

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

Environmental Assessment

DOI-BLM-WY-100-EA2010-447

July 2010

August Lease Parcels

Pinedale Field Office
1625 West Pine St.
P.O. Box 768
Pinedale, Wyoming 82941
307-367-5300



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Affected Resources EA Checklist

Bureau of Land Management, Pinedale Field Office
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August Lease Issuance for the Pinedale Field Office

Determination	Resource	Rationale for Determination
PI	Air Quality	No affects associated with leasing. Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS (Appendix 19).
NP	Areas of Critical Environmental Concern	
NP	BLM Natural Areas	
NI	Cultural Resources	Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS with appropriate mitigation measures attached to lease parcels. Parcel WY-1008-075 contains a non-contributing segment of the Lander Trail. (Appendix 1).
PI	Greenhouse Gas Emissions	No direct greenhouse gas emissions associated with leasing. Minimal emissions possible under expected actual development. New information on greenhouse gas emissions available.
NP	Environmental Justice	
NP	Farmlands (Prime or Unique)	
NI	Fish and Wildlife Excluding Federally Listed Species	Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS with appropriate mitigation measures attached to lease parcels. Parcel WY-1008-075 contains segments of South Piney and Spring Creek and their wetland/riparian zones. (Appendix 18).
NI	Floodplains	Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS with appropriate mitigation measures attached to lease parcels. Parcel WY-1008-075 contains segments of South Piney and Spring Creek and their associated floodplains.
NP	Fuels/Fire Management	

NI	Geology/Mineral Resources/Energy Production	Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS with appropriate mitigation measures attached to lease parcels.
NI	Hydrologic Conditions	Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS with appropriate mitigation measures attached to lease parcels.
NI	Invasive Species/Noxious Weeds	The Pinedale Field Office, operates under INPS protocols as set forth in the following documents: Vegetation Treatment on BLM Lands in the Seventeen Western States FEIS and ROD (2007);
PI	Lands/Access	Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS with appropriate mitigation measures attached to lease parcels. Portions of parcel WY-1008-075 overlay a portion of the Cross Lazy 2 Conservation Easement. The easement was collectively obtained by Upper Green River Valley Land Trust and the JIO to help off-set impacts of the Jonah Field.
NI	Livestock Grazing	Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS with appropriate mitigation measures attached to lease parcels (Appendix 21).
NI	Migratory Birds	The act of the proposed action (leasing) would have no affect on this resource. Site specific NEPA for proposed surface disturbing activities would further analyze affects and mitigation applied in compliance with the Migratory Bird Species-Interim Management Guidance Policy (included within Instruction Memorandum No. 2008-050)
NI	Native American Religious Concerns	Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS with appropriate mitigation measures attached to lease parcels (Appendix 1.)
NI	Paleontology	The act of the proposed action (leasing)

		would have no affect on this resource. Impacts from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS.
NI	Rangeland Health Standards	Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS with appropriate mitigation measures attached to lease parcels (Appendix 21).
NI	Recreation	Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS with appropriate mitigation measures attached to lease parcels.
PI	Socio-Economics	Socioeconomic data was updated, and analysis based on more recent information is provided.
NI	Soils	Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS with appropriate mitigation measures attached to lease parcels.
NP	Threatened, Endangered or Candidate Plant Species	
PI	Threatened, Endangered or Candidate Animal Species	Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS.
NP	Wastes (hazardous or solid)	
NI	Water Resources/Quality (drinking/surface/ground)	Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS. Parcel WY-1008-075 contains segments of South Piney and Spring Creek and their wetland/riparian zones.
NI	Wetlands/Riparian Zones	Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS with appropriate mitigation measures attached to lease parcels. Parcel WY-1008-075 contains segments of South Piney and Spring Creek and their wetland/riparian zones. (Appendix 21).
NP	Wild and Scenic Rivers	

NP	Wilderness/WSA	
NP	Woodland/Forestry	
NI	Vegetation Excluding Federally Listed Species	Affects from surface disturbing activities were analyzed in the Pinedale Field Office RMP/FEIS with appropriate mitigation measures attached to lease parcels.
NI	Visual Resources	Affects from development were analyzed in the Pinedale Field Office RMP/FEIS with appropriate mitigation measures attached to lease parcels. A portion of parcel WY-1008-075 falls within an area of VRM Class II
NP	Wild Horses and Burros	
PI	Areas with Wilderness Characteristics	Lands containing wilderness characteristics were analyzed, and the results contained in Appendix C.

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
PINEDALE FIELD OFFICE
ENVIRONMENTAL ASSESSMENT FOR
AUGUST 2010 COMPETITIVE OIL AND GAS LEASE SALE
DOI-BLM-WY-100-EA2010-447

INTRODUCTION

It is the policy of the Bureau of Land Management (BLM) as derived from various laws, including the Mineral Leasing Act of 1920, as amended [30 U.S.C. 181 *et seq.*] and the Federal Land Policy and Management Act of 1976, to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs. The BLM Wyoming State Office conducts a quarterly competitive lease sale to sell available oil and gas lease parcels in Wyoming and Nebraska. A Notice of Competitive Lease Sale, 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 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 BLM State Office sends a draft parcel list to each field office where the parcels are located. Field Office staff then review 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. Once the draft parcel review is completed and returned to the State Office, a list of available lease parcels and stipulations is made available to the public through a Notice of Competitive Lease Sale (NCLS). On rare occasions, additional information obtained after the publication of the NCLS, may result in withdrawal of certain parcels prior to the day of the lease sale.

The following Environmental Assessment (EA) documents the Pinedale Field Office review of the three parcels (3) with a total of 3290.57 acres to be offered at the August 2010 Competitive Oil and Gas Lease Sale that are under the administration of the Pinedale Field Office. It serves to verify conformance with the approved land use plan and provides the rationale for deferring or dropping parcels from a lease sale as well as providing rationale for attaching additional lease stipulations to specific parcels.

1.0 Purpose and Need

The purpose of this document is to analyze the impacts of offering parcels for competitive oil and gas leasing is to allow private individuals or companies to explore for and develop oil and gas resources on public markets. The analysis is needed to meet BLM's obligations under federal statutes.

The BLM's purpose and need for offering parcels on the August 2010 lease sale is to provide areas for the potential exploration and development of additional oil and gas resources to help meet the nation's current and expanding need for energy sources. Wyoming is a major source of natural gas for heating and electrical energy production in the United States. The sale and issuance of oil and gas leases also is needed to meet the requirements of Mineral Leasing Act and FLPMA. Oil and gas leasing provides oil and gas companies the opportunity to expand existing areas of production and to locate previously undiscovered oil and gas resources to help meet the public's energy demands.

1.1 Conformance with Applicable Land Use Plan and Other Environmental Assessments

The RMP described specific stipulations that would be attached to new leases offered in certain areas. 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 Pinedale Field Office Resource Management Plan and Final Environmental Impact Statement. The Final Resource Management Plan was approved by a Record of Decision (ROD) signed November 2008.

According to the Pinedale RMP ROD, approximately 453,700 acres are closed to leasing. Approximately 175,040 acres are available for intensive oil and gas leasing with standard lease stipulations and appropriate NSO and CSU stipulations and 451,490 acres are available for oil and gas leasing in concert with maintaining the viability of non oil and gas resourced values and land issues. The RMP described specific stipulations that would be attached to new leases offered in certain areas.

One of the nominated parcel is located in an area not open to leasing and was deleted from the August 2010 Lease Sale. Additionally one of the nominated parcels overlays a portion of a conservation easement secured as off-site mitigation for impacts occurring in the Jonah Field. Per verbal direction from the Wyoming State Office Leasing Supervisor the portion of the lease that overlays the conservation easement is recommended for deferral from the August list:

Parcel Deleted Pursuant to the Original Field Office Review and Processing:

WY-1008-107* 831.880 Acres

T.0370N, R.1100W, 06th PM, WY

Sec. 019 LOTS 1-4;
019 W2E2,E2W2;
030 LOTS 1-4;
030 NWNE,E2NW;
031 W2NE;

*This parcel was submitted to the field office for the initial list processing and was recommended for deletion at that time. Per the Field Office recommendation the parcel was not included in the August Lease Offer Booklet and is only included here for reference.

Portion of Parcel Deferred:

WY-1008-075 (originally WY-1008-110) 680.000 Acres

T.0290N, R.1140W, 06th PM, WY

Sec. 011 SWNE,W2,SE;
012 W2SW, SESW; SWSE.

1.2 Leasing:

Analysis as required by the National Environmental Policy Act (NEPA) of 1969, as amended (Public Law 91-90, USC 4321 *et seq.*) 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 had been attached to specific parcels before they were made available for lease.

It is unknown when, where, or if future well sites or roads might be proposed. Detailed site specific analysis of individual wells or roads would occur when a lease holder submits an Application for Permit to Drill (APD).

Issuance of leases would not be in conflict with any local, county, or state plans.

The following DNA document was prepared by the Pinedale Field Office April 2010) in support of the decisions to offer the subject parcels for sale, and provide additional information on the site specific characteristics of each parcel (the DNA is hereby supplanted by this EA):

Lease Sale	NEPA Documentation	Date Signed
August 2010 parcels	Documentation of NEPA Adequacy (DNA)	April 8, 2010

1.3 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.

Pinedale Field Office endangered species specialists reviewed each parcel before it was offered for sale. They determined that leasing of all parcels would comply with threatened and endangered species management guidelines as there are no documented T&E species, or their habitats, located within the parcels. No further consultation with the U.S. Fish and Wildlife Service is required at this stage.

Compliance with Section 106 responsibilities of the National Historic Preservation Act are adhered to by following the BLM – Wyoming SHPO protocol agreement, which is authorized by the National Programmatic Agreement between BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers, and other applicable BLM handbooks.

PROPOSED ACTIONS AND ALTERNATIVES

2.0 Alternatives Including the Proposed Action

Three (3) lease parcels (3290.570) acres were originally nominated and proposed for inclusion in the August 2010 Competitive Oil and Gas Lease Sale.

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.

The No Action alternative would withdraw all three (3) lease parcels from the August 2010 lease sale. Surface management would remain the same and ongoing oil and gas development would continue on surrounding federal, private, and state leases. If the BLM does not lease these Federal minerals, an assumption is that it is not expected that demand would decrease for oil and gas. Demand would likely be addressed through production elsewhere or imports. Due to less stringent environmental regulations in some areas outside of the U.S., it is possible that there could be increased emissions of volatile organic compounds (VOC), air borne dust, and GHGs during exploration and production operations. In addition, it is anticipated that there could be additional emissions of GHGs during transportation of these commodities to US ports.

Socio-economics

It is assumed that the No Action Alternative (no lease option) may result in a slight reduction in domestic production of oil and gas.

This would likely result in reduced Federal and State royalty income, and the potential for Federal land to be drained by wells on adjacent private or state land.

If the BLM were to forego its leasing decisions and potential development of those minerals, the assumption is that the public's demand for the resource would not be expected to change. Instead, the resource foregone would be replaced by other sources that may include a combination of imports, fuel switching, and other domestic production. This displacement of supply could offset any reductions in emissions achieved by not leasing the subject tracts.

2.2 Alternative B Proposed Action

Description of the Proposed Action

The Proposed Action would be a recommendation to the State Director to offer for oil and gas leasing **one (1)** parcel and **one (1)** modified parcel of federal minerals covering **1,738.69 acres** administered by the Pinedale Field Office. Standard terms and conditions as well as special stipulations would apply. Lease stipulations (as required by Title 43 Code of Federal Registration 3131.3) would be added to parcels WY-1008-074 and 075 to address site specific concerns or new information not identified in the land use planning process.

Due to WY-IM-2010-012 and WY-IM-2010-013 the BLM is currently amending 6 RMPs across the state. The goal of the RMP amendments is to have a plan state-wide that is consistent with Order 2008-2, the IMs and to have stipulations match across field office boundaries in order to avoid a potential ESA listing of the sage grouse.

Currently, the PRMP is one of the six that will be amended. WY-IM-2010-012 directs the BLM to analyze "an alternative that limits development to one disturbance location per 640 acres within the State's Core Areas to coincide with the Governor's Executive Order (EO, Order 2008-2). The one location and cumulative value of existing disturbance in the area will not exceed five percent (5%)

of sagebrush habitat within those same 640 acres.” WY-IM-2010-013 directs the BLM to screen each parcel for sage grouse core areas. If the parcel is within “core” then the BLM is to identify if grouse habitat is involved. Under step two of the screen it is assumed that if the parcel is within “core” then there is associated habitat. Step three is to identify if the parcel is within eleven square miles (11 mi²) of contiguous, manageable, unleased federal minerals. If the parcel is with this 11 mi², then the BLM’s Reservoir Management Group (RMG) is contacted to identify any potential fluid mineral drainage concerns. If there are not any drainage concerns then the parcel is recommended for deferral from leasing. The parcels are recommended for deferral only, due to the fact that final decision to defer or lease is made by the BLM Wyoming State Director or designee. All parcels have been screened against the latest version of these Sage Grouse Core Area boundaries (version 3) released by the WY Game and Fish Department in early July 2010. Following review, it has been determined that no parcels met all requirements of IM 2010-13.

Standard terms and conditions as well as special stipulations would apply. Lease stipulations (as required by Title 43 Code of Federal Regulation 3131.3) were added to each parcel as identified by the Pinedale Field Office to address site specific concerns or new information not identified in the land use planning process.

All of parcel WY-1008-074 and a portion of parcel WY-1008-075 would be included in the lease sale with appropriate lease stipulations and notices. Parcel number, acreage, and location of parcels are listed in Appendix 1, Table 1, with the attached stipulations.

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 Registration 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 the lease can be resold.

Drilling of wells on a lease is not permitted until the lease owner or operator secures approval of a drilling permit and a surface use plan specified in Title 43 Code of Federal Registration 3162.

It is recommended that the State Director not offer for oil and gas leasing parcel WY-1008-107 from the initial August list, as well as a portion of parcel WY-1008-075 (WY-1008-110 on the initial August list). No lease stipulations (as required by Title 43 Code of Federal Registration 3131.3) would be attached to the deleted/modified parcels and/or acreage to address site specific concerns or new information not identified in the land use planning process. Standard terms and conditions as well as special stipulations listed in the RMP would not be applied to the deleted/deferred parcels.

2.3 Alternatives C:

Alternative C would be similar to Alternative B with the exception that parcel WY-1008-075 would be offered in its entirety.

2.4 Alternatives Considered But Not Analyzed In Detail

The original draft parcel list sent to the field office included WY-1008-107 that is in an area closed to leasing in the RMP. Inclusion of these parcels would not be in compliance with the land use plan, thus they were dropped from consideration. An alternative of offering all parcels with a no surface occupancy (NSO) stipulation was not analyzed in detail as those areas for which NSO was considered appropriate were analyzed in the 1997/PRMP/FEIS.

No other alternatives to the proposed action were apparent which would meet the purpose and need of the proposed action.

AFFECTED ENVIRONMENT

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 the relevant resources or 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 Sublette County, Wyoming. This environmental assessment (EA) tiers to and incorporates by reference the information and analysis contained in the Pinedale Field Office Resource Management Plan, November 2008.

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. Ongoing 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.

3.1 Air Resources

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.

The Environmental Protection Agency (EPA) has the primary responsibility for regulating air quality, including seven nationally regulated ambient air pollutants. Regulation of air quality is also delegated to some states. Air quality is determined by atmospheric pollutants and chemistry, dispersion meteorology and terrain, and also includes applications of noise, smoke management,

and visibility. Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years.

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 National Ambient Air Quality Standards (NAAQS) identify maximum limits for concentrations of criteria air pollutants at all locations to which the public has access. The WAAQS and NAAQS are legally enforceable standards. Concentrations above the WAAQS and NAAQS represent a risk to human health that, by law, require public safeguards 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 Sublette County ambient air monitoring stations recorded elevated ozone levels during their first 3 years of operation (2005, 2006, and 2007). The four highest 8-hour values for each year are shown in Table 3.2. The elevated ozone levels have been recorded during the winter months, primarily in February, which is atypical when compared to other areas of the country where ozone levels are elevated. Typically, ozone is thought to be a summertime problem in urban areas. Elevated ozone concentrations are uncommon during the winter months; however, they do not appear to be an anomaly because these conditions were recorded in February of each year. There are several hypotheses on the cause(s) of these elevated ozone events including stratospheric ozone intrusion, ozone transport from other areas, unique meteorological conditions acting upon local scale emissions, and instrument error.

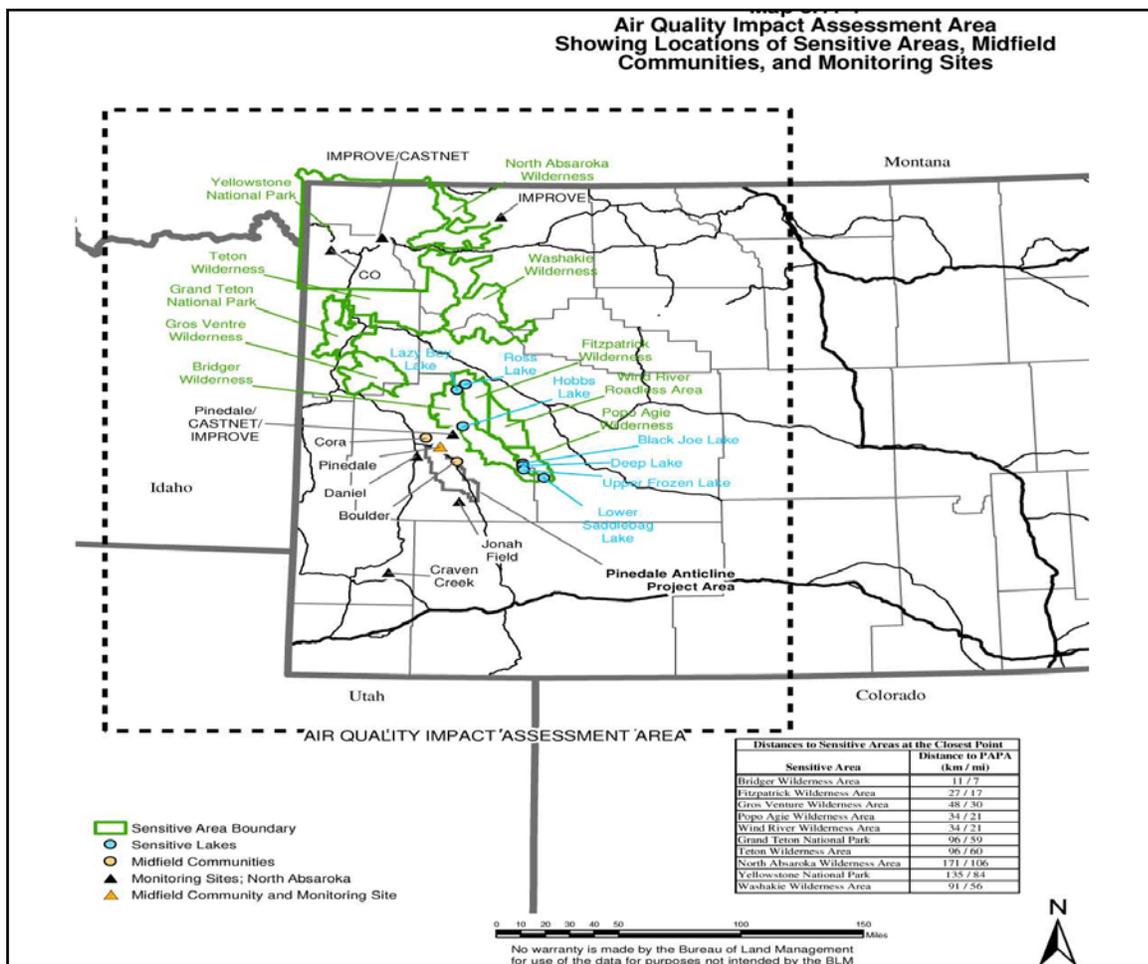
In subsequent studies, DEQ has ruled out stratospheric ozone intrusion and instrument error for the winter time ozone exceedances. There are now 5 factors that are considered the dominant factors in Pinedale's winter ozone problem, stagnant meteorological conditions, significant snow cover, UV radiation, temperature inversion (low mixing height), local sources of ozone precursors (VOC and NO_x emissions).

These hypotheses have been explored through evaluations of recorded conditions of meteorological data and air pollutant data, both locally and regionally. The evaluations have resulted in the WDEQ-AQD concern that elevated ozone concentrations monitored in the winter are a result of ground-level ozone formation. The WDEQ-AQD and EPA are concerned that unique wintertime meteorological conditions acting upon local scale emissions may be contributing to ozone formation. The WDEQ-AQD has initiated further evaluation of ozone formation in the Upper Green River Basin through a field study and modeling project to better understand the cause of these monitored elevated ozone levels.

In March 2008, EPA revised the 8-hour ozone standard to 75 parts per billion (ppb). It was to be federally enforceable beginning May 27, 2009. States failing to comply with the new standard were to develop and implement an EPA approved State Implementation Plan (SIP). On March 12, 2009, Wyoming's governor requested that EPA re-designate Sublette County and parts of Lincoln and Sweetwater Counties as being Non-attainment for ozone compliance with the Clean Air Act.

Upon EPA's confirmation of the re-designation, or not, (by mid-March 2011), the Wyoming Department of Environmental Quality (WY DEQ) then has until March 2013 to develop an SIP for EPA's approval, detailing how it will lower ozone levels to acceptable levels. However, in January 2010 EPA announced that they were revisiting this standard again to between 60-70 ppb, and would stay all requests for designation of non-impairment. The final standard is expected in August, 2010 with designations of non-attainment in March 2011. If the non-attainment designation for Sublette, Sweetwater and Lincoln counties are upheld by the EPA, the State of WY will have three years to submit a State Implementation Plan (SIP) outlining the process it will follow to bring these counties into compliance with the new ozone standard.

Figure 3.1



It should be noted that the following standards as identified in Table 3.1 from the PAPA RDSEIS (2008), have changed: annual PM10 standard of 50 ug/m³ for WAAQS; new 1 hour NO₂ standard of 100 ppb for NAAQS; new 1 hour SO₂ standard of 75 ppb for NAAQS; 3 hour SO₂ standard of 1300 ug/m³ for WAAQS; revised 24 hour PM_{2.5} for WAAQS to 35 (will take effect 1/2011).

Table 3.1 Summary of Air Quality in Sublette County (PAPA RDSEIS, 2008)

Pollutant	Averaging Time	NAAQS			WAAQS			Representative Concentrations		
		(ppm)	(ppb)	(µg/m ³)	(ppm)	(ppb)	(µg/m ³)	(ppm)	(ppb)	(µg/m ³)
Carbon Monoxide	1 hour ¹	35	35000	40,000	35	35000	40,000	1.7	1730	1,979
	8 hour ¹	9	9000	10,000	9	9000	10,000	0.8	814	931
Nitrogen Dioxide	Annual ² (Arithmetic Mean)	0.053	53	100	0.053	53	100	0.002	2	3.4
Ozone	8 hour ³	0.075	75	147	0.075	75	147	0.078	78	153
PM ₁₀	24 hour ⁴	N/A	N/A	150	N/A	N/A	150	N/A	N/A	91
PM _{2.5}	24 hour ⁵	N/A	N/A	35	N/A	N/A	65	N/A	N/A	11.7
	Annual ⁶	N/A	N/A	15	N/A	N/A	15	N/A	N/A	7.6
Sulfur Dioxide	24 hour ⁷	0.140	140	365	0.099	99	260	0.001	0.57	1.48
	Annual ⁷ (Arithmetic Mean)	0.031	31	80	0.023	23	60	0.0003	0.25	0.66

¹Not to be exceeded more than once per year. Data collected at Yellowstone National Park during 2005.
²Thunder Basin data, 2008.
³To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 75 ppb. Measured fourth highest concentration for 2008 for the Thunder Basin site.
⁴Not to be exceeded more than once per year on average over 3 years. Maximum 24-hour average for 2008 at Cody SLAMS site.
⁵To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor in an area must not exceed 35 µg/m³. Maximum 24-hour average for 2006 for the North Absaroka IMPROVE site.
⁶To attain this standard, the 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³. Annual average for 2008 for the Lander SLAMS site (waiting for new data from North Absaroka).
⁷Maximum 24-hour and annual averages for 2008 for the Sheridan WARMS site.

N/A Not Applicable
NAAQS National Ambient Air Quality Standards
WARMS Wyoming Air Resource Monitoring System
PM_{2.5} particulate matter less than 2.5 microns in diameter
WAAQS Wyoming Ambient Air Quality Standards
PM₁₀ particulate matter less than 10 microns in diameter
µg/m³ micrograms per cubic meter
ppm parts per million
ppb parts per billion

3.1.2 Climate

The climate in the planning area is designated as Southern Rocky Mountain Steppe, a temperate semiarid steppe regime with average annual temperatures ranging from 35 to 45 degrees Fahrenheit (°F) (2 to 7 degrees centigrade [°C]) in most of the region, but reaching 50°F (10°C) in the lower valleys. The prevailing west winds and the general north-south orientation of the mountain ranges influence the climate. East slopes are much drier than west slopes; individual mountain ranges have similar east-west slope differences region-wide. Winter precipitation varies considerably with altitude. Total precipitation is moderate, but greater than on the plains to the east and west. In the highest mountains, a considerable part of annual precipitation is snow, although permanent snowfields and glaciers cover only relatively small areas. Bases of these mountains receive only 10 to 20 inches (260 to 510 millimeters [mm]) of rainfall per year. At higher elevations, annual

precipitation increases to 40 inches (1,020 mm), and average temperatures fall (Bailey 1995). Weather stations are located in Pinedale (7,175 feet above means sea level) and Big Piney (6,820 feet above means sea level) in Sublette County, Wyoming. Meteorological data are available for Pinedale from August 1948 through April 2007 and for Big Piney from 1948 through 2006. Table 3.2 shows the average climate data for Pinedale.

Table 3.2 Climate data for Pinedale

Climate Component	Pinedale, WY
Mean maximum summer temperatures (degrees Fahrenheit)	75
Mean minimum winter temperatures (degrees Fahrenheit)	0
Mean annual temperature(degrees Fahrenheit)	52
Mean annual precipitation (inches)	11
Mean annual snowfall (inches)	24
Mean annual wind speed (miles per hour)	11.2
Prevailing wind direction	Highly variable

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.

Visibility

Refer to the Pinedale Resource Management Plan and FEIS, 2008.

3.2 Cultural and Paleontology Resources

Once the decision is made by the lessee to develop a lease, area specific cultural records review would be done to determine if there is a need for a cultural inventory of the areas that could be affected by the subsequent surface disturbing activities. Generally, a cultural inventory will be required and all historic and archaeological sites that are eligible for listing in the National register of Historic Places or potentially eligible to be listed would be either avoided by the undertaking or have the information in the sites extracted through archaeological data recovery prior to surface disturbance.

Parcel WY-1008-074 is within the viewshed of a segment of the Lander Trail. Parcel 075 contains a half-mile segment and is within the viewshed of segments of the Lander Trail. Refer to the Chapter 3 of Pinedale Resource Management Plan and FEIS, 2008 for additional discussion on the Lander Trail, its contributing and non-contributing segments, and the associated viewshed

Parcels in this lease sale may contain vertebrate fossils and the same cultural reviews would apply for the Paleontology Resources.

3.3 Floodplains

A portion of parcel number WY-1008-074 is located in the 100-year floodplains associated with South Piney and Spring Creeks. The portion of floodplain associated with South Piney Creek is within the area recommended for deferral; see the discussion in sections 1.1 and 2.2 above. Refer to the Chapter 3 Pinedale Resource Management Plan and FEIS, 2008 for additional floodplain discussion.

3.4 Threatened or Endangered Species

Under Section 7 of the Endangered Species Act of 1973 (as amended), the BLM is required to consult with the U.S. Fish and Wildlife Service on any proposed action which may affect Federal listed threatened or endangered species or species proposed for listing. Consultation was completed for the Pinedale RMP and addressed actions such as oil and gas leasing, as well as subsequent oil and gas development. The proposed lease parcels fall within that consultation. No further consultation with the U.S. Fish and Wildlife Service is required.

3.5 Vegetation - The primary broad vegetation types found in parcel WY-1008-074 and 075 are the wetland/riparian habitats along South Piney and Spring Creek and the upland shrub/grassland type on the rest of the area with the exception of approximately 80 acres of hay meadow on parcel 075.

Refer to the Chapter 3 Pinedale Resource Management Plan and FEIS, 2008 for additional vegetation discussion.

3.6 Wildlife

The wetland/riparian areas associated with South Piney and Spring Creeks and the upland shrub areas within parcels WY-1008-074 and 075 provide habitat for a variety of terrestrial, aquatic, and avian species. Refer to the Chapter 3 Pinedale Resource Management Plan and FEIS, 2008 for additional wildlife discussion.

3.7 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.

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 RMPs have 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 Pinedale Field Office, where habitat fragmentation and degradation has not reduced habitat to unsuitable. 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. 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. In mid July, 2010, the WY Game and Fish department also released Version 3 of their Sage Grouse Core Area boundaries. Both parcels have been screened against this version. Specific information regarding each parcel can be found in Appendix B.

There are many sources of habitat fragmentation, all of which may affect the greater sage-grouse. Industrial development, livestock and wildlife grazing, mining, gravel pit operations, oil and gas activity, land exchanges and disposal, vegetation manipulation, fuel reduction projects and other activities may cause an artificial component to a natural habitat condition. Structures such as powerlines and 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 in the Pinedale Field Office.

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.

Additional special status species discussion and information habitat and vegetation types found in parcels WY-1008-074 and 075 can be found Chapter 3 Pinedale Resource Management Plan and FEIS, 2008.

Parcel 075 also contains a segment of Spring Creek with a current population of Colorado River Cutthroat Trout (CRCT).

3.8 Visual Resources

Visual Resource Management (VRM) on public lands is conducted in accordance with BLM Handbook 8410 and BLM Manual 8411. The southern portion of Parcel WY-1008-075 is located within an area designated VRM Class II. The rest of the parcel 075 and all of parcel 074 are located on private surface/federal mineral split estate land and are unclassified for VRM.

3.9 Land Encumbrances

Portions of parcel WY-1008-075 (680 acres) overlay a portion of the Cross Lazy 2 Conservation Easement. The easement was collectively obtained by Upper Green River Valley Land Trust and the JIO to help off-set wildlife impacts resulting from the development of the Jonah Field. Off-site mitigation projects, such as the Cross Lazy 2 Conservation Easement, are part to the prescribed mitigation in the Jonah Infill EIS. The conservation easement prohibits the encumbered private land from subdivision and restricts the amount of oil and gas leasing and development that can occur.

3.10 Lands with Wilderness Characteristics

In 1964, the Congress passed the Wilderness Act, establishing a national system of lands for the purpose of preserving a representative sample of ecosystems in a natural condition for the benefit of future generations. Until 1976, most land considered for and designated as wilderness was managed by the USFS and NPS. With the passage of FLPMA in 1976, the Congress directed BLM to inventory, study, and recommend which public lands under its administration should be designated wilderness. In the 1988 Pinedale RMP ROD, the Scab Creek WSA was recommended for wilderness designation, and the Lake Mountain WSA was not recommended for wilderness designation.

In the interim, between the wilderness inventory that identifies suitable and eligible areas appropriate for wilderness designation and the actual congressional designation of a wilderness, BLM must manage the potential wilderness. BLM manages these potential wilderness areas as Wilderness Study Areas (WSA) (USDI, BLM 1990b). During the time that the Congress considers an area for wilderness, which can be many years, designated WSAs require special management practices to preserve the wilderness characteristics that make the areas appropriate for designation. WSAs, established under the authority of Section 603(c) of FLPMA, are managed to preserve their wilderness values according to the RMP and will continue to be managed in that manner until the Congress either designates them as wilderness or releases them for other uses. Only Congress can designate or release Section 603 WSAs, and their status will not change as a result of the PFO planning process.

Two WSAs are identified in the planning area: Scab Creek WSA, composed of 7,710 acres; and Lake Mountain WSA, composed of 13,490 acres. The final document for each area (Final Scab Creek Wilderness Study Report [BLM 1981]; Final Rock Springs Wilderness EIS [BLM 1990b]) has been used in the PFO to help determine which areas are suitable for WSA designation. At present, the BLM manages these lands in accordance with the current RMP; no specific management has been developed for these areas. An additional screen for wilderness characteristic was run for parcels WY-1008-074 and 075 (see Appendix C)

3.11 Socioeconomic Resources

Table 3.4 shows changes in population by major population center for each county between 1990 and 2006. Pinedale was the fastest-growing town, increasing its population by 30% since 1990; the next fastest-growing town was Rock Springs, which increased by 4% from 1970 to 2005. Kemmerer’s population declined by almost 5%.

Table 3.4 Population Centers

County	City	Population				Percentage Change July 2000 to July 2006
		Census 1990 ¹	Census 2000 ²	July 2000 Estimate ²	July 2006 Estimate ²	
Lincoln	Afton	1,394	1,818	1,848	1,821	-1.5%
	Kemmerer	3,020	2,651	2,649	2,525	-4.7%
Sublette	Pinedale	1,181	1,412	1,407	1,846	31.2%
Sweetwater	Green River	12,711	11,808	11,768	11,933	1.4%
	Rock Springs	19,050	18,708	18,592	19,324	3.9%

¹ Source: U.S. Census Bureau 1990 census.

² Source: U.S. Census Bureau, Population Division, Subcounty Population Estimates; July 2008.

The socioeconomic study area is showing signs of shifting patterns of income growth. Overall, personal income has grown across the study area. Since 1990, real personal income has risen 36%,

an average increase of 2% per year. However, there are variations across the three-county study area. Personal income in Sweetwater and Lincoln counties is growing at lower rates than the rate experienced by Sublette County. Since 1990, Sweetwater, Lincoln, and Sublette counties have grown 26%, 44%, and 100% in personal income, which is an average annual rate of 2%, 3%, and 6%, respectively. Since 2000, Sublette County has experienced 9% annual growth in personal income while Sweetwater and Lincoln counties have grown at an average rate of 2% and 3% over that same period, respectively. Table 3.5 summarizes these trends.

Table 3.5 Real Personal Income Changes (Based on 2006\$)

Area	Percentage Change 1990–2006	Percentage Change 2000–2006	Average Annual Percentage Change 1990–2006	Average Annual Percentage Change 2000–2006
Lincoln County				
Labor Earnings	52%	28%	3%	5%
Investment Income	7%	-32%	0%	-5%
Transfer Payments	71%	23%	4%	4%
Total Personal Income	44%	11%	3%	2%
Sublette County				
Labor Earnings	152%	116%	9%	19%
Investment Income	55%	5%	3%	1%
Transfer Payments	53%	14%	3%	2%
Total Personal Income	100%	57%	6%	9%
Sweetwater County				
Labor Earnings	26%	24%	2%	4%
Investment Income	14%	-19%	1%	-3%
Transfer Payments	29%	7%	2%	1%
Total Personal Income	26%	15%	2%	3%
Total Study Area				
Labor Earnings	40%	32%	2%	5%
Investment Income	19%	-19%	1%	-3%
Transfer Payments	40%	12%	3%	2%
Total Personal Income	36%	18%	2%	3%

Source: BEA, Regional Economic Accounts; inflated with Southwestern Wyoming's Cost of Living Index.

Personal income data were obtained for each county in the socioeconomic study area from the BEA, Regional Economic Accounts. Total personal income for the study area increased to \$2.5 billion in 2006, up from about \$990 million in 1990, an increase of 151% in nominal dollars. However, the cost of living in Wyoming, and especially in southwestern Wyoming, has also been increasing, which has resulted in a smaller amount of real income growth. Wyoming's rate of inflation has averaged 4.48% over the past 4 years (2003–2006), with the largest increases in 2004 (4.9%) and 2006 (5.6%) (Wyoming Division of Economic Analysis, 2008). Southwestern Wyoming's inflation rates have been even higher over the same period, with an average of 5.58%. In comparison, the consumer price index, which tracks all prices for the United States, has averaged 2.78% between 2003 and 2006. In the past 3 years, southwestern Wyoming has experienced even higher rates of inflation than those experienced by the State of Wyoming—6.6%, 7.6%, and 6.2% annual inflation rates in 2005, 2006, and 2007, respectively.

To account for the cost of living impacts on income, the income tables in this section have been deflated with rates published by the State of Wyoming, Economic Analysis Division, and the Wyoming Cost of Living Index for the Southwestern Wyoming region to represent income figures based on 2006 dollars. This allows an assessment of real income increases over time based on constant dollar figures. Once inflation impacts have been accounted for, real personal income in the study area has increased 36% between 1990 and 2006 (compared with 151% in nominal dollars).

Personal income can be broken into three categories: labor earnings, investment income, and transfer payments. Labor earnings are derived through wages, salaries, and self-employment income. Investment income includes rents, dividends, and interest earnings, known simply as money earned from investments. Finally, transfer payments are derived largely from retirement benefits, Social Security benefits, Medicare and Medicaid benefits, healthcare and disability insurance payments, and other government payments to individuals. Personal income data are summarized in Table 3.6.

Table 3.6: Personal Income Trends within the Study Area (2006\$, Thousands)

Area	1990	2000	2001	2002	2003	2004	2005	2006
Lincoln								
Earnings	220,614	260,499	284,591	296,761	328,786	324,475	312,023	334,637
Investment Income	78,956	123,840	116,764	100,886	105,567	112,197	104,217	84,680
Transfer Payments	38,614	53,848	58,244	64,005	66,570	67,384	65,712	66,159
Total Personal Income	338,184	438,186	459,598	461,652	500,923	504,055	481,951	485,476
Nonlabor Income Percentage	35%	41%	38%	36%	34%	36%	35%	31%
Sublette								
Earnings	99,541	115,891	132,808	147,653	169,273	185,048	209,859	250,370
Investment Income	51,064	75,137	72,070	70,083	71,358	82,197	74,654	79,066
Transfer Payments	16,989	22,833	23,521	25,126	26,237	26,498	25,732	25,927
Total Personal Income	167,594	213,860	228,400	242,862	266,868	293,744	310,244	335,363
Nonlabor Income Percentage	41%	46%	42%	39%	37%	37%	32%	31%
Sweetwater								
Earnings	992,777	1,013,101	998,788	1,004,434	1,043,647	1,090,577	1,144,406	1,252,317
Investment Income	198,100	279,752	265,152	263,526	267,936	221,842	229,922	226,069
Transfer Payments	119,540	143,310	146,877	159,134	163,033	158,885	152,849	153,950
Total Personal Income	1,310,418	1,436,163	1,410,816	1,427,094	1,474,616	1,471,304	1,527,177	1,652,317
Nonlabor Income Percentage	24%	29%	29%	30%	29%	26%	25%	23%
Study Area								
Earnings	1,312,932	1,389,490	1,416,186	1,448,847	1,541,706	1,600,100	1,666,288	1,837,324
Investment Income	328,120	478,728	453,986	434,496	444,861	416,236	408,792	389,815
Transfer Payments	175,143	219,990	228,641	248,265	255,840	252,767	244,292	246,036
Total Personal Income	1,816,196	2,088,208	2,098,814	2,131,608	2,242,407	2,269,103	2,319,372	2,473,156

Area	1990	2000	2001	2002	2003	2004	2005	2006
Nonlabor Income Percentage	28%	33%	33%	32%	31%	29%	28%	26%

Source: BEA, Regional Economic Accounts: Labor earnings are net earnings by place of residence; transfer payments are personal current transfer receipts; personal income figures were inflated with the Southwestern Wyoming Cost of Living Index to represent real 2006 dollar values. The inflation index is presented in Table 3-23.

ENVIRONMENTAL IMPACTS

4.0 Environmental Consequences and Proposed Mitigation Measures

4.1 Air Resources

Alternative A: No Action

Under the no action alternative, neither parcel WY-1008-074 nor the recommended portion parcel WY-1008-075 would be offered for lease and no oil and gas development would occur; therefore no air quality impacts associated with developing these parcels would occur. 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 the appropriate stipulations. It is not possible to accurately predict what level of development may or may not occur should these parcels be leased in the future, nor it possible to predict what level of restrictions may be requires for leasing in the future. 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 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. It is assumed that development in the future on these parcels would have similar air quality impacts to what would be anticipate if they were leased presently.

A decision to not issue leases for either of the parcels would alter other uses of these lands. Grazing, wildlife, and dispersed recreational (hunting and fishing) uses would continue. Grazing and recreational uses typically entail vehicle travel for access, and would be expected to continue at current rates.

Alternative B - Proposed Action

Issuing leases for all of parcel WY-1008-074 and the recommended portion of parcel 075 would have no direct impacts to air quality. Any potential effects to air quality would occur if and when the leases were developed. Over the last 10 years, the leasing of Federal oil and gas mineral estate in the Pinedale Field Office has resulted in an average total of 200 wells drilled on federal leases annually. 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 airborne 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. 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 existing or yet undiscovered technologies may be employed by a given company for drilling any new wells. The degree of impact will also vary according to the volumes produced, type of hydrocarbon (oil vs. natural gas) and 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.

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.

In 2003, the BLM Wyoming State Office Reservoir Management Group produced a draft Reasonably Foreseeable Development Scenario (RFD) document for the Pinedale Field Office RMP revision. This document demonstrates that 9,150 new wells could be drilled from 2001 to 2020; 94 percent of these are expected to be non-coalbed methane wells. (The petroleum resources specific to these leases in the Proposed Action are not known whether they are gas or oil or a combination thereof). 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. However, the RFD takes these assumptions into account, and on a Field Office wide basis, is still valid. Current APD permitting trends within the field office confirm that these assumptions are still accurate as from October 1999 through September 30, 2009 the Pinedale Field Office has approved 4117 APDs, or an average of 412APDs per year.

Coalbed methane development does not currently exist within the field office. Several coalbed methane wells exist in the field office, but have proved unproductive; therefore, there are no expected emissions from this source.

Refer to the Pinedale Resource Management Plan and FEIS, 2008 for visibility impacts

Alternative C: Full Lease Issuance:

Under this alternative, parcels WY-1008-074 AND 075 would be issued in their entirety with the stipulations applied (see Appendix A). However, due to the larger acreage under this Alternative potentially subject to surface disturbing activities, drilling and production, the potential for impacts are similar to, but have a higher probability of occurring in larger amounts, as under Alternative B. 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.

Mitigation In accordance with Chapter 2, and Appendices 3, 5, 7, 11, and 12 of the Pinedale Field Office RMP/ROD (November 2008) the mitigation measures/stipulation listed in Appendix A below would be applied to parcels WY-1008-074 and 075 under Alternatives B and C.

4.2 Climate/Greenhouse Gas Emissions

Alternative A: No Action

A decision to not issue 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. It is not possible to accurately predict what level of development may or may not occur should these parcels be leased in the future, nor it possible to predict what level of restrictions may be requires for leasing in the future. 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 determine associated air quality impacts. 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 4.12 for a discussion of the impacts of these potential greenhouse gas emissions on global climate change.

Alternative B: Proposed Action

The issuance 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 Report, 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 approximately 4,698 existing Federal oil and gas wells in the Pinedale Field Office, which account for approximately 14.2 percent of the total Federal wells in Wyoming. Therefore, GHG emissions from all wells within the field office amount to approximately 2.7903 metric tons annually (mt) ($19.6 \text{ mt} \times 0.142 = 2.7903 \text{ mt}$).

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

Parcels WY-1008-074 AND 075 are located within an area defined as having high potential for oil and gas development in the September Reasonably Foreseeable Development (RFD) Scenario Document produced by the WY State Office Reservoir management Group for the Pinedale Field Office RMP revision process.

See Section 4.12 for a discussion of the impacts of these potential greenhouse gas emissions on global climate change. 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.

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 Pinedale 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.

4.3 Cultural and Paleontological Resources

Alternative A No Action

Under this alternative no leases would be issued; therefore no post lease impacts to cultural or paleontological resources, including the Lander Trail and the associated viewshed would occur. Should the parcels be re-nominated and leased at a point in the future, impacts similar to those described in Chapter 4 of the Pinedale RMP/FEIS would be anticipated.

Alternative B Proposed Action

While the administrative act of leasing a parcel would produce no impacts, subsequent development of the lease could have impacts on archaeological and paleontological resources, including the Lander Trail and its viewshed. Required archaeological surveys would be conducted upon all subsequent actions that are expected to occur from the lease sale to avoid disturbing cultural and/or paleontological sites. Refer to Chapter 4 of the Pinedale RMP/FEIS for a description of impacts that are anticipated to cultural and paleontological resources from surface disturbing activities, including post lease actions such as well pad, road, and pipeline development.

Alternative C: Full Lease Issuance:

Same as Alternative B, except additional 680 acres of parcel 075 would be offered for lease.

Mitigation

In accordance with Chapter 2, and Appendices 3, 5, 7, 11, and 12 of the Pinedale Field Office RMP/ROD (November 2008) the mitigation measures/stipulation listed in Appendix A below would be applied to parcels WY-1008-074 and 075 under Alternatives B and C.

4.4 Floodplains

Alternative A No Action

Under this alternative no leases would be issued; therefore no post lease impacts to floodplains would occur. Should the parcels be re-nominated and leased at a point in the future, impacts similar to those described in Chapter 4 of the Pinedale RMP/FEIS would be anticipated.

Alternative B Proposed Action

While the administrative act of leasing a parcel would produce no impacts, subsequent development of the lease could have impacts on floodplains. Surface disturbance from the development of well pads, access roads, pipelines, and powerlines can result in impairment of the floodplain values from removal of vegetation, removal of wildlife habitat, impairment of water quality, decreased flood water retention and decreased groundwater recharge. Refer to Chapter 4 of the Pinedale RMP/FIES for a description of impacts that are anticipated to floodplains from surface disturbing activities, including post lease actions such as well pad, road, and pipeline development. Note: Alternative B would only involve floodplains along Spring Creek.

Alternative C: Full Lease Issuance:

An additional 680 acres of parcel 075 would be offered for lease. Under this alternative there would be a minor amount of floodplain associated with South Piney Creek, in addition to the floodplain along Spring Creek floodplains discussion in Alternative B. Refer to Chapter 4 of the Pinedale RMP/FIES for a description of impacts that are anticipated to floodplains from surface disturbing activities, including post lease actions such as well pad, road, and pipeline development.

Mitigation

In accordance with Chapter 2, and Appendices 3, 5, 7, 11, and 12 of the Pinedale Field Office RMP/ROD (November 2008) the mitigation measures/stipulation listed in Appendix A below would be applied to parcels WY-1008-074 and 075 under Alternatives B and C.

4.5 Threatened or Endangered Species

Alternative A No Action

Under this alternative no leases would be issued; therefore no post lease impacts to threatened or endangered species would occur. Should the parcels be re-nominated and leased at a point in the future, impacts similar to those described in Chapter 4 of the Pinedale RMP/FEIS would be anticipated.

Alternative B Proposed Action

Under Alternative B, the administrative act of issuing leases for parcel WY-1008-074 and the recommended portion of parcel 075 would create no impact to listed species. Impacts associated with post lease actions, should they occur, are anticipated to be within the scope of the impacts discussed in Chapter 4 of the Pinedale RMP/FEIS. Anticipated impacts from post lease actions have also been addressed in the Biological Assessment for the RMP. Waters flowing through and from the parcels contribute to downstream (i.e. below Flaming Gorge Dam) habitat for threatened and endangered Colorado River fish species.

Alternative C: Full Lease Issuance:

An additional 680 acres of parcel 075 would be offered for lease., otherwise the same as Alternative B.

Mitigation

In accordance with Chapter 2 and Appendices 3, 5, 7, 11, and 12 of the Pinedale Field Office RMP/ROD (November 2008) the mitigation measures/stipulation listed in Appendix A below would be applied to parcels WY-1008-074 and 075 under Alternatives B and C.

4.6 Vegetation

Alternative A No Action

Under this alternative no leases would be issued; therefore no post lease impacts to vegetation would occur. Should the parcels be re-nominated and leased at a point in the future and post lease surface disturbing activities occur, the impacts are anticipated to be similar to those described in Chapter 4 of the Pinedale RMP/FEIS would be anticipated.

Alternative B Proposed Action

While the administrative act of leasing a parcel would produce no impacts, subsequent development of the lease could would impacts vegetation. Refer to the impact discussion in Chapter 4 of the Pinedale RMP/FEIS .

Alternative C: Full Lease Issuance:

Same as Alternative B, except an additional 680 acres of parcel 075 would be offered for lease.

Mitigation

In accordance with Chapter 2 and Appendices 3, 5, 7, 11, and 12 of the Pinedale Field Office RMP/ROD (November 2008) the mitigation measures/stipulation listed in Appendix A below would be applied to parcels WY-1008-074 and 075 under Alternatives B and C.

4.7 Wildlife

Alternative A No Action

Same as Section 4.7

Alternative B Proposed Action Parcels WY-1008-074 and 075 contain known raptor nesting habitat. Parcel 075 also contains crucial big game winter range. The administrative act of leasing a parcel would produce no impacts to the wildlife resources, subsequent surface disturbing development of the lease, should it occur, could impacts these resources. The impacts would be similar in type and scope to those discussed in the wildlife section of Chapter 4 of the Pinedale RMP/FEIS.

Alternative C: Full Lease Issuance:

Same as Alternative B, except an additional 680 acres could affected

Mitigation

In accordance with Chapter 2 and Appendices 3, 5, 7, 11, and 12 of the Pinedale Field Office RMP/ROD (November 2008) the mitigation measures/stipulation listed in Appendix A below would be applied to parcels WY-1008-074 and 075 under Alternatives B and C.

4.8 Special Status Species

Alternative A: No Action

Parcel WY-1008-075 contains known sage-grouse nesting habitat and a newly discovered sage-grouse lek (April 2010). Parcel 075 also contains a segment of Spring Creek with a current population of Colorado River Cutthroat Trout (CRCT). Under the No-Action alternative, oil and gas development within parcels WY-1008-074 and 075 would not occur. Therefore, no impacts would result from BLM actions. Neither parcel falls within a Sage-grouse Core Area. If the parcels were in a core areas development activities would be limited to those associated with current land uses, primarily recreation and agriculture. Sage Grouse Core Areas are those areas identified by the state of Wyoming, adjusted to include additional habitat identified in consultation with the local WY Game and Fish office. Parcels located within sage grouse core Areas would not be developed, consistent with the Wyoming 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, parcels WY-1008-074 and a portion of parcel 075 would be offered for lease. The remaining portion of parcel 075 would be deferred from leasing. As stated above, neither parcel falls within sage-grouse core areas. Parcel 075 does fall within sage-grouse nesting habitat and contains a newly discovered lek. Parcel 075 also contains a segment of Spring Creek with a known CRCT population. Since neither parcel falls within a sage-grouse core area, no parcels would be deferred from leasing pending revision of certain wildlife lease stipulations per IM WY-2010-012 and or pending completion of the Pinedale RMP amendment to address Sage Grouse. No development would be curtailed until stipulations in accordance with the Sage Grouse Core strategy could be attached to leases for the affected parcel. All other sage-grouse impacts and the CRCT impacts are the same as those described in the Pinedale RMP (2008).

Alternative C: Full Lease Issuance:

Same as Alternative B, except an additional 680 acres could be affected

Mitigation

In accordance with Chapter 2 and Appendices 3, 5, 7, 11, and 12 of the Pinedale Field Office RMP/ROD (November 2008) the mitigation measures/stipulation listed in Appendix A below would be applied to parcels WY-1008-074 and 075 under Alternatives B and C. Post lease actions in T29N, R114W, Section 13 and 14 would be encumbered by a condition of approval to prevent surface disturbing activities within ¼ mile of the perimeter of the new lek and to provide seasonal restrictions to protect sage-grouse nesting and brood-rearing from March 15 to July 15 with a 2-mile radius of the lek.

4.9 Visual Resources

Alternative A No Action

Under this alternative no leases would be issued; therefore no post lease impacts to VRM would occur. Should the parcels be re-nominated and leased at a point in the future and post lease surface disturbing activities occur, the impacts are anticipated to be similar to those described in Chapter 4 of the Pinedale RMP/FEIS would be anticipated

Alternative B: Proposed Action

Parcel 074 and portions of parcel 075 are located on split estate land without a VRM classification; hence development would not affect the visual resource classification. The federal portions of parcel 075 would be located in VRM II. The administrative act of leasing a parcel would produce no impacts to the wildlife resources, subsequent surface disturbing development of the lease, should it occur, could impacts these resources. The impacts would be similar in type and scope to those discussed in the VRM section of Chapter 4 of the Pinedale RMP/FEIS.

Alternative C: Full Lease Issuance:

Same as Alternative B, except an additional 680 acres could affected

Mitigation

In accordance with Chapter 2 and Appendices 3, 5, 7, 11, and 12 of the Pinedale Field Office RMP/ROD (November 2008) the mitigation measures/stipulation listed in Appendix A below would be applied to parcels WY-1008-074 and 075 under Alternatives B and C.

4.10 Land Encumbrances

Portions of parcel WY-1008-075 (680 acres) overlay a portion of the Cross Lazy 2 Conservation Easement. The easement was collectively obtained by Upper Green River Valley Land Trust and the JIO to help off-set wildlife impacts resulting from the development of the Jonah Field. Off-site mitigation projects, such as the Cross Lazy 2 Conservation Easement, are part to the prescribed mitigation in the Jonah Infill EIS. The conservation easement prohibits the encumbered private land from subdivision and restricts the amount of oil and gas leasing and development that can occur.

Alternative A No Action

Under this alternative no leases would be issued; therefore no post lease impacts to Conservation Easement would occur. Should the parcels be re-nominated and leased at a point in the future and post lease surface disturbing activities occur on the portion of parcel 075 within the Conservation Easement, the primary anticipated impact would be a degradation of the wildlife habitat contained within the easement. The physical impacts to the habitat would be similar to those described for habitats on federal lands in Chapter 4 of the Pinedale RMP.

Alternative B: Proposed Action

As stated above part of parcel 075 is located on split estate land within the Cross Lazy 2 Conservation Easement. Under this alternative that portion of parcel 075 would be deferred; hence there would be no impact on the Easement lands.

Alternative C: Full Lease Issuance:

Under this alternative the portions of parcels 075 within the Conservation Easement would be offered for lease. The primary anticipated impact would be a degradation of the wildlife habitat contained within the easement. The physical impacts to the habitat would be similar to those described for habitats on federal lands in Chapter 4 of the Pinedale RMP.

Mitigation

Within the extent of BLM's authority, impacts to wildlife habitat use in the Conservation Easement under Alternative C would be mitigated through the wildlife mitigation measures in with Chapter 2 and Appendices 3, 5, 7, 11, and 12 of the Pinedale Field Office RMP/ROD (November 2008) the mitigation measures/stipulation listed in Appendix A below would be applied to parcels WY-1008-074 and 075 under Alternatives B and C.

4.10 Lands with Wilderness Characteristics**Alternative A: No Action**

Areas identified as containing wilderness characteristics were inventoried in the Pinedale Field Office in 2009. Parcels WY-1008-074 and 075 were screened for wilderness characteristics; none were found to contain areas that have been identified as containing wilderness characteristics.

Alternative B: Proposed Action

Under this alternative, parcel 074 and part of parcel 075 would be offer for lease and part of parcel 075 would be deferred. Neither lease was found to contain areas that have been identified as containing wilderness characteristics (see Appendix C). Therefore, no impacts are anticipated under this alternative.

Alternative C: Full Issuance

Impacts under Alternative C would be the same as under Alternative B.

Mitigation

None

4.11 Socio-economics**Alternative A-- No Action:**

Under this alternative, no leases would be issued and no development under those leases would occur. As primarily rural communities that rely heavily on energy development revenue and agricultural uses, the communities in the leasing areas are likely to be negatively impacted by loss of potential revenue from subsequent development, of these parcels. Because there is demand for oil and gas, it is expected that if the leases are not issued the parcels will be re-nominated and leased in the future under more stringent stipulations. This would still allow for development of leases, and generation of revenue from federally-managed minerals. Therefore, it is an assumption that the No Action Alternative (no lease option) may result in a slight reduction in domestic local production of oil and gas. This would likely result in reduced federal and state royalty income, and the potential for federal land to be drained by wells on adjacent private or state land.

Under the No-Action alternative, the BLM would receive no money from bonus bids and rental fees that would occur if the parcels were offered and sold. By law, the BLM provides approximately 50% of bonus bids and rentals go to the state of Wyoming. This represents a loss of considerable revenue to the state of Wyoming and to the federal government.

Alternative B: Proposed Action

Under this alternative, parcels WY-1008-074 and a portion of parcel 075 would be offered for lease. The remaining portion of parcel 075 would be deferred from leasing. The sale of parcel 074 and the recommended section of parcel 075 would yield bonus bid and rental revenue for the Federal government, and well as for the State. The amount will not be determined until the bidding process is completed for each parcel. Development of the issued leases would proceed consistent with the Reasonable Foreseeable Development report, at approximately 60 wells per year. Specific economic impacts would be identified in the NEPA document supporting the Application for Permit to Drill, when a more accurate analysis is possible based on the speculative nature of leasing in relation to development.

Alternative C-- Full Issuance:

Under this alternative, all leases would be issued. This would provide the most opportunity for development of oil and gas, and the most revenue for the Federal government and the State.

Mitigation

None.

4.12 Cumulative Impacts

As of July 15, 2010, there are approximately 4,816 federal producing wells in the Pinedale Field Office; there are no producing coalbed methane production wells. An additional 453 wells are in active drilling status.

Analysis of cumulative impacts for reasonably foreseeable development (RFD) of oil and gas wells on public lands in the Pinedale Field Office is presented in the 2008 Draft Pinedale Field Office Management Plans (RMP). 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.

Estimates of total surface disturbance for this lease sale action are based on full field development. Full field development assumes development of every spacing unit and has a total complement of roads, pads, power lines, gravel sources and pipelines. Exploration and development of hydrocarbon resources outside of well-developed areas increases the distance required for roads, pipelines, and power lines. The parcels offered are not within or near well developed fields. The surface disturbance assumptions shown in the following table estimate impacts associated with oil and gas exploration and development drilling activities in these areas:

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Table 4.1 Projected Surface Disturbance

Parcel	Acres in parcel	Full Field Development *	
		40 acre spacing	640acre spacing
WY-1008-074	60.04 (2 lots)	18 (1 well per lot)	9
WY-1008-075	1,727.65	387	27

*assumes all surface disturbance is on the parcel acreage

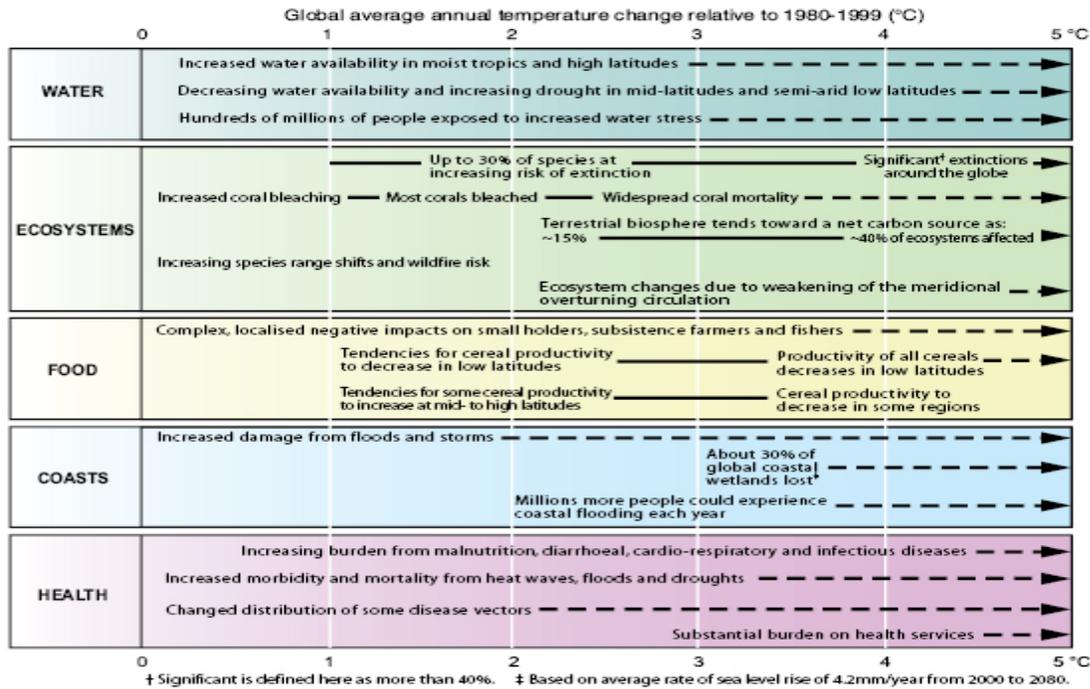
- Access Roads: 14 foot wide travel way, 3.0 acres disturbance per access road
- Drill Pads: 1.4 acres disturbance per average well pad (250 feet x 250 feet)
- Pipelines: 3.6 acres initial disturbance per producing well (30 feet right-of-way width)
- Power lines: 1.0 acre initial disturbance per producing well
- Total Surface disturbance: 9 acres

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 or quantifiable 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 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 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.

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 4.6.1, taken from the Fourth Assessment Report indicates varying responses of the natural world to increasing global temperatures.

Figure 4.6.1: 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 Pinedale Field Office and for the State of WY currently do not exist.

Based on a 0.00059 mt/well emission factor (See Section 4.2), an RFD of 412 wells drilled and produced per year would result in approximately 0.2429mt of CO₂e, potentially being added to the current levels associated with oil and gas development in the Pinedale Field Office. 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.

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. 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.

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, the dynamics of changing technology 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.

There are currently no proposals for Type 3 renewable energy projects in the Pinedale Field Office.

5.0 Description of Mitigating Measures and Residual Impacts

The issuance of those leases identified under the proposed action 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 Pinedale Field Office, Surface Use and Occupancy Requirements, Conditions of Approval, and the Pinedale Field Office's Special Leasing Stipulations, which are in place at the Wyoming State Office, will provide adequate mitigation for issuance of all lease parcels under the Proposed Action.

Direct, indirect, cumulative and residual impacts of leasing and lease development are generally described in the Pinedale Field Office Approved Resource Management Plan and Record of Decisions, November 2008. An environmental analysis will be prepared on a case-by-case basis upon receipt of proposals for future subsequent actions.

6.0 Consultation/Coordination

Pinedale Field Office BLM Staff

Mark Thonhoff, Natural Resource Specialist,

High Desert District BLM Staff

Bill Lanning, Resource Advisor

Participants in the original review and DNA preparation for parcels WY-1008-074 and 075 (formerly WY-1008-109 and 110) were:

Rusty Kaiser	Wildlife Biologist	BLM-PFO
Dave Crowley	Archaeologist	BLM-PFO
Merry Gamper	Supr. Natl Res Specialist	BLM-PFO
Larry Jensen	Acting AFM M&L	BLM-PFO

7.0 References

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U.S. Department of the Interior, Bureau of Land Management. 2008. Pinedale Field Office Resource Management Plan and Final Environmental Impact Statement. Pinedale, 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 Oct. 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. P L 94-579.

APPENDIX A

Lease Parcels

WY-1008-074 61.040 Acres

T.0290N, R.1140W, 06th PM, WY

Sec. 001 LOTS 1,2;

Sublette County

Pinedale FO

CA WYW156640

Formerly Lease No.

Stipulations:

Lease Notice No. 1

Lease Notice No. 2

Lease Notice No. 3

Special Lease Notice:

Portions of this lease, due to private surface ownership, may be encumbered by the Cross Lazy II conservation easement.

Special Lease Notice:

Any proposals outside of the quarter mile NSO for the Lander Road, but within the viewshed of the trail will be evaluated for effects to the historic setting of the trail through the Section 106 process. Any proposed adverse effects to the setting of the trail will require a Memorandum of Agreement to mitigate those adverse effects as required by 36 CFR800 and the Wyoming Protocol.

Special Lease Stipulation

TLS (1) Feb 1 to Jul 31; (2) as mapped on the Pinedale 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 Pinedale Field Office GIS database; (3) protecting Species affected by water depletions from the Colorado River system.

CSU (1) Surface occupancy or disturbance is prohibited, except for linear crossings, within one-quarter mile of the Lander Trail; (2) as mapped on the Pinedale Field Office GIS database; (3) protecting cultural and scenic values of the Lander Trail.

CSU (1) Surface occupancy or use within 500 Feet of Range Improvements will be restricted or prohibited unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts; (2) entire lease; (3) protecting range improvements.

WY-1008-075 2397.650 Acres

T.0290N, R.1140W, 06th PM, WY

Sec. 001 LOTS 3,4;
 001 S2NW,N2SW;
 002 LOTS 1,4;
 002 SENE,SWNW,NESE;
 011 SWNE,W2,SE;
 012 NWSW,S2S2;
 013 ALL;
 014 ALL;

Sublette County

Pinedale FO

Formerly Lease No.

Stipulations:

Lease Notice No. 1

Lease Notice No. 2

Lease Notice No. 3

Special Lease Notice:

Portions of this lease, due to private surface ownership, may be encumbered by the Cross Lazy II conservation easement.

Special Lease Stipulation

- TLS (1) Feb 1 to Jul 31; (2) as mapped on the Pinedale Field Office GIS database; (3) protecting nesting Raptors.
- TLS (1) Mar 15 to Jul 15; (2) as mapped on the Pinedale Field Office GIS database; (3) protecting nesting Greater sage-grouse.
- TLS (1) Nov 15 to Apr 30; (2) as mapped on the Pinedale Field Office GIS database; (3) protecting big game on crucial winter range.
- CSU (1) Surface occupancy or use will be restricted or prohibited unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts; (2) as mapped on the Pinedale Field Office GIS database; (3) protecting Class I and/or Class II Visual Resource Management Areas.
- CSU (1) Surface occupancy or disturbance is prohibited, except for linear crossings, within one-quarter mile of the Lander Trail; (2) as mapped on the Pinedale Field Office GIS database; (3) protecting cultural and scenic values of the Lander Trail.
- CSU (1) Surface occupancy or use within 500 Feet of Range Improvements will be restricted or prohibited unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts; (2) entire lease; (3) protecting range improvements.
- 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 Pinedale Field Office GIS database; (3) protecting Species affected by water depletions from the Colorado River system.

APPENDIX B

Greater Sage-grouse Core Area Screen

APPENDIX C

Wilderness Review Screen

