbing light. Regional haze occurs when pollutants from widespread emission sources become mixed in the atmosphere and travel long distances.

Visibility is quantified in terms of the deciview (dv), which is defined as a change in light extinction, with one dv representing the minimal perceptible change in visibility to the human eye, and in terms of the Standard Visible Range (SVR), which is defined as the greatest distance that a standard object can be seen by the unaided eye. Figures 3-2 and 3-3 show annual visibility in deciviews from 2002 to 2014 for the North Absaroka and from 2003 to 2014 for the Cloud Peak Interagency Monitoring of Protected Visual Environments (IMPROVE) sites.

Figure 3-2 North Absaroka annual IMPROVE visibility (2002-2014).

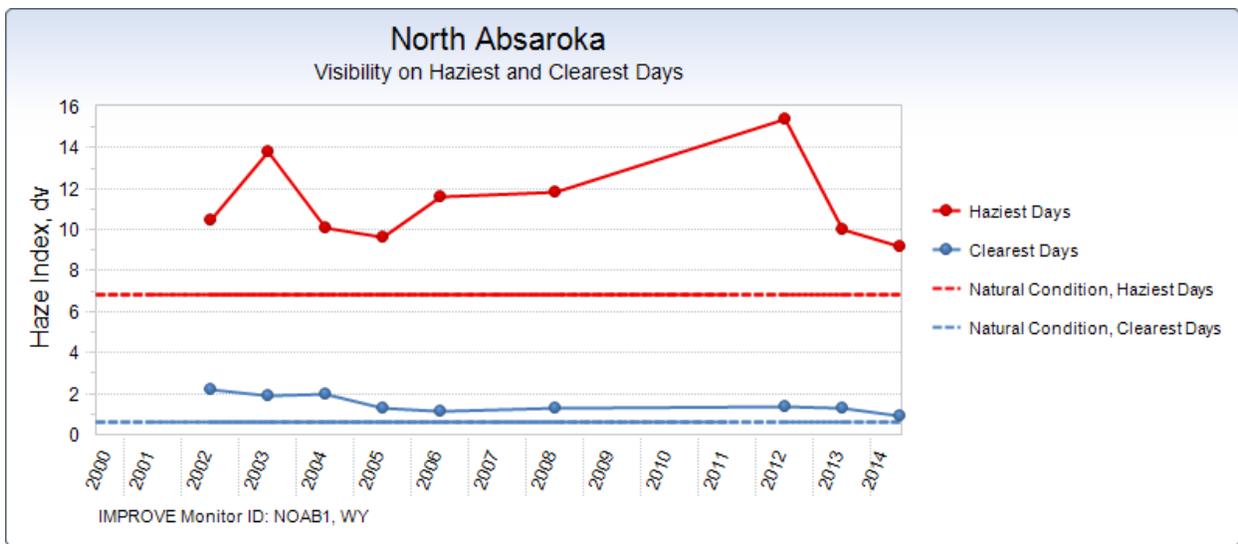
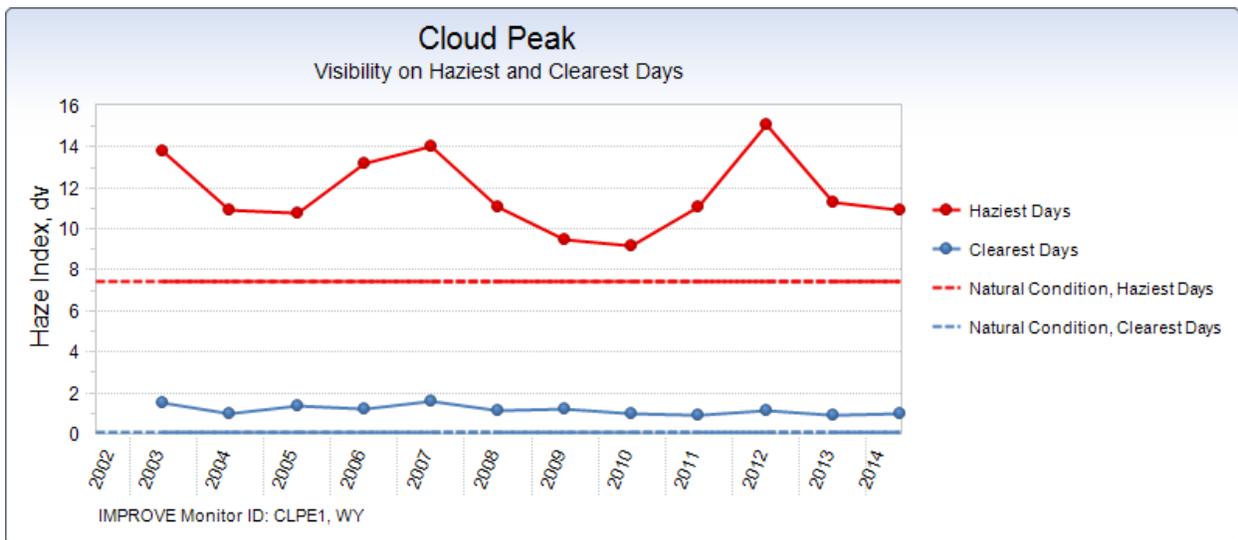


Figure 3-3 Cloud Peak annual IMPROVE visibility (2003-2014).



Reference: <http://views.cira.colostate.edu/fed/AqrvMenu.aspx>

3.4.5.6 Basin, Wyoming Clean Air Status and Trends Data (CASTNET)

CASTNET is a long-term, rural monitoring network used to assess the environmental results due to emission reduction programs and pollutant impacts to sensitive ecosystems and vegetation. CASTNET measures ambient concentrations of sulfur and nitrogen species as well as rural ozone concentrations. Results from CASTNET are used to report on geographic patterns and temporal trends in acidic pollutants, deposition and regional ozone concentrations. CASTNET is the only network in the US that provides a consistent, long-term data record of acidic dry deposition fluxes.

During 2013, the BLM upgraded the Basin, WY site to become part of CASTNET. Ammonia data collection started in 2015. Annual concentration data from the Basin site is listed in Table 3-2.

Table 3-2 Basin, WY Annual CASTNET concentrations (µg/m3) for 2013 and 2014.

Year	Sulfur Dioxide	Particulate Sulfate	Particulate Nitric Acid	Total Nitrate	Particulate Ammonium
2013	0.988	0.714	0.412	1.081	0.416
2014	0.941	0.678	0.354	0.87	0.369

3.4.5.7 Climate Change

Climate change refers to any significant change in the measure of climate, such as precipitation and temperature, lasting for an extended period of time (decades or longer). Temperatures in western Wyoming are expected to increase by 0.25°F to 0.4°F per decade and precipitation is expected to decrease by 0.1 to 0.6 inches per decade.

Several activities that occur in the area contribute to climate change, including: large wildfires, activities using combustion engines, changes to the natural carbon cycle, changes to radioactive forces and reflectivity, and emissions of greenhouse gases (GHGs). GHGs, including CO₂, as well as, methane (CH₄), nitrous oxide (N₂O), and fluorinated gases, are created and emitted through human activities, including oil and gas development, and agricultural activities. Without additional meteorological monitoring systems, it is difficult to determine spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

3.4.6 RMP Special Designations:

No parcels were nominated within areas closed to oil and gas leasing. Parcels nominated within ACECs are discussed in section 3.7.10.

Reference:

LFO FEIS Section 4.2.4, ROD Chapter 2.1.4, and specific resources Decisions found throughout; BB FEIS Section 4.2.5, and 2.5.2, 2.5.7; WFO & CyFO and specific resources Decisions found throughout; and CyFO Decisions 7009, 7088 - 7091.

3.4.7 Socioeconomics, Environmental Justice, and Public Health and Safety

The Approved RMPs balance the need for development of renewable and non-renewable energy resources with resource protections. The decisions in the RMPs will facilitate development and provide for socioeconomic benefits to the planning areas and the State of Wyoming.

Executive Order 12898 requires federal agencies to assess projects to ensure there is no disproportionately high or adverse environmental, health, or safety impacts on minority and low income populations. A review of the parcels offered for lease indicates there are no impacts on minority or low-income populations.

Oil and gas development, as well as other industrial use such as mining has occurred in the WR/BBD for many decades. Due to the industrial safety programs, standards, and state and federal regulations, offering these parcels is not expected to increase health or safety risks to humans, wildlife, or livestock. There are no identified hazardous or solid waste sites on the parcels addressed in this EA.

Leasing of the parcels analyzed in this EA would present no new or unusual health or safety issues not covered by existing state and federal laws and regulation.

Reference:

LFO FEIS Section 4.8, and Decisions 8001 - 8015;

BB FEIS Section 4.8, WFO Decisions 8001 - 8017, and CyFO Decisions 8001 – 8017.

3.4.8 Split Estate

Private surface overlaying federal minerals is commonly referred to as Split Estate, of which the dominate estate is minerals. As required by BLM leasing policy, notification letters are sent to private surface owners of split estate parcels at the time of lease nomination, and for EA review and opportunity to comment. If development should be proposed after leasing, the operator is responsible for complying with the requirements of Onshore Oil and Gas Order No. 1, including the requirement to make a good-faith effort to reach a Surface Access Agreement with the private surface owner. The BLM will generally offer the surface owner the same level of surface protection that the BLM provides on federal surface. Parcels offered for sale are subject to the stipulations shown in Attachment 1, which includes protections on split estate lands under Standard Lease Notice 1.

The LFO RMP FEIS discusses split estate lands throughout the document, and in Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The BB RMP FEIS discusses split estate lands throughout the document, and Appendix G Federal Oil and Gas Operations on Split-Estate Lands for both the WFO and CyFO RMPs have

full discussions of split estate laws, regulations, and BLM policy and procedures. Also reference Appendix F. Wyoming Bureau of Land Management Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

For more information about split estate lands, references and web links are available at the end of this document.

3.5 No Action Alternative

3.5.1 Common to all Resources

Under the No-Action Alternative, lease parcels would not be offered at this time. Due to demand for oil and gas, it would be expected that these parcels would be re-nominated in the future, consistent with appropriate land use planning decisions, and might be offered for sale with additional stipulations. There is no way to accurately predict what level of restrictions future leasing might require, but it can be assumed that a substantial portion of the development that would occur under the No-Action Alternative would still be permitted under future leases. Future nominations for leases would be screened for conformance with the Land Use Plan in effect at the time, and the appropriate environmental review would be conducted to determine associated impacts. Effects from leases issued from any future sales would be analyzed in the appropriate environmental documents for those sales.

3.6 Proposed Action

3.6.1 Common to all Resources

The parcels nominated for the lease sale in the Proposed Action, in conformance with the Land Use Plans, have been identified as available for leasing in each RMP. Under this alternative, application of stipulations to nominated parcels for resource protections is directed by these RMPs. Should the 50 parcels, totaling 66,642.820 acres, be offered and sold, leases would be issued. At the development stage, additional site specific mitigation could be imposed if warranted. Under this alternative, revenue is generated through the sale of the lease parcel.

3.7 Resources Brought Forward for Analysis

No direct impacts to resources are associated with the administrative action of leasing. During parcel reviews, the following resources have been identified as being present in the nominated lease parcel areas, are brought forward for further analysis, and stipulations or protective measures have been applied to the lease parcels as defined in Attachment 1.

3.7.1 Soils

The Proposed Action Alternative would offer 50 parcels, totaling 66,642.820 acres, for lease sale for potential oil and gas development.

There are no direct impacts to soil resources through the administrative action of leasing. Indirect effects from leasing may occur to soil resources if development were to occur. At the time of a site-specific application, such as an APD, soil types will be identified and conditions of approval to mitigate adverse impacts to the soil may be imposed at that time.

The LFO FEIS Section 4.1.3 analyzed adverse and beneficial impacts to soils from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated soil protections that were in the Proposed Plan which subsequently were incorporated, including reclamation, in the ROD in Decisions 1009 – 1025. Additional soil protections occur throughout the ROD when the soil protection is secondary to another resource such as the designation right-of-way exclusion and avoidance area in Decision 6016 that limits the area available for new surface disturbance for rights-of-ways. This limitation secondarily benefits soils or reduces adverse impacts to soils through co-location. Also reference Appendix B. Reclamation Standards, Appendix E. Required Design Features and Best Management Practices, and Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The Bighorn Basin FEIS Section 4.1.3 analyzed adverse and beneficial impacts to soils from a variety of of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated soil protections that were in the Proposed Plan which subsequently were incorporated, including reclamation, in WFO RMP Decisions 1007 – 1023, and CyFO RMP Decisions 1007 – 1023. Additional soil protections occur throughout the ROD when the soil protection is secondary to another resource. Also reference Appendix F. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The Proposed Action Alternative would make approximately 67,000 acres of federal mineral estate available for lease sale. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action Alternative would allow mineral development to occur while protecting soil resources.

Parcels offered for lease sale are subject to the stipulations shown in Attachment 1, which includes restrictions on slope and limited reclamation potential soils, and Standard Lease Notice 1.

3.7.2 Water

The Proposed Action Alternative would offer 50 parcels, totaling 66,642.820 acres, for lease sale for potential oil and gas development.

At the time of a site-specific application, such as an APD, surface and subsurface water resources will be identified, evaluated, and conditions of approval to mitigate adverse impacts to the water related resources may be imposed at that time. Parcels offered for sale are subject to the stipulations shown in Attachment 1.

The LFO FEIS Section 4.1.3 analyzed adverse and beneficial impacts to surface water and groundwater (water) from various types of BLM authorized activities and cumulative impacts

from other activities. The FEIS also evaluated water protections that were in the Proposed Plan which subsequently were incorporated, including protections for watershed health, in the ROD in Decisions 1009 – 1025. Additional water protections occur throughout the ROD when the water protection is secondary to another resource, such as application of timing limitations to surface-disturbing activities within water channels that will adversely affect spawning, egg incubation, and fry areas in fish-bearing streams in Decision 4053. Also reference Appendix B. Reclamation Standards, Appendix E. Required Design Features and Best Management Practices, and Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The BB RMP FEIS 4.1.4 analyzed adverse and beneficial impacts to surface water and groundwater (water) from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated water protections that were in the Proposed Plan which subsequently were incorporated, including protections for watershed health, in the in the WFO RMP Decisions 1024 – 1042, and CyFO Decisions 1024 – 1042.

Additional water protections occur throughout the ROD when the water protection is secondary to another resource, such as management of 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, in WFO Decision 4055 and CyFO Decision 4056. This management for fish habitat secondarily benefits water resources or reduces adverse impacts to water resources. Also reference Appendix F. Wyoming Bureau of Land Management Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The Proposed Action Alternative would make approximately 67,000 acres of federal mineral estate available for lease sale. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action Alternative would allow for mineral development to occur while protecting water resources.

Parcels offered for lease sale are subject to the stipulations shown in Attachment 1, for the protection of perennial surface waters, riparian-wetland areas, and playas; for the protection of spawning habitat in fish-bearing streams; and Standard Lease Notice 1.

3.7.3 Master Leasing Plan Analysis Areas

The Proposed Action Alternative would offer 50 parcels, totaling 66,642.820 acres, for lease sale for potential oil and gas development.

Within those parcels being offered, three contiguous parcels WY-1608-098, -099 and a portion of -100, are located within the Absorka Front MLP in the WFO. To conform with the provisions of the MLP designation in that area, the three parcels which are within the Absorka Front MLP area will be combined to be offered as one parcel, totaling 1709.77 acres. The 120 acre portion of parcel 100 which is outside of the MLP will be offered as a separate parcel. Therefore, the number of parcels brought forward to the lease sale book will be changed from 50 to 49 for this lease sale.

One parcel in the Fifteen Mile MLP, WY-1608-057 totaling 761.87 acres, in the WFO is also offered for lease sale for oil and gas development.

In accordance with WO IM 2010-117, Oil and Gas Leasing Reform, Master Leasing Plan (MLP) analysis was conducted in the WR/BBD RMPs as a as a tool to facilitate resource protection while allowing for oil and gas development. The analysis resulted in MLP determinations for each field office.

LFO RMP FEIS Section 4.2.4; RMP Decisions 2024 - 2035: The Beaver Rim area was determined to be suitable for an MLP because of its high value resources, and location adjoining two designated development areas. The LFO has initiated an implementation plan for the Beaver Rim MLP.

BB FEIS Section 4.2.5; WFO RMP Decisions 2033 - 2042: Three MLPs were defined in the WFO: Absaroka Front MLP, Fifteen Mile MLP, and Big Horn Front MLP. The Absaroka Front MLP and Big Horn Front MLP are in both the WFO and CyFO.

BB FEIS Section 4.2.5; CyFO RMP Decisions 2034 - 2040: Two MLPs were defined in the CyFO: Absaroka Front MLP and Big Horn Front MLP. The MLPs are in both the CyFO and WFO.

As described in Section 4.2.5.2 of the BB FEIS; the inclusion of the MLP determinations place additional stipulations on oil and gas-related surface disturbances in the Absaroka Front, Fifteen mile, and Big Horn Front MLP analysis areas for the protection of big game, recreation, geologic features, and Limited Reclamation Potential (LRP) soils. As a result, adverse impacts on oil and gas development could occur in these MLP analysis areas compared to not applying this management. However, because of the generally low to very low potential for oil and gas development and redundancies with other restrictions on mineral leasing from the management of other program areas, management specific to the MLP determination is less likely to adversely affect oil and gas development in these areas.

The Proposed Action Alternative would make approximately 67,000 acres of federal mineral estate available for lease sale, with approximately 2,500 acres in MLPs. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action alternative would allow mineral development to occur while protecting resources identified in the MLPs.

Parcels offered for sale are subject to the stipulations shown in Attachment 1, which includes the protection of big game, vegetation, recreation, geologic features, LRP soils, cultural and visual resources, and Standard Lease Notice 1.

3.7.4 Vegetation, Including Invasive Species and T&E Species

The Proposed Action Alternative would offer 50 parcels, totaling 66,642.820 acres, for lease sale for potential oil and gas development.

There are no direct impacts to vegetation resources through the administrative action of leasing. Indirect effects from leasing may occur to vegetation if development were to occur. At the time of a site-specific application, such as an APD, vegetation, including invasive species and T&E species, will be identified and conditions of approval to mitigate adverse impacts to vegetation, including invasive species and T&E species, may be imposed at that time.

The LFO RMP FEIS analyzed adverse and beneficial impacts to vegetation resources from various types of BLM authorized activities and cumulative impacts from other activities in the Proposed Resource Management Plan. The FEIS describes the current condition of vegetation resources and analyzed the likely future of conditions under the Proposed Resource Management Plan. The FEIS also evaluated vegetation protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions.

LFO RMP FEIS Sections:

- 4.4.1 Vegetation: Forests, Woodlands, and Aspen Communities
- 4.4.2 Vegetation: Grassland and Shrubland Communities
- 4.4.3 Invasive Species and Pest Management
- 4.4.4 Riparian-Wetland Resources

LFO RMP Decisions Table 2.1. 4000 Biological Resources, Vegetation

- Decisions 4001 – 4007 Vegetation: General
- Decisions 4008 – 4012 Vegetation: Forests, Woodlands, and Aspen Communities
- Decisions 4013 – 4017 Vegetation: Grassland and Shrubland Communities
- Decisions 4018 – 4027 Invasive Species and Pest Management
- Decisions 4028 – 4032 Riparian-Wetland Resources

The BB RMP FEIS analyzed adverse and beneficial impacts to vegetation resources from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS describes the current condition of vegetation resources in the analysis areas and analyzed likely future of vegetation resource conditions under the Proposed Resource Management Plan. The FEIS also evaluated vegetation protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions for WFO and CyFO.

BB RMP FEIS Sections:

- 4.4.1 Vegetation: Forests, Woodlands, and Forest Products
- 4.4.2 Vegetation: Grassland and Shrubland Communities
- 4.4.3 Riparian-Wetland Resources
- 4.4.4 Invasive Species and Pest Management

WFO RMP Decisions Table 3.8. 4000 Biological Resources, Vegetation

- Decisions 4001 – 4026 Vegetation: Forests, Woodlands, and Forest Products
- Decisions 4027 – 4030 Vegetation: Grassland and Shrubland Communities
- Decisions 4031 – 4036 Riparian-Wetland Resources
- Decisions 4037 – 4049 Invasive Species and Pest Management

CyFO RMP Decisions Table 3.8. 4000 Biological Resources, Vegetation

- Decisions 4001 – 4027 Vegetation: Forests, Woodlands, and Forest Products
- Decisions 4028 – 4031 Vegetation: Grassland and Shrubland Communities
- Decisions 4032 – 4037 Riparian-Wetland Resources
- Decisions 4038 – 4049 Invasive Species and Pest Management

The Proposed Action Alternative would make approximately 67,000 acres of federal mineral estate available for lease sale. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action alternative would allow mineral development to occur while protecting protecting or mitigating vegetation, including invasive species and T&E species, resources.

Parcels offered for sale are subject to the stipulations shown in Attachment 1, which includes the protection of perennial surface waters, riparian-wetland areas, playas, water, disturbance within 500 feet perennial surface water, and protection of riparian habitat supporting special status fish species. Further protections are implemented through Lease Stipulation No. 2

3.7.5 Greater Sage-Grouse

The Proposed Action Alternative would offer 50 parcels, totaling 66,642.820 acres, for lease sale for potential oil and gas development. Table 3-3 summarizes the areas in priority habitat management areas (PHMAs), general habitat management areas (GHMAs), and a total of all habitat management areas.

Table 3-3 Sage Grouse Habitat Area Summary

Office	Analyzed Parcels	Analyzed Acres	Acres in PHMA	% in PHMA	Acres in GHMA	% in GHMA
Lander	10	6,772.880	503.060	7%	6,269.820	93%
Worland	21	25,143.840	0.000	0%	25,143.840	100%
Cody	19	34,726.100	1,354.530	4%	33,371.570	96%
WR/BBD Total	50	66,642.820	1,857.590	3%	64,785.230	97%

The greater sage-grouse is a BLM sensitive species that is ubiquitous in the WR/BBD. There are no direct impacts to sage-grouse or their habitat through the administrative action of leasing. Indirect effects from leasing may occur to sage-grouse habitat if development were to occur at the time of a site-specific application, such as an APD, the area will be evaluated for sage-grouse and further conditions of approval to mitigate adverse impacts to sage-grouse habitat may be imposed at that time.

Both FEIS' discuss in detail the management concerns regarding greater sage-grouse throughout the documents.

LFO RMP FEIS Sections 4.4.9 and 3.2.4 describe the current conditions in the analysis areas and analyzed likely future potential effects of development in relation to sage-grouse habitat, and what protections might need to be implemented. The FEIS also evaluated protective measures that were incorporated in the RMP Decisions found in Table 2.1. 4000 Biological Resources, Special Status Species, Decisions 4102 – 4120. Also reference LFO ROD Appendix M. Greater Sage-Grouse Conservation Objectives Final Report Consistency Review, and Appendix M.1. Conservation Objectives.

The BB RMP FEIS Sections 4.4.9 and 3.2.5 describe the current conditions in the analysis areas and analyzed likely future potential effects of development in relation to sage-grouse habitat, and what protections might need to be implemented. The FEIS also evaluated protective measures that were incorporated in the RMP Decisions found in Table 3.13. 4000 Biological Resources, Special Status Species, Greater Sage-Grouse, WFO Decisions 4087 – 4115, and CyFO Decisions 4088 – 4116. For both WFO and CyFO, also reference Chapter 2 Approved Resource Management Plan for Greater Sage-Grouse Habitat, and Appendix D. Greater Sage-Grouse Habitat Management Strategy.

The Proposed Action Alternative would make approximately 67,000 acres of federal mineral estate available for lease sale within sage-grouse habitat areas. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action alternative would allow mineral development to occur while protecting sage-grouse habitats.

The leases in priority habitat will be offered subject to the appropriate sage-grouse protective stipulations. These include seasonal timing limitations protecting breeding and nesting areas and other prescriptions within PHMAs. Outside of Designated Development Areas, these seasonal limitations are applied to operations and maintenance activities as well as drilling. Required design features and best management practices are applied to limit the adverse impacts of oil and gas development on greater sage-grouse.

Parcels offered for sale are subject to the stipulations shown in Attachment 1, for protection of sage-grouse habitat, and all leases have the added protection of Standard Lease Notice 3. The disturbance density & cap stipulation, LFO 4109, WFO 4109, and CyFO 4110, notifies the potential bidder, in part, ‘This lease does not guarantee the lessee the right to occupy the surface of the lease for the purpose of producing oil and natural gas within Greater Sage-Grouse designated PHMA (Core only).’

3.7.6 Wildlife & Fish

The Proposed Action Alternative would offer 50 parcels, totaling 66,642.820 acres, for lease sale for potential oil and gas development.

There are no direct impacts to wildlife, fish, or wild horse habitat resources through the administrative action of leasing. The BLM manages 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. Indirect effects from leasing may occur to the habitat if development were to occur. At the time of a site-specific application, such as an APD, wildlife, fish, or wild horse resources will be identified and conditions of approval to mitigate adverse impacts may be imposed at that time.

The LFO RMP FEIS Section 4.4 analyzed adverse and beneficial impacts to wildlife, fish, or wild horses from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS describes the current condition of biological resources in the analysis areas and analyzed likely future resource conditions under the Proposed Resource Management Plan.

The FEIS also evaluated protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions.

The lease sale includes some LFO parcels that are open to oil and gas leasing subject to an NSO stipulation for the protection of wildlife.

LFO RMP FEIS Sections:

- 4.4.5 Fish & Wildlife Resources: Fish
- 4.4.6 Fish & Wildlife Resources: Wildlife
- 4.4.7 Special Status Species – Plants
- 4.4.8 Special Status Species – Fish
- 4.4.9 Special Status Species – Wildlife
- 4.4.10 Wild Horses

LFO RMP Decisions Table 2.14. 4000 Biological Resources, Fish and Wildlife

- Decisions 4033 – 4048 Fish & Wildlife Resources: General
- Decisions 4049 – 4055 Fish & Wildlife Resources: Fish
- Decisions 4056 – 4060 Fish & Wildlife Resources: Wildlife
- Decisions 4061 – 4070 Fish & Wildlife Resources: Big Game
- Decisions 4071 – 4060 Fish & Wildlife Resources: Raptors

LFO RMP Decisions Table 2.15. 4000 Biological Resources, Special Status Species

- Decisions 4072 – 4080 Special Status Species – General
- Decisions 4081 – 4086 Special Status Species – Plants
- Decisions 4087 Special Status Species – Fish
- Decisions 4088 – 4120 Special Status Species – Wildlife

LFO RMP Decisions Table 2.16. 4000 Biological Resources, Wild Horses

- Decisions 4121 – 4132 Wild Horses

LFO ROD:

Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities

Appendix J. Species Mentioned in the Lander Field Office Resource Management Plan and Environmental Impact Statement

Appendix I. Wild Horse Management in the Lander Planning Area

The BB RMP FEIS Section 4.4 analyzed adverse and beneficial impacts to wildlife, fish, or wild horses from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS describes the current condition of biological resources in the analysis areas and analyzed likely future resource conditions under the Proposed Resource Management Plan. The FEIS also evaluated protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions.

BB RMP FEIS Sections:

- 4.4.5 Fish & Wildlife Resources: Fish
- 4.4.6 Fish & Wildlife Resources: Wildlife
- 4.4.7 Special Status Species – Plants
- 4.4.8 Special Status Species – Fish
- 4.4.9 Special Status Species – Wildlife
- 4.4.10 Wild Horses

WFO RMP Decisions Table 3.12. 4000 Biological Resources, Fish and Wildlife Resources

- Decisions 4050 Fish & Wildlife Resources: General
- Decisions 4051 – 4057 Fish & Wildlife Resources: Fish
- Decisions 4058 – 4082 Fish & Wildlife Resources: Wildlife

WFO RMP Decisions Table 3.13. 4000 Biological Resources, Special Status Species

- Decisions 4083 – 4086 Special Status Species – General
- Decisions 4087 – 4115 Special Status Species – Greater Sage-Grouse
- Decisions 4016 – 4118 Special Status Species – Raptors
- Decisions 4119 – 4120 Special Status Species – Migratory Birds
- Decisions 4121 – 4124 Special Status Species – Mammals
- Decisions 4125 - 4130 Special Status Species – Fish
- Decisions 4131 - 4132 Special Status Species – Amphibians and Reptiles
- Decisions 4133 – 4138 Special Status Species – Plants

WFO RMP Decisions Table 3.14. 4000 Biological Resources, Wild Horses

- Decisions 4139 – 4150 Wild Horses

WFO ROD:

Appendix F. Wyoming Bureau of Land Management Mitigation Guidelines for Surface-Disturbing and Disruptive Activities

Appendix K. Biological Opinion

Appendix N. Seasonal Raptor Stipulations for All Surface-Disturbing and Disruptive Activities

CyFO RMP Decisions Table 3.12. 4000 Biological Resources, Fish and Wildlife Resources

- Decisions 4050 – 4051 Fish & Wildlife Resources: General
- Decisions 4052 – 4058 Fish & Wildlife Resources: Fish
- Decisions 4059 – 4083 Fish & Wildlife Resources: Wildlife

CyFO RMP Decisions Table 3.13. 4000 Biological Resources, Special Status Species

- Decisions 4084 – 4087 Special Status Species – All
- Decisions 4088 – 4116 Special Status Species – Greater Sage-Grouse
- Decisions 4017 – 4119 Special Status Species – Raptors
- Decisions 4120 – 4121 Special Status Species – Migratory Birds
- Decisions 4122– 4128 Special Status Species – Mammals
- Decisions 4129 - 4134 Special Status Species – Fish
- Decisions 4135 - 4136 Special Status Species – Amphibians and Reptiles
- Decisions 4137 – 4142 Special Status Species – Plants

CyFO RMP Decisions Table 3.14. 4000 Biological Resources, Wild Horses

- Decisions 4143 – 4155 Wild Horses

CyFO ROD:

Appendix F. Wyoming Bureau of Land Management Mitigation Guidelines for Surface-Disturbing and Disruptive Activities

Appendix K. Biological Opinion

Appendix N. Seasonal Raptor Stipulations for All Surface-Disturbing and Disruptive Activities

The Proposed Action Alternative would make approximately 67,000 acres of federal mineral estate available for lease sale. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action alternative would allow mineral development to occur while protecting wildlife, fish, and wild horses resources and habitat.

Parcels offered for sale are subject to the stipulations shown in Attachment 1, with protections for wildlife, fish, and wild horses. The lease sale includes some LFO parcels that are open to oil and gas leasing subject to an NSO stipulation for the protection of wildlife.

3.7.7 Cultural Resources

The Proposed Action Alternative would offer 50 parcels, totaling 66,642.820 acres, for lease sale for potential oil and gas development.

As provided for in the Wyoming State Protocol Appendix B.2., issuance of leases is exempt from Class III cultural resource inventory; the sale of a lease will have no effect on known or unknown cultural properties. Indirect effects from leasing may occur to cultural resources if development were to occur. A Class III cultural resource inventory would be required at the time of a site specific proposal, such as an APD. Tribal consultation is conducted on a case-by-case basis. Avoidance or mitigation measures would be developed once the site-specific cultural inventory is completed.

The LFO RMP FEIS Section 4.5.1 analyzed adverse and beneficial impacts to cultural resources from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS describes the current condition of cultural resources in the analysis areas and analyzed likely future cultural resource conditions under the Proposed Resource Management Plan. The FEIS also evaluated cultural resource protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions 5001 – 5052. Also reference Appendix C., Exception, Modification, and Waiver Criteria, Avoidance Criteria, and Special Management for Designated Corridors, Part C.4.2. Cultural Resources, and Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The BB RMP FEIS Section 4.5.1 analyzed adverse and beneficial impacts to cultural resources from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS describes the current condition of cultural resources in the analysis areas and analyzed likely future cultural resource conditions under the Proposed Resource Management Plan. The FEIS also evaluated cultural resource protections that were in the Proposed Plan which subsequently were incorporated in the WFO RMP Decisions 5001 – 2025, and CyFO Decisions 5001 – 5023. Also reference for both WFO and CyFO Appendix B., Oil and Gas Lease Notices and Lease Stipulations, including Exception, Modification, and Waiver Criteria; and Appendix F. Wyoming Bureau of Land Management Mitigation Guidelines for Surface-Disturbing and Disruptive Activities

The Proposed Action Alternative would make approximately 67,000 acres of federal mineral estate available for lease sale. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action alternative would allow mineral development to occur while protecting cultural resources.

To reduce potential impacts to known cultural sites, management actions in the RMPs apply avoidance of surface-disturbing activities, and protect the foreground of important cultural sites

where setting is an important aspect of the integrity of the site. Parcels offered for sale are subject to the stipulations shown in Attachment 1, and common to all leases Special Lease Stipulation and Lease Stipulation No. 1.

3.7.8 Paleontology & Geology

The Proposed Action Alternative would offer 50 parcels, totaling 66,642.820 acres, for lease sale for potential oil and gas development.

There are no direct impacts to paleontological or geological resources through the administrative action of leasing. Indirect effects from leasing may occur to paleontological or geological resources if development were to occur, such as damage or destruction of surficial and buried paleontological resources. At the time of a site-specific application, such as an APD, paleontological or geological resources will be identified and conditions of approval to mitigate adverse impacts to paleontological or geological resources may be imposed at that time, which may include prework paleontological resource surveys prior to approval of surface disturbing activities and/or paleontological monitoring during construction of roads, well pads, and other proposed activities.

Incorporated by reference are the specific management goals, plans, and monitoring actions that are addressed in the RMPs:

The LFO RMP FEIS Section 4.5.2 analyzed adverse and beneficial impacts to paleontological resources from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated the current condition of paleontological resources in the analysis areas and analyzed likely future paleontological resource conditions under the Proposed Resource Management Plan. The FEIS also evaluated paleontological protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions 5053 – 5064. Also reference Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The BB RMP FEIS Section 4.5.2 analyzed adverse and beneficial impacts to geological and paleontological resources from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated the current condition of paleontological protections in the Proposed Plan which subsequently were incorporated into the ROD WFO Decisions 5026 – 5045, and CyFO Decisions 5024 – 5043. Also reference Appendix F. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The Proposed Action Alternative would make approximately 67,000 acres of federal mineral estate available for lease sale. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action alternative would allow mineral development to occur while protecting paleontological resources.

Parcels offered for sale are subject to the stipulations shown in Attachment 1, which may include restrictions on surface use or occupancy within designated “very high” or “high” potential fossil yield classification areas for the protection of fossil resources.

3.7.9 Recreation, Visual Resource Management (VRM)

The Proposed Action Alternative would offer 50 parcels, totaling 66,642.820 acres, for lease sale for potential oil and gas development. Seven parcels in LFO, nine parcels in WFO, and four parcels in CyFO, are identified as containing VRM Class II resources. Of those nominations, one parcel in LFO and nine parcels in WFO are also identified for recreation resources.

There are no direct impacts to VRM or recreation resources through the administrative action of leasing. Indirect effects from leasing may occur to VRM or recreation resources if development were to occur. At the time of a site-specific application, such as an APD, VRM or recreation resources impacts will be identified and conditions of approval to mitigate adverse impacts to VRM or recreation resources may be imposed at that time.

Surface occupancy or use is restricted within designated VRM Class I and II areas for the protection of VRM Class I and II areas. Oil & gas leasing within developed recreation sites, which are identified in the RMPs, are open to leasing with a variety of oil and gas prescriptions.

The LFO RMP FEIS Section 4.5.3 analyzed adverse and beneficial impacts to VRM from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated the current condition of VRM, and identified protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions 5065 – 5070.

The LFO RMP FEIS Section 4.6.6 analyzed adverse and beneficial impacts to recreation resources from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated recreation protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions 6076 – 6140. Also reference Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.

The BB RMP FEIS Section 4.5.3 analyzed adverse and beneficial impacts to VRM from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated VRM protections that were in the Proposed Plan which subsequently were incorporated in the in the ROD WFO Decisions 5046 – 5054, and CyFO Decisions 5044 – 5052.

The BB RMP FEIS Section 4.6.5 analyzed adverse and beneficial impacts to recreation resources from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS also evaluated recreation protections that were in the Proposed Plan which subsequently were incorporated in the in the ROD WFO Decisions 6049 – 6193, and CyFO Decisions 6055 – 6121. Also reference for both WFO and CyFO Appendix H. Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities; and Appendix J. Recreation Management

The Proposed Action Alternative would make approximately 67,000 acres of federal mineral estate available for lease sale, of which fourteen parcels are identified as having VRM Class II areas, and ten parcels are in recreation protected areas. None of these lands would be offered at

this time under the No Action Alternative. The Proposed Action alternative would allow mineral development to occur while protecting VRM and recreational resources.

Parcels offered for sale are subject to the stipulations shown in Attachment 1, which include protection of VRM Class I and II areas; protection of recreation areas and developed recreation sites; protection of the Absorka Front Foothills Special Recreation Management Area and/or Extensive Recreation Management Area; protection of areas within the Johnny Behind the Rocks Special Recreation Management Area; and protection of the viewshed of Heart Mountain Relocation Camp National Historic Landmark.

3.7.10 Areas of Critical Environmental Concern (ACEC)

The Proposed Action Alternative would offer 50 parcels, totaling 66,642.820 acres, for lease sale for potential oil and gas development. Two parcels in the Green Mountain ACEC and three parcels in the Twin Creek ACEC, totaling 962.92 acres in LFO were identified. Two parcels totaling 5,028.650 acres in CyFO were identified as being within the Sheep Mountain Anticline ACEC. No parcels were nominated in WFO within ACECs. ACECs are managed on a case-by-case basis. In LFO, the East Fork ACEC, as part of Dubois management, is closed to oil and gas leasing; all other LFO ACECs are open to oil and gas leasing with a no surface occupancy stipulation. In WFO and CyFO, ACECs may be closed to oil and gas leasing, or open to oil and gas leasing with protection measures.

There are no direct impacts to ACEC resources through the administrative action of leasing. No surface use or occupancy is allowed within designated ACECs for purposes of protecting the relevant and important ACEC values. At the time of a site-specific application, such as an APD, ACEC values will be identified and conditions of approval to mitigate adverse impacts to ACECs may be imposed at that time.

The LFO RMP FEIS Section 4.7.5. analyzed adverse and beneficial impacts to ACECs from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS describes the current condition of ACECs in the analysis areas and analyzed likely future of ACECs resource conditions under the Proposed Resource Management Plan. The FEIS also evaluated ACEC protections that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions 7055 - 7134

The BB RMP FEIS Section 4.7.1. analyzed adverse and beneficial impacts to ACECs from various types of BLM authorized activities and cumulative impacts from other activities. The FEIS describes the current condition of ACECs in the analysis areas and analyzed likely future of ACECs resource conditions under the Proposed Resource Management Plan. The FEIS also evaluated ACEC protections that were in the Proposed Plan which subsequently were incorporated in the in the WFO RMP Decisions 7001 – 7037, and CyFO RMP Decisions 7001 – 7087.

The Proposed Action Alternative would make approximately 67,000 acres of federal mineral estate available for lease sale, of which approximately 6,900 acres are identified within ACECs and available for lease sale. None of these lands would be offered at this time under the No

Action Alternative. The Proposed Action alternative would allow mineral development to occur while protecting ACEC resources

Parcels offered for sale are subject to the stipulations shown in Attachment 1, which includes protection of ACECs on LFO parcels, and for the protection of Special Designations (Geologic Resources) on CyFO parcels. Parcels nominated within portions of the Sheep Mountain Anticline ACEC in the CyFO are subject to NSO and CSU stipulations, designed to protect geologically-significant natural resources within Special Designation areas, apply on applicable portions of that ACEC.

3.7.11 Historic Resources, Including Trails

The Proposed Action Alternative would offer 50 parcels, totaling 66,642.820 acres, for lease sale for potential oil and gas development. Eight parcels totaling 13,836.860 acres in WFO and one parcel in CyFO totaling 435.470 acres were nominated in areas that are identified as being within trails areas. No parcels were nominated in LFO in areas identified for the protection of historic resources including protected trails.

There are no direct impacts to trails or historic resources through the administrative action of leasing. Indirect effects from leasing may occur to trails or historic resources if development were to occur. At the time of a site-specific application, such as an APD, trails or historic resources will be identified and conditions of approval to mitigate adverse impacts to trails or historic resources may be imposed at that time.

The LFO RMP FEIS Section analyzed adverse and beneficial impacts to trails from various types of BLM authorized activities and cumulative impacts from other activities, in Section 4.7.1 Congressionally Designated Trails – Cultural and Historic, and Section 4.7.2 Congressionally Designated Trails – Recreation and Visual. The current condition of trail resources in the analysis areas is described, and analyzed likely future trail resource conditions under the Proposed Resource Management Plan. The FEIS also evaluated protections to trails that were in the Proposed Plan which subsequently were incorporated in the in the RMP Decisions 7001 - 7029

The BB RMP FEIS Section 4.7.4 National Historic Trails and Other Historic Trails analyzed adverse and beneficial impacts to trails from various types of BLM authorized activities and cumulative impacts from other activities. This section describes the current condition of trail resources in the analysis areas and analyzed likely future trail resource conditions under the Proposed Resource Management Plan. The FEIS also evaluated protections to trails that were in the Proposed Plan which subsequently were incorporated in the in the WFO RMP Decisions 7042 – 7045, and CyFO RMP Decisions 7092 – 7099.

The RMPs apply avoidance of surface disturbing activities and protect the settings of Historic Trails. NHTs, especially High Potential Sites and Segments, are managed and protected in accordance with the National Trails System Act, Section 106 of the NHPA, the National Landscape Conservation System Act, Executive Order 13195, and BLM IM Washington Office-2009-215 (BLM 2009i).

The NHTs in Wyoming, which include the Oregon, California, Mormon Pioneer, and Pony Express Trails, as well as the Nez Perce Trail, were designated by Congress through the National Trails System Act (Public Law (Pub. L.) 90-543; 16 United States Code [U.S.C.] 1241-1251) as amended through Pub. L. 106-509 dated November 13, 2000. The LFO RMP protects the nature and setting of the national trails in the National Trails Management Corridor; see Decisions 7001 et seq. No parcels were nominated in the NTMC.

The Proposed Action Alternative would make approximately 67,000 acres of federal mineral estate available for lease sale, which includes parcels within designated trails areas. None of these lands would be offered at this time under the No Action Alternative. The Proposed Action alternative would allow mineral development to occur while protecting trail resources.

Parcels offered for sale are subject to the stipulations shown in Attachment 1, which includes protections of Special Designations (Scenic and Cultural Resources) up to 2 miles from Other Trails, and protections in Standard Lease Notice 2.

4. Consultation and Coordination

- Parcels located within Bureau of Reclamation (BOR) lands are reviewed by BOR.
- Where federal minerals have been nominated for leasing underlying private surface, the private land owners have been notified, consistent with Washington Office Instruction Memorandum 2009-184.
- Tribal consultation is conducted as directed in BLM Handbook H-8120-1.
- The BLM coordinates with the Wyoming Game and Fish Department.
- A BLM interdisciplinary team reviewed all parcels in accordance with Washington Office Instruction Memorandum 2010-117. Table 4-1 lists the members of the BLM interdisciplinary team.

Table 4-1 Interdisciplinary Team

Name	Title	BLM Office	Responsible for:
David Seward	Natural Resource Specialist	CyFO	Site Visits
Gretchen Hurley	Geologist	CyFO	Geology and Paleontological Resources
Destin Harrell	Wildlife Biologist	CyFO	Wildlife
Kierson Crume	Archeologist	CyFO	Cultural
Paul Rau	Outdoor Recreation Planner	CyFO	Recreation/VRM/Special Designations
Bradley Johnson	Planning & Environmental Coordinator	CyFO	All
Debra Larsen	Land Law Examiner	LFO	All
Tim Vosburgh	Wildlife Biologist	LFO	Wildlife, T&E and Sensitive Species
Craig Bromley	Archaeologist	LFO	Cultural Resources/Paleontological Resources
Jared Oakleaf	Outdoor Recreation Planner	LFO	Wilderness and Recreation
Kristin Yannone	Planning & Environmental Coordinator	LFO	All
Darci Stafford	Natural Resource Specialist	WFO	Site Visits
Ted Igleheart	Wildlife Biologist	WFO	Wildlife/T&E
Tim Stephens	Wildlife Biologist	WFO	Wildlife/T&E
Marit Bovee	Archaeologist	WFO	Cultural Resources/Paleontological Resources
Adam Babcock	Outdoor Recreation Planner	WFO	Recreation/VRM/Special Designations
Jared Dalebout	Hydrologist	WFO	Water Resources
Karen Hepp	Range Management Specialist	WFO	T&E Plants
Holly Elliott	Planning & Environmental Coordinator	WFO	All
Rita Allen	District Resource Advisor	WR/BBD	Preparer
Ryan McCammon	Air Quality Specialist	WSO	Air Quality
Travis Bargsten	Natural Resource Specialist	WSO	Reviewer

5. References

BLM 2013. Proposed Resource Management Plan and Final Environmental Impact Statement for the Lander Field Office Planning Area, February 22, 2013 (two volumes)

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BLM, General Land Office. The Official Federal Land Records Site, provides live access to federal land conveyance records for the Public Land States. U.S. DOI, BLM, Washington, D.C.

<http://www.glorerecords.blm.gov/default.aspx>

Air Quality:

2016 Federal Land Manager Environmental Database

<http://views.cira.colostate.edu/fed/SiteBrowser/Default.aspx>

EPA 2016 AirData website

<http://www.epa.gov/airdata>