

**United States Department of the Interior
Bureau of Land Management**

**Amended Environmental Assessment
WY-080-EA10-27**

January 2011

**Competitive Oil and Gas Lease Sale
February, 2011**

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<u>AFFECTED RESOURCES EA CHECKLIST</u>	3
<u>1.0 INTRODUCTION</u>	6
<u>1.1 PURPOSE AND NEED</u>	7
<u>1.2 CONFORMANCE WITH APPLICABLE LAND USE PLAN AND OTHER ENVIRONMENTAL ASSESSMENTS</u>	7
<u>1.3 LEASING</u>	7
<u>1.4 FEDERAL, STATE OR LOCAL PERMITS, LICENSES OR OTHER CONSULTATION REQUIREMENTS</u>	8
<u>2.0 PROPOSED ACTIONS AND ALTERNATIVES</u>	8
<u>2.1 ALTERNATIVE A NO ACTION:</u>	8
<u>2.2 ALTERNATIVE B PROPOSED ACTION:</u>	8
<u>3.0 DESCRIPTION OF AFFECTED ENVIRONMENT</u>	11
<u>3.1 AIR RESOURCES</u> ERROR! BOOKMARK NOT DEFINED.	11
<u>3.1.1 AIR QUALITY</u>	10
<u>3.1.2 Climate</u>	12
<u>3.1.3 Visibility</u>	15
<u>3.2 WILDLIFE</u>	17
<u>3.2.1 SPECIAL STATUS SPECIES</u>	17
<u>4.0 ENVIRONMENTAL EFFECTS</u>	20
<u>4.1 AIR RESOURCES</u>	20
<u>4.1.1 AIR QUALITY</u>	20
<u>Alternative A: No Action</u>	20
<u>Alternative B: Proposed Action</u>	20
<u>MITIGATION</u>	22
<u>4.1.2 GREENHOUSE GAS EMISSIONS</u>	22
<u>Alternative A: No Action</u>	22
<u>Alternative B: Proposed Action</u>	23
<u>Mitigation</u>	24
<u>4.2 WILDLIFE</u>	25
<u>4.2.1 SPECIAL STATUS SPECIES</u>	25
<u>Alternative A: No Action</u>	26
<u>Alternative B: Proposed Action</u>	26
<u>Mitigation</u>	27
<u>4.3 CUMULATIVE IMPACTS</u>	27
<u>5.0 DESCRIPTION OF MITIGATING MEASURES AND RESIDUAL IMPACTS</u>	31
<u>6.0 CONSULTATION/COORDINATION</u>	31
<u>7.0 REFERENCES</u>	31
 <u>APPENDIX</u>	 33

Affected Resources Amended EA Checklist

Bureau of Land Management, Newcastle Field Office

WY-080-EA10-27 Competitive Oil and Gas Lease Sales for February 2011 for the Newcastle Field Office

Determination	Resource	Rationale for Determination
NI	Air Quality	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
PI	Air Quality	New information about air quality is available.
NP	Areas of Critical Environmental Concern (ACEC)	No effects associated with leasing, as there are no ACECs identified within the subject parcels.
NP	BLM Natural Areas	No effects associated with leasing, as there are no BLM Natural Areas identified within the subject parcels.
NI	Cultural Resources	Affects from surface disturbing activities were analyzed in the Newcastle RMP/FEIS with appropriate mitigation measures attached to lease parcels. A records search was conducted to identify previously recorded cultural resources that merit lease stipulations; however, unidentified significant cultural resources may be present that might affect future development on the leasehold.
NI	Greenhouse Gas Emissions	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
PI	Greenhouse Gas Emissions	New information on greenhouse gas emissions available.
NI	Environmental Justice	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NP	Farmlands (Prime or Unique)	No effects associated with leasing, as there are no Farmlands (Prime or Unique) identified within the subject parcels.
NI	Fish and Wildlife Excluding Federally Listed Species	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Floodplains	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Fuels/ Fire Management	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Geology/ Mineral Resources/ Energy Production	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Hydrologic Conditions	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Invasive Species/ Noxious Weeds	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Lands/ Access	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Livestock Grazing	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Migratory Birds	No effects associated with leasing beyond what is currently

Determination	Resource	Rationale for Determination
		addressed in the Newcastle RMP.
NI	Native American Religious Concerns	Affects from surface disturbing activities were analyzed in the Newcastle RMP/FEIS with appropriate mitigation measures attached to lease. Consultation with Native American tribes was not conducted to determine if Native American religious concerns might be present for subject lease sales.
NI	Paleontology	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
Ni	Rangeland Health Standards	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Recreation	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Socio-Economics	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Soils	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Threatened, Endangered or Candidate Plant Species	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
PI	Threatened, Endangered or Candidate Animal Species	New information and policy changes are discussed further in the EA.
NI	Wastes (hazardous or solid)	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Water Resources/ Quality (drinking/ surface/ ground)	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Wetlands/ Riparian Zones	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NP	Wild and Scenic Rivers	No effects associated with leasing, as there are no Wild and Scenic Rivers identified within the subject parcels.
NP	Wilderness/ Wilderness Study Areas (WSA)	No effects associated with leasing, as there are no Wilderness or WSAs identified within the subject parcels.
NI	Woodland/ Forestry	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Vegetation Excluding Federally Listed Species	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NI	Visual Resources	No effects associated with leasing beyond what is currently addressed in the Newcastle RMP.
NP	Wild Horses and Burros	No effects associated with leasing, as there are no Wild Horses and Burros within the subject parcels.
NP	Areas with Wilderness Characteristics	There are clearly no proposed lease parcels identified with wilderness characteristics within the Newcastle Field Office. All parcels were screened to determine if wilderness characteristics

Determination	Resource	Rationale for Determination
		were present in accordance with Secretarial Order 3310 and Draft Manuals 6300-1 and 6300-2. Screening forms are located in the Newcastle Field Office and the High Plains District Office.

DETERMINATION –

NP – not present in the area impacted by the proposed or alternative actions

NI – present, but adequately analyzed in RMP/FEIS for leasing actions

PI – present, not analyzed in RMP/FEIS or new information requires further analysis in the EA

**BUREAU OF LAND MANAGEMENT
NEWCASTLE FIELD OFFICE
AMENDED ENVIRONMENTAL ASSESSMENT FOR
COMPETITIVE OIL AND GAS LEASE SALE
FOR FEBRUARY 2011
WY-080-EA10-27**

1.0 INTRODUCTION

It is the policy of the Bureau of Land Management (BLM) as derived from various laws, including the Mineral Leasing Act (MLA) of 1920, as amended [30 U.S.C. 181 *et seq.*] and the Federal Land Policy and Management Act of 1976 [43 U.S.C. 1701 *et seq.*], to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs.

As required by the Federal Oil and Gas Leasing Reform Act of 1987 (FOOGLRA) (Public Law 100-203, Sec. 5102, dated 12/22/87), an amendment to the MLA and the Code of Federal Regulations (CFR) (43 CFR 3120.1-2), the BLM Wyoming State Office conducts a quarterly competitive lease sale to sell available oil and gas lease parcels. After a public nomination process, a Notice of Competitive Lease Sale (NCLS), which lists lease parcels to be offered at the auction, is published by the BLM State Office at least 45 days before the auction is held. Lease terms and conditions as well as site-specific resource protection stipulations applicable to each parcel are specified in the Sale Notice. The decision as to which public lands and minerals are open for leasing and what leasing stipulations may be necessary, based on information available at the time, is made during the land use planning process. Surface management of non-BLM administered land overlaying federal minerals is determined by BLM in consultation with the appropriate surface management agency or the private surface owner.

In the process of preparing a lease sale the Wyoming BLM State Office sends a preliminary parcel list with the respective nominated parcels to each field office. Field Office staff reviews the legal descriptions of the parcels to determine if they are in areas open to leasing; if appropriate stipulations have been included; if new information has become available which might change any analysis conducted during the planning process; if appropriate consultations have been conducted; and if there are special resource conditions of which potential bidders should be made aware. On rare occasions, additional information obtained after the publication of the NCLS, may result in the withdrawal of certain parcels prior to the day of the lease sale.

This Environmental Assessment (EA) documents the Newcastle Field Office review of the 10 parcels that were nominated through an Expression of Interest (EOI) for the Competitive Oil and Gas Lease Sale scheduled for February 2011. All parcels addressed in this EA are under the administration of the Newcastle Field Office. The parcels that are not sold at auction during the competitive lease sale will be available for purchase through the non-competitive bidding

process for a period of 2 years from the date of the initial respective sale. The EA serves to verify conformance with the approved land use plan, address new information, and provide the rationale for the recommendations of the Newcastle Field Manager regarding the deferral or the offer of leases for these parcels.

1.1 Purpose and Need

The purpose of this document is to analyze the impacts of offering the parcels at the competitive oil and gas lease sale to allow private individuals or companies to explore for and develop oil and gas resources on public lands. BLM has prepared this EA to analyze whether it remains appropriate to offer leases for these parcels.

The sale and issuance of oil and gas leases is needed to meet the growing energy needs of the United States public. Wyoming is a major source of natural gas for heating and electrical energy production in the lower 48 states, especially for markets in the Eastern United States. Continued sale and issuance of lease parcels is necessary to maintain options for production as oil and gas companies seek new areas for production or attempt to develop previously inaccessible or uneconomical reserves.

1.2 Conformance with Applicable Land Use Plan and Other Environmental Assessments

Pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21, this environmental assessment (EA) tiers to and incorporates by reference the information and analysis contained in the Newcastle Resource Management Plan (RMP) and Final Environmental Impact Statement (FEIS).

The Newcastle RMP FEIS analyzed a range of alternatives regarding land use allocations, terms and conditions, as well as resource protection stipulations specific to oil and gas leasing. Ultimately, the Proposed RMP was selected and approved as the Newcastle RMP by Record of Decision (ROD) signed August 25, 2000. Federal mineral estate was identified as either administratively unavailable or open for oil and gas leasing throughout the planning area. The Newcastle RMP dictates resource protection and site-specific stipulations that are attached to parcels offered for leasing throughout the Newcastle Field Office planning area. For a complete listing of all 10 parcels with the applicable terms and conditions as well as site-specific resource protection stipulations, see Appendix.

1.3 Leasing

Analysis as required by NEPA was conducted by Field Office resource specialists who relied on personal knowledge of the areas involved and/or reviewed existing databases and file information to determine if appropriate stipulations have been attached to each parcel prior to being made available for lease.

1.4 Federal, State or Local Permits, Licenses or Other Consultation Requirements

Purchasers of oil and gas leases are required to obey all applicable federal, state, and local laws and regulations including obtaining all necessary permits required should lease development occur. The BLM would not offer parcels for sale that would conflict with any local, county, or state plans.

2.0 PROPOSED ACTIONS AND ALTERNATIVES

Oil and gas nominations for the competitive lease sales scheduled to occur in February 2011 within the Newcastle Field Office boundary yielded 10 parcels.

2.1 Alternative A No Action:

The BLM NEPA Handbook (H-1790-1) states that for Environmental Assessments (EAs) on externally initiated proposed actions, the No Action Alternative generally means that the proposed action would not take place. In the case of a lease sale, this would mean that an expression of interest to lease (parcel nomination) would be denied or rejected.

Under the No Action alternative, the BLM would not offer any of the 10 parcels at the competitive lease sale that have been nominated. Surface management would remain the same and ongoing oil and gas development would continue on surrounding federal, private, and state leases.

It is not expected that demand for energy oil and gas will go down, and a decision to not issue these leases would not prevent future leasing in these areas consistent with land use planning decisions, and subject to appropriate stipulations, identified in the Resource Management Plan. Therefore, it is anticipated that these parcels may be nominated and leased at a future date. While future leases may contain more restrictive lease terms, it is reasonable to consider that a substantial portion of the development possible under current planning decisions will be possible under future leases.

2.2 Alternative B Proposed Action:

The Proposed Action is a recommendation from the Newcastle Field Manager to the State Director which includes the availability for leasing of 10 parcels.

This recommendation is based on an interdisciplinary review which included updated site specific resource data and new information not identified in the land use planning process. As required by 43 CFR 3131.3 standard terms and conditions as well as site-specific resource protection stipulations are attached to each parcel as identified by the Newcastle Field Office interdisciplinary review panel of specialists.

The entire list of the 10 subject parcels addressed in this EA, with the standard terms and conditions and site-specific resource protection stipulations attached can be found in the Appendix.

Once sold, the lease purchaser has the right to use so much of the leased lands as is reasonably necessary to explore and drill for all of the oil and gas within the lease boundaries, subject to the stipulations attached to the lease (Title 43 Code of Federal Regulations 3101.1-4).

Oil and gas leases are issued for a 10-year period and continue for as long thereafter as oil or 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; ownership of the minerals leased revert back to the federal government and may be leased again.

Before a lease owner or operator conducts any surface disturbing activities on the lease, BLM must first approve an Application for Permit to Drill (APD) and a surface use plan specified in Title 43 Code of Federal Regulations 3162.

Surface use restrictions, including timing limitation stipulations (TLS), No Surface Occupancy (NSO) stipulations, and controlled surface use (CSU) stipulations, as well as unavailable for leasing designations, cannot be retroactively applied to valid, existing oil and gas leases or to valid, existing use authorizations (e.g., Application for Permit to Drill [APD]). Post-lease actions/authorizations (e.g., APDs, road/pipeline ROWs), however, could be encumbered by TLS and CSU restrictions on a case-by-case basis, as required through project-specific NEPA analysis or other environmental review.

3.0 Description of Affected Environment

This section describes the environment that would be affected by implementation of the alternatives described in Section 2. Aspects of the affected environment described in this section focus on relevant major resources and issues. Certain critical environmental components require analysis under BLM policy. Only those aspects of the affected environment that are potentially impacted are described in detail.

The proposed lease parcels are located in Crook and Niobrara Counties, Wyoming. This environmental assessment (EA) tiers to and incorporates by reference the information and analysis contained in the Newcastle RMP FEIS.

3.1 Air Resources

In addition to the air quality information in the RMP cited above, new information about GHGs and their effects on national and global climate conditions has emerged since the RMP was prepared. On-going scientific research has identified the potential impacts of GHG emissions such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), water vapor; and several trace gases on global climate. Through complex interactions on a global scale, GHG emissions cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia (along with corresponding variations in climatic conditions), industrialization and burning of fossil carbon sources have caused GHG concentrations to increase measurably, and may contribute to overall climatic changes.

This EA incorporates an analysis of the contributions of the proposed action to GHG emissions and a general discussion of potential impacts to climate. Air quality and climate are the components of air resources, which include applications, activities, and management of the air resource. Therefore, the BLM must consider and analyze the potential effects of BLM and BLM-authorized activities on air resources as part of the planning and decision making process.

3.1.1 Air Quality

The U.S. Environmental Protection Agency (EPA) established air quality standards (NAAQS) for criteria pollutants. Criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), sulfur dioxide (SO₂), and lead (Pb). Air pollutant concentrations greater than the NAAQS represent a risk to human health.

EPA has delegated regulation of air quality to the State of Wyoming and is administered by the Wyoming Department of Environmental Quality. Wyoming Ambient Air Quality Standards (WAAQS) and 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 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 counties that lie within the jurisdictional boundaries of the Newcastle Field Office are classified as in attainment of all state and national ambient air quality standards as defined in the Clean Air Act of 1977, as amended. Modeling conducted to date by the WYDEQ does not indicate that air quality is likely to exceed any limits specified by the Clean Air Act in the near future.

Although various state and federal agencies monitor air pollutant concentrations, visibility, and atmospheric deposition throughout Wyoming, at present there are only two air quality monitors near the Newcastle Field Office in Weston County. Table 3.1 and 3.2 list the available air quality monitoring standards and background parameters in the lower Little Missouri River Basin. The Wyoming Department of Environmental Quality (DEQ) operates a PM10 monitor as part of the State and Local Monitoring Site (SLAMS) network in Cody, Wyoming (Park County). Additional SLAMS and Special Purpose Monitoring (SPM) sites operate in nearby counties. Nearby monitoring sites include several IMPROVE monitors and BLM administered sites that are part of the Wyoming Air Resource Monitoring System (WARMS) and National Acid Deposition Program (NADP), (Weston County). Atmospheric deposition (wet) measurements of ammonium, sulfate, and various metals are also taken at the Sinks Canyon, South Pass and Yellowstone Park sites, which the BLM operates as part of the National Acid Deposition Program (NADP).

Table 3.1 Criteria Air Pollutant standards and background concentrations (not to be exceeded more than once per year).

Pollutant	Averaging Period	Wyoming Standard(ug/m3)	National Standard	Background Concentration
Total suspended particulates	24-hr.	150	—	62.5
Particulate matter <10 micrometers in diameter (PM-10)	24-hr.	150	150	10
	annual	50	50	—
Nitrogen dioxide (NO2)	annual	100	100	2
Ozone (O3)	1-hr.	160	235	—
Sulfur dioxide (SO2)	3-hr.	1,300	—	—
	24-hr.	260	365	9

	Annual	60	80	1
Carbon monoxide	1-hr.	40,000	40,000	3500
	8-hr.	10,000	10,000	1500

Table 3.2 Air Pollution increments for prevention of significant deterioration

Pollutant	Averaging Period	Wyoming Standard(ug/m3)	National Standard	Background Concentration
Total suspended particulates	annual			
	Geometric	5	19	37
Nitrogen dioxide (NO2)	24-hr.	10	37	75
	annual arithmetic	2.5	25	50
Sulfur dioxide (SO2)	3-hr.	25	512	700
	24-hr.	5	91	182
	annual		80	1
	annual arithmetic	2	20	40

With only two air quality monitors in the lower Little Missouri River Basin, 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. The examination of these data indicates that the current air quality for criteria pollutants in the Planning Area is considered good overall. Based on measurements in the area, visibility in the Planning Area is considered excellent. More information from the available air quality monitoring stations is on file at the Newcastle Field Office.

3.1.2 Climate

The climate in the Resource Area is generally dry continental temperate. Most days in the area are dry and sunny with weather fronts coming from the Pacific Ocean. The area does vary in its climatic setting as influenced by elevation. Higher elevations experience lower average temperatures and higher average precipitation. Thus, the lowest area in the Belle Fourche valley supports steppe/grassland ecosystems. Most of the area is semiarid steppe, while the mountains in the Northeast are more lush montane and alpine ecosystems.

Precipitation and temperature are the two most important climatic parameters relating vegetation growth in the planning area. The locations of stations where climate measurements are made in the resource area can be found in the management situation analysis (MSA) which is on file at the Newcastle Field Office. The average annual precipitation for the area is from 22.78 inches in

the Black Hills at Alva to 10.59 inches at Keeline. About 19% of the precipitation generally occurs from November through March as snow and about 57% from April through July as rain. Temperatures can be extreme in both winter and summer. The lowest recorded temperature was -30°F and the highest was 105°F.

Other climatic factors which affect the ecological setting of the area are humidity, evaporation, and growing season length. Relative humidity over this area can be very low and averages about 65% throughout the year. Pan evaporation is an indication of the amount of moisture that can be lost by water bodies, soil, and vegetation due to atmospheric conditions. The estimated annual pan evaporation for this area is 60 to 65 inches of water. The growing season in this area is short making grain production limited and most other agricultural activities inappropriate, though the grasslands have helped to foster the grazing industry. The frost-free period is a maximum of about 137 days (the longest in the state) and decreases with the increasing elevation to as low as 100 days. Winter in this part of the state is not as long and harsh as elsewhere, although severe snowstorms occur between once and twice a year, particularly in the higher elevations. Days with summer thunderstorms are more common along the eastern edge of the state, including the planning, averaging over 50 days per year.

Wind observations are not taken in the area. The nearest such stations in similar parts of the state are at Casper and Cheyenne. It is expected that like most of the state, winds are predominantly from the west to southwest, depending on the influence of local terrain, and can be quite strong. More information on wind speeds and directions can be found in the MSA on file at the Newcastle Field office.

Climate change refers to any significant change in measures of climate (e.g., temperature or precipitation) lasting for an extended period of time (decades or longer). Climate change may result from natural processes, such as changes in the sun's intensity; natural processes within the climate system (such as changes in ocean circulation); human activities that change the atmosphere's composition (such as burning fossil fuels) and the land surface (such as urbanization) (IPCC 2007).

Greenhouse gases that are included in the US Greenhouse Gas Inventory are: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). CO₂ and methane (CH₄) are typically emitted from combustion activities or are directly emitted into the atmosphere. On-going scientific research has identified the potential impacts of greenhouse gas emissions (including CO₂; CH₄; nitrous oxide (N₂O), water vapor; and several trace gasses) on global climate. Through complex interactions on at regional and global scales, these greenhouse gas emissions cause a net warming effect of the atmosphere (which making makes surface temperatures suitable for life on Earth), primarily by decreasing the amount of heat energy radiated by the Earth back into space. Although greenhouse gas levels have varied for millennia (along with corresponding variations in climatic conditions), recent industrialization and burning of fossil carbon sources have caused CO₂ concentrations to increase dramatically, and are likely to contribute to overall climatic

changes, typically referred to as global warming. Increasing CO₂ concentrations also lead to preferential fertilization and growth of specific plant species.

Global mean surface temperatures have increased nearly 1.0°C (1.8°F) from 1890 to 2006 (Goddard Institute for Space Studies, 2007). However, observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Data indicates that northern latitudes (above 24° N) have exhibited temperature increases of nearly 1.2°C (2.1°F) since 1900, with nearly a 1.0°C (1.8°F) increase since 1970 alone. It also shows temperature and precipitation trends for the conterminous United States. For both parameters we see varying rates of change, but overall increases in both temperature and precipitation. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of greenhouse gases are likely to accelerate the rate of climate change.

In 2001, the Intergovernmental Panel on Climate Change indicated that by the year 2100, global average surface temperatures would increase 1.4 to 5.8°C (2.5 to 10.4°F) above 1990 levels. The National Academy of Sciences (2006) has confirmed these findings, but also indicated that there are uncertainties regarding how climate change may affect different regions. Computer model predictions forecasts indicate that increases in temperature will not be evenly or equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures is more likely than increases in daily maximum temperatures.

Currently, the WDEQ-AQD does not have regulations regarding greenhouse gas emissions, although these emissions are regulated indirectly by various other regulations.

Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The primary greenhouse gases that enter the atmosphere as a result of anthropogenic activities include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorinated gases such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. These synthetic gases are powerful GHGs that are emitted from a variety of industrial processes.

Ongoing scientific research has identified the potential impacts of anthropogenic greenhouse gas (GHG) emissions and changes in biological sequestration due to land management activities on global climate. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused CO₂ concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change (IPCC) recently concluded that “warming of the climate system is unequivocal” and “most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations.”

Several activities contribute to the phenomena of climate change, including emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development, large wildfires and activities using combustion engines; changes to the natural carbon cycle; and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will have a sustained climatic impact over different temporal scales. For example, recent emissions of carbon dioxide can influence climate for 100 years. In contrast, black carbon is a relatively short-lived pollutant, as it remains in the atmosphere for only about a week. It is estimated that black carbon is the second greatest contributor to global warming behind CO₂ (Ramanathan and Carmichael, 2008).

The lack of scientific tools designed to predict climate change at regional or local scales limits the ability to quantify potential future impacts. However, potential impacts to air quality due to climate change are likely to be varied. Several activities occur within the planning area that may generate greenhouse gas emissions: oil, gas, and coal development, large fires, livestock grazing, and recreation using combustion engines which can potentially generate CO₂ and methane.

Some activities within the Planning Area generate greenhouse gas (GHG) emissions. Oil and gas development activities can generate carbon dioxide (CO₂) and methane (CH₄). CO₂ emissions result from the use of combustion engines, while methane can be released during processing. Wildland fires also are a source of other GHG emissions, while livestock grazing is a source of methane. Other activities in the Resource 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. A description of the potential greenhouse gas emissions associated with the proposed leasing activities is included in Section 4.

3.1.3 Visibility

There are several National Parks, National Forests, recreation areas, and wilderness areas surrounding the Newcastle Planning Area. Table 3.4 lists areas designated as Class I or Class II airsheds. National Parks, Monuments and some state designated Wilderness Areas are designated as Class I. The Clean Air Act “declares as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas . . . from manmade air pollution.” 42 U.S.C. § 7491(a)(1).25. Under the BLM Manual Section 8560.36, BLM lands, including wilderness areas not designated as Class I, are managed as Class II, which provides that moderate deterioration of air quality associated with industrial and population growth may occur.

Table 3.4 National Parks, Wilderness Areas, and National Monuments in the Vicinity of the Newcastle Planning Area

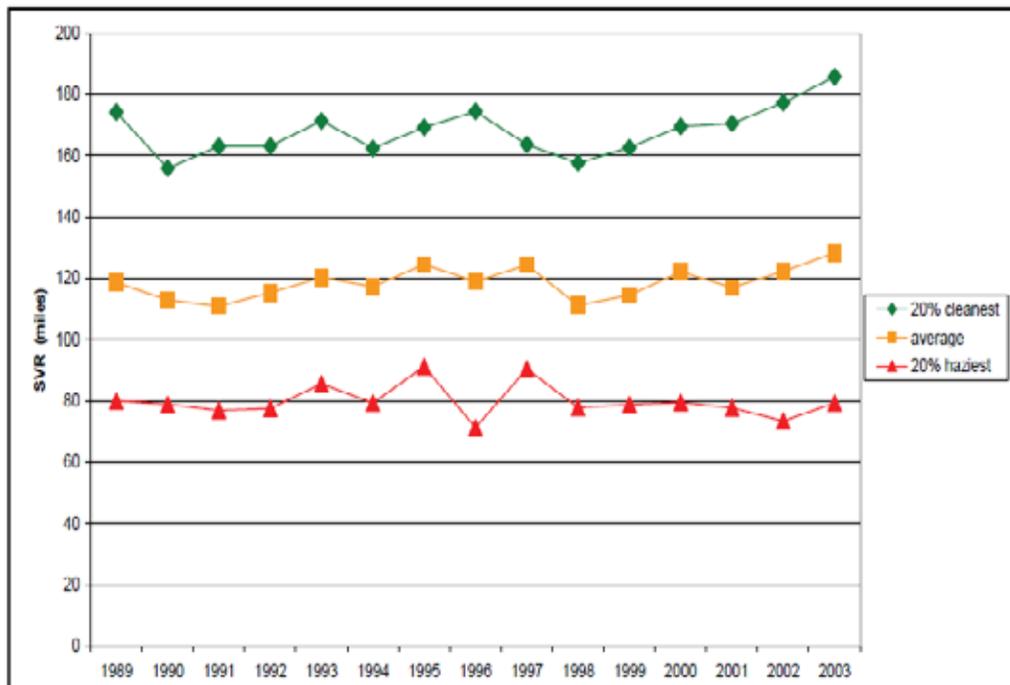
Area Name	Closest Distance to the Newcastle Planning Area (miles)	Direction from the Newcastle Planning Area	Clean Air Act Status of the Area
Wind Cave National Park	75	East	Class I
Yellowstone National Park	>100	Northwest	Class I

Grand Teton National Park	>100	Northwest	Class I
Badlands National Park	>100	East	Class I
Jewel Cave National Monument	50	East	Class II
Cloud Peak Wilderness Area	90	West	Class II
North Absaroka Wilderness Area	>100	Northwest	Class I
Washakie Wilderness Area	>100	Northwest	Class I
Fitzpatrick Wilderness Area	>100	West	Class I
Bridger Wilderness Area	>100	West	Class I
Teton Wilderness Area	>100	Northwest	Class I

Source: NPS 2006

The BLM works cooperatively with several other federal agencies to measure visibility with the Inter-Agency Monitoring of Protected Visual Environments (IMPROVE) network. The IMPROVE station operating in the Class I area nearest to the planning area, approximately >100 miles to the west, is in the Bridger Wilderness Area. Figure 3-2 shows the visual range measured in the Bridger Wilderness Area over the last 15 years.

Figure 3.2 Annual Visibility (SVR) in the Bridger Wilderness Area.\



Source: Caplan 2006b

3.2 Wildlife

3.2.1 Special Status Species

Section 7 of the ESA requires that BLM land managers ensure that any action authorized, funded, or carried out by the BLM is not likely to jeopardize the continued existence of any threatened or endangered species and that it avoids any appreciable reduction in the likelihood of recovery of affected species. Consultation is required on any action proposed by the BLM or another federal agency that affects a listed species or that jeopardizes or modifies critical habitat.

Since the signing of the Newcastle RMP in 2000 the bald eagle is no longer listed as threatened and blowout penstemon has been added to the Newcastle Field Office list of Threatened and Endangered Species. Blowout penstemon was added to the list in May 2009 as an endangered species. Consultation re-initiation for blowout penstemon in the Newcastle Field Office has not been completed. Potential impacts to blowout penstemon and its habitat are evaluated for each project and if needed section 7 consultation is initiated with the U.S. Fish and Wildlife Service Ecological Services Office in Cheyenne, WY.

T&E Species:

Black-footed ferret (*Mustela nigripes*)

Black-footed ferret was listed as an endangered species under the Endangered Species Preservation Act. Black-footed ferrets are members of the weasel family and the only ferret native to North America. Black-footed ferrets are characterized by a black mask, a brownish head, black feet and legs, and a black tipped tail. The black-footed ferret is almost exclusively associated with prairie dog colonies. Ferrets are not normally found in prairie dog towns less than 100 acres in size. The black-footed ferret life span is approximately three years in the wild. No black-footed ferrets are currently known to occur in the Newcastle Field Office (U.S.D.I. 2004).

Ute Ladies'-tresses Orchid (*Spiranthes diluvialis*)

Ute ladies'-tresses is a perennial, terrestrial orchid with stems 20 to 50 cm tall. It has narrow leaves about 28 cm long and 1.5 cm wide at the base of the stem and becoming reduced in size going up the stem (U.S.D.I. 2004). Ute ladies'-tresses inhabits early successional riparian habitats such as moist stream beds, wet meadows, point bars, sand bars, abandoned stream channels, and low lying gravelly, sandy, or cobbly edges (U.S.D.I. 2004). Ute ladies' have a close affinity with floodplain areas where the water table is near the surface throughout the growing season and into early autumn (U.S.D.I. 2004).

Blowout penstemon (*Penstemon haydenii*)

The blowout penstemon is a member of the figwort family (*Scrophulariaceae*). The plant is a hairless perennial herb that grows one to two feet high (U.S.D.I. 2005). The plant flowers from June to July and fruits from July to August. Similar species include *Penstemon grandiflorus*,

which has larger, non-aromatic flowers and larger fruits, and *Penstemon angustifolius* var. *caudatus*, which has smaller flowers (U.S.D.I. 2005). The blowout penstemon's habitat consists of sparsely vegetated, early successional, shifting sand dunes and blowout depressions created by wind (U.S.D.I. 2005). In Wyoming, it is often found on the lower half of steep, sandy slopes, deposited at the bases of sedimentary or granite mountains or ridges. Blowout penstemon is found most frequently in microsites that are zones of sand accumulation. The plant is a primary invader that does not persist when a blowout becomes completely vegetated (U.S.D.I. 2005). The BLM's Special Status Species Policy outlined in BLM Manual 6840 is to conserve listed species and the ecosystems on which they depend and to ensure that actions authorized or carried out by BLM are consistent with the conservation needs of special status species and do not contribute to the need to list any of these species. The BLM's policy is intended to ensure the survival of those plants that are rare or uncommon, either because they are restricted to specific uncommon habitat or because they may be in jeopardy due to human or other actions.

By BLM policy, species proposed for federal listing are to be managed with the same level of protection provided for threatened and endangered species. The policy for federal candidate species and BLM sensitive species is to ensure that no action that requires federal approval should contribute to the need to list a species as threatened or endangered.

Other management direction is based on RMP management objectives, activity level plans, and other aquatic habitat and fisheries management direction, including 50 CFR 17, the Land Use Planning Handbook, Appendix C, Part E, Fish and Wildlife.

The current RMP evaluated the need to protect habitat necessary for the success of species identified through these regulations and policies. New information regarding the status of the Greater Sage-grouse has elevated its status from a BLM sensitive species to a federal candidate species. Policy was issued by the Wyoming BLM in December, 2009 under Information Memoranda 2010-012 and 2010-013; additional policy was issued by the Washington Office BLM under Information Memoranda 2010-071.

The Greater sage-grouse is a candidate species for listing under provisions of the ESA as determined by the USFWS and documented in a March 5, 2010 Federal Register notice declaring that listing of the Greater Sage Grouse was warranted but precluded. Greater sage-grouse are distributed in sagebrush habitat throughout the Newcastle Field Office. Greater sage-grouse leks are generally at mid elevations within sagebrush habitat. Nesting and brood-rearing habitat is sometimes associated with the lek and sometimes found at a distance from the lek in sagebrush habitat. Within the Newcastle Field Office there are approximately 676,580 acres, based on Core Area Version 3 Map of designated Greater Sage-grouse Core Areas that occur on public, private, state, and other federal lands. These remaining suitable sagebrush habitat areas could be productive for Greater sage-grouse; however, fragmentation and degradation might limit the distribution and abundance of Greater sage-grouse. The WGFD has identified core areas, which represent these relatively productive areas, and has suggested special management for these areas.

There are many sources of habitat fragmentation, all of which may affect the Greater sage-grouse. Industrial development, livestock grazing, mining, gravel pit operations, oil and gas activity, land exchanges and disposal, vegetation manipulation, fuel reduction projects and other activities may cause an artificial component to a natural habitat condition. Structures such as powerlines, towers and industrial disruptive activities may cause avoidance and abandonment of habitat. Livestock grazing, fuels treatments, and weed spread infestations are factors which 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 Greater sage-grouse survival. There has been little research to document the presence of the virus and its effect on Greater sage-grouse

Greater sage-grouse have been declining across the west, which has prompted several petitions to list them as threatened under the ESA, including a recent petition that led to the March 5, 2010 finding by the USFWS of warranted for listing but precluded. Population levels throughout the Planning Area declined during the mid 1990s. Since 2004, the levels have maintained or slightly increased. It is thought this resurgence was a result of well-timed precipitation events. 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.

4.0 ENVIRONMENTAL EFFECTS

4.1 Air Resources

4.1.1 Air Quality

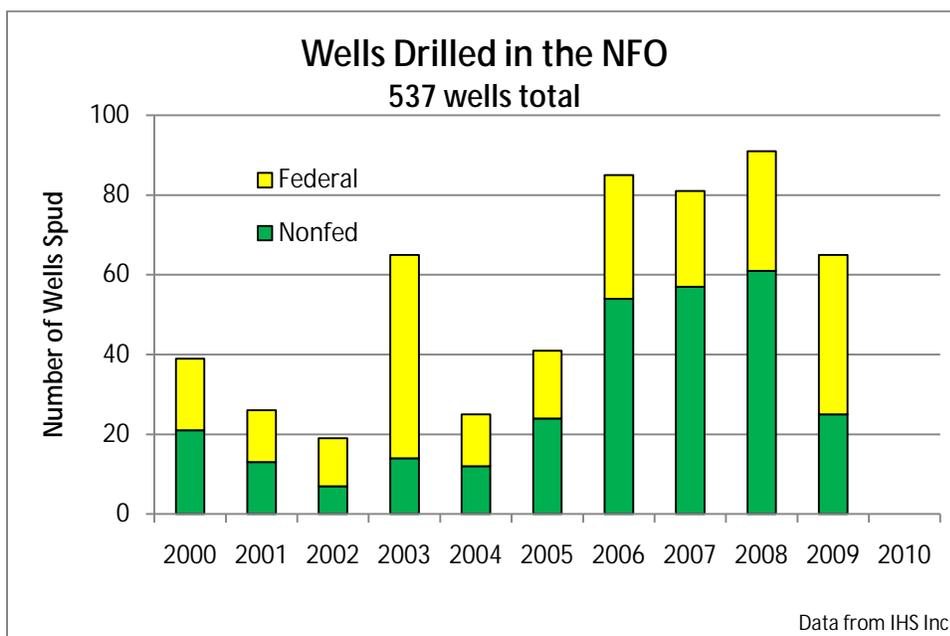
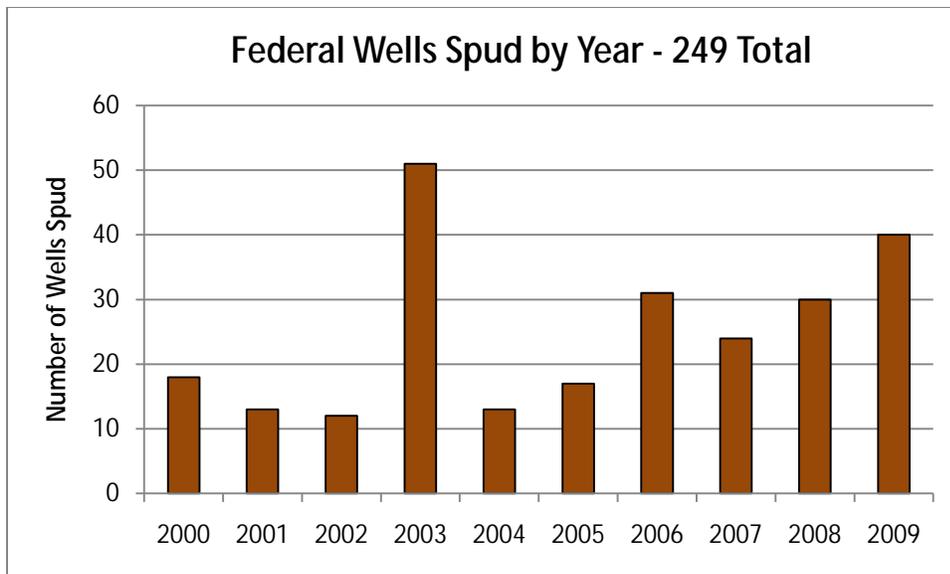
Alternative A: No Action

Due to demand for oil and gas, it is expected that these parcels may be re-nominated in the future, consistent with appropriate land use planning decisions, and would be offered for sale with additional stipulations. There is no way to accurately predict what level of restrictions future leasing may require, but it can be assumed that a substantial portion of the development that would have been authorized under the leases currently sold would still be permitted under future leases. Nominations of parcels for lease under future land use plans and decisions would be screened for consistency with the land use plan in effect at the time, and the appropriate environmental analysis would be conducted to determine associated air quality impacts. Impacts to air quality from leases issued from any future sales would be analyzed in the appropriate environmental documents for those sales. Analysis of air quality impacts is also required at the time an application for a permit to drill is submitted.

A decision to not issue leases for any of the 10 parcels would support continued current uses of these parcels. These uses are primarily associated with grazing, with some dispersed recreation such as hunting and hiking. These uses typically entail vehicle travel for access, and would be expected to continue at current rates.

Alternative B: Proposed Action

Offering leases for the subject tracts would have no direct impacts to air quality. Any potential effects to air quality would occur if and when the leases were developed. Application-for-Permit-to-Drill (APD) permitting trends within the Newcastle Field Office as from October 2008 through July 26, 2010, show that the Newcastle Field Office has approved a total of 249 federal wells, or an average of 25 APDs per year. These wells would contribute a small percentage of the total emissions (including GHG's) from oil and gas activities in Wyoming.



Potential impacts of development could include increased air borne soil particles associated with the construction of new well pads, pipelines, or roads, exhaust emissions from drilling equipment, compressors, vehicles, and dehydration and separation facilities, as well as potential releases of GHG and volatile organic compounds during drilling or production activities. The amount of increased emissions cannot be quantified at this time since it is unknown how many wells might be drilled, the types of equipment needed if a well were to be completed successfully (e.g. compressor, separator, dehydrator), or what technologies may be employed by a given company for drilling any new wells. The degree of impact will also vary according to the characteristics of the geologic formations from which production occurs. Emissions of all

regulated pollutants (including GHGs) and their impacts will be quantified and evaluated at the time that a specific development project is proposed.

The absolute density of drilling depends upon the technology available (vertical, directional, or horizontal) and the geology of the hydrocarbon-bearing zone. As a result, it is unknown the specific numbers of wells that could potentially be drilled under a full field development scenario as a result of issuing the leases.

Subsequent development of any leases issued, would contribute a small incremental increase in overall hydrocarbon emissions, including GHGs. When compared to total national or global emissions, the amount released as a result of potential production from the proposed lease tracts would not have a measurable effect.

Coalbed natural gas development accounts for none of the APDs approved by the Newcastle Field Office.

Mitigation

None

4.1.2 Greenhouse Gas Emissions

Alternative A: No Action

A decision to not offer the leases would preclude oil and gas development that could contribute greenhouse gas emissions from these leases. However, as discussed previously under the no action alternative, this would not preclude future nomination, leasing, and development consistent with land use planning decisions at that time. Based on demand for oil and gas, it is expected that these parcels would be nominated in the future, consistent with appropriate land use planning decisions, and would be offered for sale with appropriate stipulations. There is no way to accurately predict what level of restrictions future leasing may require, but it can be assumed that a substantial portion of the development that would have been authorized under the leases currently sold would still be permitted under future leases. This would result in a postponement of development, and the possibility of the development occurring with increased restriction on greenhouse gas emissions. The levels and types of restrictions would be determined at the time of lease, and submittal of development activities for approval, but are expected to allow for at least moderate development of areas open to leasing. Therefore, the no-action alternative would likely delay, and not prevent, greenhouse gas emissions. The no-action alternative may also result in reduced levels of emissions associated with future expanded restrictions.

See Section 4.3 for a discussion of the impacts of these potential greenhouse gas emissions on global climate change.

Alternative B: Proposed Action

The offer of leases in itself would not result in any direct greenhouse gas emissions. However, in regard to future development, the assessment of GHG emissions and climate change is in its formative phase. While it is not possible to accurately quantify potential GHG emissions in the affected areas as a result of making the proposed tracts available for leasing, some general assumptions however can be made: issuing the proposed tracts may contribute to drilling new wells.

The Center for Climate Strategies (CCS) prepared the Wyoming Greenhouse Gas Inventory and Reference Case Projection 1990-2020 (Inventory) for the Wyoming Department of Environmental Quality (WYDEQ) through an effort of the Western Regional Air Partnership (WRAP). This inventory report presents a preliminary draft greenhouse gas (GHG) emissions inventory and forecast from 1990 to 2020 for Wyoming. This report provides an initial comprehensive understanding of Wyoming's current and possible future GHG emissions. The information presented provides the State with a starting point for revising the initial estimates as improvements to data sources and assumptions are identified.

The inventory report discloses that activities in Wyoming accounted for approximately 56 million metric tons (MMt) of *gross* carbon dioxide equivalent (CO₂e) emissions in 2005, an amount equal to 0.8% of total US gross GHG emissions. These emission estimates focus on activities in Wyoming and are *consumption-based*; they exclude emissions associated with electricity that is exported from the State. Wyoming's gross GHG emissions increased 25% from 1990 to 2005, while national emissions rose by only 16% from 1990 to 2004. Annual sequestration (removal) of GHG emissions due to forestry and other land-uses in Wyoming are estimated at 36 MMtCO₂e in 2005. Wyoming's per capita emission rate is more than four times greater than the national average of 25 MtCO₂e/yr. This large difference between national and State per capita emissions occurs in most of the sectors – Wyoming's emission per capita significantly exceed national emissions per capita for the following sectors: electricity, industrial, fossil fuel production, transportation, industrial process and agriculture. The reasons for the higher per capita intensity in Wyoming are varied but include the State's strong fossil fuel production industry and other industries with high fossil fuel consumption intensity, large agriculture industry, large distances, and low population base. Between 1990 and 2005, per capita emissions in Wyoming have increased, mostly due to increased activity in the fossil fuel industry, while national per capita emissions have changed relatively little.

Wyoming's gross GHG emissions are expected to continue to grow to 69 MMtCO₂e by 2020, 56% above 1990 levels. As shown in Figure ES-3 of the Inventory, demand for electricity is projected to be the largest contributor to future emissions growth, followed by emissions associated with transportation. Although GHG emissions from fossil fuel production had the greatest increase by sector in the period 1990 to 2005, the growth from this sector is projected to decline due to assumption of decreased carbon dioxide emissions from venting at processing plants.

As of 2008, the Inventory indicates that there over 33,000 oil and gas wells in the State. There are over 2000 existing Federal oil and gas wells in the Newcastle Field Office, which account for approximately 10 percent of the total Federal wells in Wyoming. Therefore, GHG emissions

from all wells within the field office amount to approximately 1.96 metric tons annually (mt) (19.6 mt X 0.10 = 1.96 mt) assuming steady production and emission venting.

Based on this emission factor, each potential well that may be drilled on these parcels, if issued, could emit approximately 0.00059 mt of CO₂e. It is unknown what the drilling density may be for these parcels, if they were to be developed; therefore, it is impossible to predict what level of emissions could occur from development at this stage under the proposed action.

Mitigation

The BLM holds regulatory jurisdiction over portions of natural gas and petroleum systems, identified in the EPA Inventory of US Greenhouse Gas Emissions and Sinks document. Exercise of this regulatory jurisdiction has led to development of “Best Management Practices (BMPs)” designed to reduce emissions from field production and operations. Analysis and approval of future development on the lease parcels would include applicable BMPs as conditions of approval (COAs) in order to reduce or mitigate GHG emissions. Additional measures developed at the project development stage would be incorporated as COAs in the approved APD or with a programmatic EIS, which are binding on the operator.

Such mitigation measures may include, but are not limited to:

- Flare hydrocarbon and gases at high temperatures in order to reduce emissions of incomplete combustion through the use of multi-chamber combustors;
- “Green” (flareless) completions,
- Water dirt roads during periods of high use in order to reduce fugitive dust emissions;
- Require that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored;
- Installation of liquids gathering facilities or central production facilities to reduce the total number of sources and minimize truck traffic,
- Use of natural gas fired or electric drill rig engines,
- The use of selective catalytic reducers on diesel-fired drilling engines; and,
- Re-vegetate areas of the pad not required for production facilities to reduce the amount of dust from the pads.

The EPA Inventory data show that adoption by industry of the Best Management Practices proposed by the EPA's Natural Gas Energy Star program has reduced emissions from oil and gas exploration and development (Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2006). The Newcastle Field Office will work with industry to facilitate the use of the relevant BMPs for operations proposed on federal mineral leases where such mitigation is consistent with agency policy.

4.2 Wildlife

4.2.1 Special Status Species

T&E Species:

Section 7 consultation for the Newcastle RMP was completed on October 5, 2004. The Service concurred with determinations that activities described in the land use plan will not likely

adversely affect the Ute ladies'-tresses orchid, black-footed ferret, and downstream listed species on the Platter River System.

Blowout penstemon (*Penstemon haydenii*)

2006 and 2009 NAIP imagery was used to identify potential blowout penstemon habitat in on the proposed leases. No active sand dunes were identified and it was determined that there is no habitat in the analysis area for blowout penstemon.

Because there is no habitat on the proposed leases, the proposed action and no action alternative will have “**no effect**” on blowout penstemon.

Alternative A: No Action

Under the No-Action alternative, leasing of the proposed 10 parcels would not occur. Therefore, no impacts would result from BLM actions on the lands proposed for leasing within the planning area. Additionally, activities in Sage Grouse Core Areas would be limited to those associated with current land uses, primarily existing oil and gas leases, recreation and agriculture. Sage Grouse Core Areas are identified by the state of Wyoming and adjusted to include additional habitat identified in consultation with the local WY Game and Fish office. Approximately 2,193.82 acres (based on Core Area Version 3 Map) of Sage Grouse Core Areas would not be leased and therefore not developed for oil and gas production, consistent with the WY Governor’s strategy to conserve the species in support of the USFWS finding of Warranted but Precluded. As discussed previously, many of these parcels may be eligible for nomination, lease, and development in the future, and could be leased subject to appropriate levels of restriction identified in the RMP at the time.

Alternative B: Proposed Action

Under this alternative, all 10 parcels were screened according to the Sage-grouse screen contained in Instruction Memorandum WY-2010-012 and would be recommended for leasing, 8 of which were found in a sage-grouse core area. 2193.82 acres in Sage-grouse Core Area would be available for leasing due to the lease proximity to existing oil and gas leases and manageability of the surface.

The 10 parcels would receive a recommendation for available for leasing with the standard terms and conditions as well as site-specific resource protection stipulations attached. All other impacts are the same as those described in the Newcastle RMP as they relate to Sage Grouse.

A portion, or all, of some parcels are located in potential sage-grouse habitat. The BLM will, at the time development activities are proposed, conduct a site-specific analysis of the proposal and the current key sage-grouse habitat boundaries (such as the State of Wyoming Governor’s Core Areas). Consistent with decisions that have recognized the ability of the BLM to impose reasonable protection measures at the time lease development activities are proposed based on site-specific environmental analysis, (*Yates Petroleum Corporation*, 176 IBLA 144, 2008) the

BLM may require additional avoidance and/or impact minimization measures in order to manage sage-grouse habitat in support of Wyoming's Sage Grouse Conservation Strategy and Wyoming Game and Fish Department Sage Grouse objectives. These measures may include, but are not limited to, disturbance density limitations or surface use and timing restrictions in proximity to certain habitats (e.g., severe winter relief habitat, sage-grouse leks, etc.). Restrictions and prohibitions for surface use activities may be applied for distances and time periods more restrictive than current RMP stipulation guidance if supported by site-specific NEPA analysis of a development proposal. Such restrictions could be applied as Conditions of Approval for exploration and development activities associated with this lease. These measures may be necessary to meet BLM policy goals for the management of sage grouse habitat and populations as Special Status Species as directed in BLM Manual 6840. Given the designation of Greater Sage Grouse as a Candidate species by US Fish and Wildlife Service (April 2010) BLM will consider more restrictive measures for Oil & Gas activities as needed to prevent the need for listing Greater Sage Grouse as a threatened species.

Mitigation

Additional mitigation and/or Conditions of Approval could be identified at the development stage to further minimize impacts associated with oil and gas development.

4.3 Cumulative Impacts

There are over 2000 federal producing wells in the Newcastle Field Office resource area; there are no producing coalbed methane production wells.

Analysis of cumulative impacts for reasonably foreseeable development (RFD) of oil and gas wells on public lands in the Newcastle Field Office is presented in the Newcastle RMP/FEIS. Potential development of all available federal minerals in the field office, including those in the proposed lease parcels, was included as part of the analysis.

As described in the analysis of environmental consequences, the proposed action and/or the alternative may contribute to the effects of climate change to some extent through GHG emissions. However, it is not currently possible to associate any of these particular actions with the creation of any specific climate-related environmental effects. The lack of scientific tools designed to predict climate change at regional or local scales limits the ability to quantify potential future impacts.

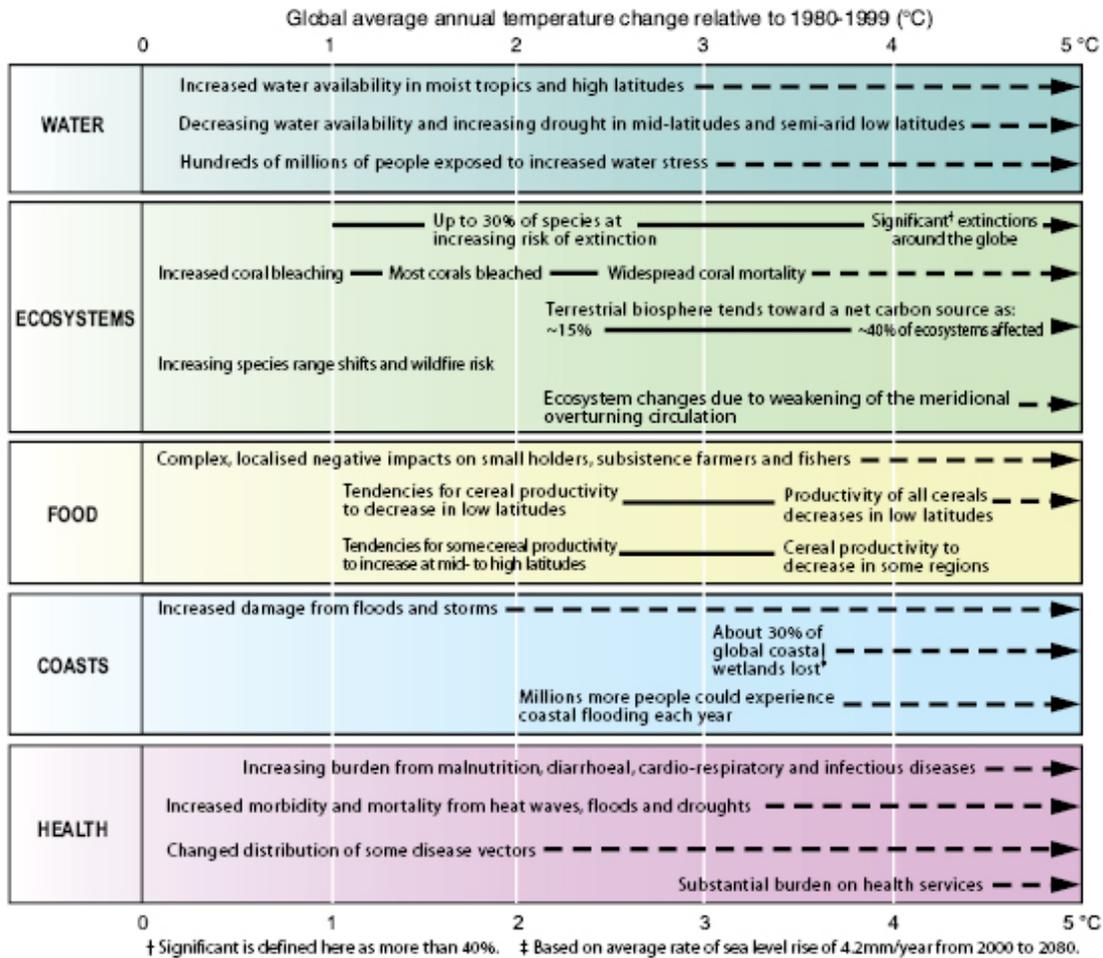
The assessment of greenhouse gas (GHG) emissions and climate change is still in its formative phase; therefore, it is not yet possible to know with confidence the net impact on climate. However, the Intergovernmental Panel on Climate Change (IPCC 2007) recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic [man-made] greenhouse gas concentrations." As the temperatures of the land and sea change, environmental factors such as weather patterns, sea levels, precipitation rates, the timing of the seasons, desert distribution, forest cover, and ocean salinity will also change. These changes influence the world's climate systems and will have different impacts to different areas. Some agricultural regions may become more arid while others become wetter; some

mountainous areas will experience greater summer precipitation, yet experience disappearing snowpack.

Global mean surface temperatures have increased nearly 1.8°F from 1890 to 2006. Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24°N) have exhibited temperature increases of nearly 2.1° F since 1900, with nearly a 1.8°F increase since 1970 alone. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

Based on research compiled for the International Panel on Climate Change Fourth Assessment Report, 2007, potential effects of climate change on resources in the affected environment are likely to be varied. Figure 3.1, taken from the Fourth Assessment Report indicates varying responses of the natural world to increasing temperatures as a result of increasing global temperatures.

Figure 4.1: Examples of impacts associated with global average temperature change (Impacts will vary by extent of adaptation, rate of temperature change and socio-economic pathway)



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%, 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 Newcastle Field Office and for the State of WY currently do not exist.

The average number of oil and gas wells drilled annually in the Field Office and probable GHG emission levels, when compared to the total GHG emission estimates from the total number of Federal oil and gas wells in the State, represent an incremental contribution to the total regional and global GHG emission levels. This incremental contribution to global GHG gases cannot be translated into incremental effects on climate change globally or in the area of these site-specific

actions. As oil and gas and natural gas production technology continues to improve in the future, one assumption is that it may be feasible to further reduce GHG emissions.

Regarding the linkage between climate change related warming and associated impacts, an assessment of the IPCC states that difficulties remain in attributing observed temperature changes at smaller than continental scales. Therefore, it is currently beyond the scope of existing science to predict climate change on regional or local scales resulting from specific sources of GHG emissions.

Significant uncertainties remain with respect to the estimates of the current level of emissions and projections of future production of fossil fuels as the oil and gas industry is difficult to forecast with the mix of drivers: economics, resource supply, demand, and regulatory procedures. The assumptions used for the projections, based on recent trends or State production trends in the near-term, and AEO2006 growth rates through 2020, do not include any significant changes in energy prices, relative to today's prices. Large price swings, resource limitations, or changes in regulations could significantly change future production and the associated GHG emissions. Other uncertainties include the volume of GHGs vented from gas processing facilities in the future, any commercial oil shale or coal-to-liquids production, and potential emissions-reducing improvements in oil and gas production, processing, and pipeline technologies.

5.0 Description of Mitigating Measures and Residual Impacts

The sale of the parcels identified under the proposed action as available for leasing will be mitigated by attaching appropriate conditions of approval to any subsequent requests for lease development either on a case by case basis or upon receipt of a multi-well project proposal. The Newcastle Field Office, Surface Use and Occupancy Requirements, Conditions of Approval, and the Newcastle Field Office's Special Leasing Stipulations, which are in place at the Wyoming State Office, will provide adequate mitigation for sale of all lease parcels under the Proposed Action.

Direct, indirect, cumulative and residual impacts of leasing and lease development are generally described in the Newcastle RMP. An environmental analysis will be prepared on a case-by-case basis upon receipt of future subsequent actions.

6.0 Consultation/Coordination

Newcastle Field Office BLM Staff:

Rod Randall, Physical Scientist

Alice Tratebas, Archaeologist

Nate West, Wildlife Biologist

Wyoming Game and Fish Department Staff:

Joe Sandrini, Wildlife Biologist

Heather O'Brien, Wildlife Biologist

High Plains District Office BLM Staff:

Mike Robinson, Resource Advisor

Wyoming State Office BLM Staff:

Christopher Carlton, Planning and Environmental Coordinator

Merry Gamper, Physical Scientist

7.0 References

U.S. Department of the Interior, Bureau of Land Management. 2000. Newcastle Proposed Resource Management Plan and Final Environmental Impact Statement. Newcastle, Wyoming.

U.S. Department of the Interior, Bureau of Land Management. 2000. Newcastle Approved Resource Management Plan and Record of Decision. Newcastle, Wyoming.

7.1 Authorities

Code of Federal Regulations (CFR) 3100

40 CFR All Parts and Sections inclusive Protection of Environment, Revised as of July 1, 2001.

43 CFR, All Parts and Sections inclusive - Public Lands: Interior. Revised as of October 1, 2000.

U.S. Department of the Interior, Bureau of Land Management and Office of the Solicitor (editors). 2001. The Federal Land Policy and Management Act, as amended. Public Law 94-579.

APPENDIX

Lease Parcels

WY-1102-006 520.440 Acres

T.0380N, R.0660W, 06th PM, WY

Sec. 001 LOTS 1,2,4;
 001 SWNE,SWNW,SE;
 020 E2SW;
 021 NENE,SWSE;

Niobrara County

Newcastle FO

Formerly Lease No.

Stipulations:

Lease Notice No. 1

Lease Notice No. 2

Lease Notice No. 3

Special Lease Stipulation

TLS (1) Feb 1 to Jul 31; (2) as mapped on the Newcastle Field Office GIS database; (3) protecting nesting Raptors.

CSU (1) The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) as mapped on the Newcastle Field Office GIS database; (3) protecting *Spiranthes diluvialis* (Ute ladies'-tresses).

CSU (1) The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) entire lease; (3) protecting *Centrocercus urophasianus* (Greater sage-grouse).

TLS (1) Mar 15 to Jul 15; (2) entire lease; (3) protecting nesting Greater sage-grouse.

WY-1102-007 360.350 Acres

T.0380N, R.0660W, 06th PM, WY

Sec. 002 LOTS 1,2;

002 S2NE;

007 SENE,SE;

Niobrara County

Newcastle FO

Formerly Lease No.

Stipulations:

Lease Notice No. 1

Lease Notice No. 2

Lease Notice No. 3

Special Lease Stipulation

TLS (1) Feb 1 to Jul 31; (2) as mapped on the Newcastle Field Office GIS database; (3) protecting nesting Raptors.

CSU (1) The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) as mapped on the Newcastle Field Office GIS database; (3) protecting *Spiranthes diluvialis* (Ute ladies'-tresses).

TLS (1) Mar 15 to Jul 15; (2) entire lease; (3) protecting nesting Greater sage-grouse.

CSU (1) The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) entire lease; (3) protecting *Centrocercus urophasianus* (Greater sage-grouse).

WY-1102-008 280.000 Acres

T.0380N, R.0660W, 06th PM, WY

Sec. 008 SWNE,S2NW,SE;

Niobrara County
Newcastle FO
Formerly Lease No.
Stipulations:

Lease Notice No. 1
Lease Notice No. 2
Lease Notice No. 3

Special Lease Stipulation

TLS (1) Feb 1 to Jul 31; (2) as mapped on the Newcastle Field Office GIS database; (3) protecting nesting Raptors.

CSU (1) The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) as mapped on the Newcastle Field Office GIS database; (3) protecting *Spiranthes diluvialis* (Ute ladies'-tresses).

TLS (1) Mar 15 to Jul 15; (2) entire lease; (3) protecting nesting Greater sage-grouse.

CSU (1) The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) entire lease; (3) protecting *Centrocercus urophasianus* (Greater sage-grouse).

WY-1102-009 515.040 Acres
T.0380N, R.0660W, 06th PM, WY
Sec. 009 S2S2,NWSE;
 031 LOTS 1-4;
 031 E2W2;

Niobrara County
Newcastle FO

Formerly Lease No.

Stipulations:

Lease Notice No. 1

Lease Notice No. 2

Lease Notice No. 3

Special Lease Stipulation

TLS (1) Mar 15 to Jul 15; (2) as mapped on the Newcastle Field Office GIS database; (3) protecting nesting Greater sage-grouse.

TLS (1) Feb 1 to Jul 31; (2) as mapped on the Newcastle Field Office GIS database; (3) protecting nesting Raptors.

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CSU (1) The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) entire lease; (3) protecting *Centrocercus urophasianus* (Greater sage-grouse).

WY-1102-010 160.000 Acres

T.0380N, R.0660W, 06th PM, WY

Sec. 011 NE;

Niobrara County

Newcastle FO

Formerly Lease No.

Stipulations:

Lease Notice No. 1

Lease Notice No. 2

Lease Notice No. 3

Special Lease Stipulation

TLS (1) Feb 1 to Jul 31; (2) as mapped on the Newcastle Field Office GIS database; (3) protecting nesting Raptors.

CSU (1) The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) entire lease; (3) protecting *Centrocercus urophasianus* (Greater sage-grouse).

TLS (1) Mar 15 to Jul 15; (2) entire lease; (3) protecting nesting Greater sage-grouse.

WY-1102-011 600.000 Acres

T.0380N, R.0660W, 06th PM, WY

Sec. 012 W2NE,NW,S2;

014 NENE;

Niobrara County

Newcastle FO

Formerly Lease No.

Stipulations:

Lease Notice No. 1

Lease Notice No. 2

Lease Notice No. 3

Special Lease Stipulation

TLS (1) Feb 1 to Jul 31; (2) as mapped on the Newcastle Field Office GIS database; (3) protecting nesting Raptors.

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consultation; (2) as mapped on the Newcastle Field Office GIS database; (3) protecting *Spiranthes diluvialis* (Ute ladies'-tresses).

CSU (1) The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) entire lease; (3) protecting *Centrocercus urophasianus* (Greater sage-grouse).

TLS (1) Mar 15 to Jul 15; (2) entire lease; (3) protecting nesting Greater sage-grouse.

WY-1102-012 237.990 Acres

T.0380N, R.0660W, 06th PM, WY

Sec. 018 LOTS 1;

018 N2NE, SWNE, E2NW;

Niobrara County

Newcastle FO

Formerly Lease No.

Stipulations:

Lease Notice No. 1

Lease Notice No. 2

Lease Notice No. 3

Special Lease Stipulation

TLS (1) Feb 1 to Jul 31; (2) as mapped on the Newcastle Field Office GIS database; (3) protecting nesting Raptors.

CSU (1) The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) entire lease; (3) protecting *Centrocercus urophasianus* (Greater sage-grouse).

TLS (1) Mar 15 to Jul 15; (2) entire lease; (3) protecting nesting Greater sage-grouse.

WY-1102-013 240.000 Acres
T.0380N, R.0660W, 06th PM, WY
Sec. 024 S2NE,NW;

Niobrara County

Newcastle FO

Formerly Lease No.

Stipulations:

Lease Notice No. 1

Lease Notice No. 2

Lease Notice No. 3

Special Lease Stipulation

TLS (1) Feb 1 to Jul 31; (2) as mapped on the Newcastle Field Office GIS database; (3) protecting nesting Raptors.

CSU (1) The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) entire lease; (3) protecting *Centrocercus urophasianus* (Greater sage-grouse).

TLS (1) Mar 15 to Jul 15; (2) entire lease; (3) protecting nesting Greater sage-grouse.

WY-1102-015 958.850 Acres
T.0330N, R.0670W, 06th PM, WY
Sec. 001 LOTS 3,4;
001 S2NW;
002 SWNE,S2SE,NESE;
011 W2NE,SENE,SW,NWSE;
012 S2NE;
029 NENE,E2SE;
032 E2NE;
033 NENE;

Converse and Niobrara Counties

Casper FO

Newcastle FO

Formerly Lease No.

Stipulations:

Lease Notice No. 1

Lease Notice No. 2

Lease Notice No. 3

Special Lease Stipulation

TLS (1) Mar 15 to Jul 15; (2) as mapped on the Newcastle Field Office GIS database; (3) protecting nesting Greater sage-grouse.

CSU (1) The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation; (2) as mapped on the Newcastle Field Office GIS database; (3) protecting *Spiranthes diluvialis* (Ute ladies'-tresses); Species affected by water depletions from the Platte River system.

WY-1102-016 158.980 Acres

T.0540N, R.0680W, 06th PM, WY

Sec. 030 LOTS 7-10;

Crook County

Newcastle FO

Formerly Lease No.

Stipulations:

Lease Notice No. 1

Lease Notice No. 2

Lease Notice No. 3

Special Lease Stipulation