



United States Department of the Interior



BUREAU OF LAND MANAGEMENT
Miles City Field Office
111 Garryowen Road
Miles City, Montana 59301-7000
www.blm.gov/mt

In Reply Refer To:

May 4, 2016 Comp Sale
3160 (MTC023)

December 1, 2015

Dear Reader:

The Bureau of Land Management (BLM) Miles City Field Office has prepared an environmental assessment (EA) to analyze the potential effects from offering six nominated lease parcels for competitive oil and gas leasing in a sale tentatively scheduled to occur on May 4, 2016.

The EA with an unsigned Finding of No Significant Impact (FONSI) is available for a 30-day public comment period. Written comments must be postmarked by December 30, 2015, to be considered. Comments may be submitted using one of the following methods:

Email: BLM_MT_Miles_CityFO_Lease_EA@blm.gov

Mail: Miles City Field Office
Attn: Irma Nansel
111 Garryowen Road
Miles City, Montana 59301-7000

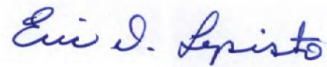
Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – will be available for public review. If you wish to withhold personal identifying information from public review or disclosure under the Freedom of Information Act (FOIA), you must clearly state, in the first line of your written comment, “CONFIDENTIALITY REQUESTED.” While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from organizations, from businesses, and from individuals identifying themselves as representatives of organizations or businesses, will be available for public review.

Upon review and consideration of public comments, the EA will be updated as needed. Based on our analysis, parcels recommended for leasing in our assessment would be included as part of a competitive oil and gas lease sale tentatively scheduled to occur on May 4, 2016.

Prior to issuance of any leases, the Decision Record and FONSI will be finalized and posted for public review on our BLM website. Please refer to the Montana/Dakotas BLM website at <http://on.doi.gov/1LQChXI>. Current and updated information about our EAs, Lease Sale Notices, and corresponding information pertaining to this sale can be found at the link referenced above.

If you have any questions or would like more information about lease sale notices or the issuance of the EA, Decision Record and FONSI, please contact me at 406-233-2903.

Sincerely,

A handwritten signature in blue ink that reads "Eric D. Lepisto". The signature is written in a cursive style.

Eric D. Lepisto
Acting Field Manager

United States Department of the Interior
Bureau of Land Management

Environmental Assessment DOI-BLM-MT-C020-2016-0022-EA
December 1, 2015

Project Title: Oil and Gas Lease Parcel, May 4, 2016 Sale

Location: Miles City Field Office (see Appendix A for list of lease parcels by number and legal description and Maps 1-7)



**Miles City Oil and Gas Lease Sale EA
DOI-BLM-MT-C020-2016-0022-EA**

1.0 PURPOSE AND NEED	1
1.1 Introduction	1
1.2 Purpose and Need for the Proposed Action	1
1.3 Conformance with Land Use Plan(s)	2
1.4 Public Scoping and Identification of Issues	3
2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION	4
2.1 Alternative A - No Action	4
2.2 Alternative B – Proposed Action	4
2.3 Additional Considerations for Alternatives B.....	5
3.0 AFFECTED ENVIRONMENT	5
3.1 Introduction	5
3.2 Air Resources	5
3.3 Soil Resources	12
3.4 Water Resources	13
3.5 Vegetation Resources	14
3.6 Wetland and Riparian Areas	16
3.7 Special Status Species	18
3.8 Fish and Wildlife.....	22
3.9 Cultural Resources	24
3.10 Native American Religious Concerns	25
3.11 Paleontology	25
3.12 Visual Resources	26
3.13 Livestock Grazing	27
3.14 Recreation and Travel Management	27
3.15 Lands and Realty	27
3.16 Minerals	28
3.17 Special Designations	29
3.18 Social and Economic Conditions	30
4.0 ENVIRONMENTAL IMPACTS.....	33
4.1 Assumptions and Reasonably Foreseeable Development Scenario Summary.....	33

4.2 Alternative A (No Action Alternative)	34
4.3 Alternative B (Proposed Action)	34
5.0 CONSULTATION AND COORDINATION	45
5.1 Persons, Agencies, and Organizations Consulted	45
5.2 Summary of Public Participation.....	45
6.0 REFERENCES	47
Figure 1. Visibility Trends at the Fort Peck Indian Reservation and the Medicine Lake Wilderness.	8
Table 1. US EPA – Air Data Air Quality Index Report (2012–2014)	7
Table 2. Monitored Concentrations Representative of the Study Area	7
Table 3. Climate Change Trends in Northeastern Montana	10
Table 4. Riparian and Wetland Areas by Lease Parcel ¹	17
Table 5. Aquatic SSS that occur in or their ranges overlap with proposed lease parcels	18
Table 6. Analysis area occurrence of BLM terrestrial sensitive species and USFWS threatened, endangered, candidate or proposed terrestrial species.	19
Table 7. Geologic units and PFYC rank within the lease parcels.	26
Table 8. VRM Classes for the analysis area by lease parcel.	26
Table 9. Number of parcels, surface ownership, and acres by county.	27
Table 10. Existing oil and gas leasing and development by county.	29
Table 11. Estimated Federal, State, and County Revenue Associated with the Lease Sale.	43
Table 12. List of Preparers	45
Map 1. All Nominated Lease Parcels.....	65
Map 2. Parcel MTM 105431-KH.....	66
Map 3. Parcel MTM 102757-V8.....	67
Map 4. Parcel MTM 102757-6X.....	68
Map 5. Parcel MTM 102757-6Y.....	69
Map 6. Parcel MTM 105431-KK.....	70
Map 7. Parcel MTM 105431-H5.....	71
Appendix A - Parcel description and proposed leasing stipulations.....	52
Appendix B - Miles City Field Office Stipulation Descriptions.....	56
Appendix C - Reasonably Foreseeable Development Scenario Forecast for the May 4, 2016 Lease Sale	63

Miles City Field Office Oil and Gas Lease Sale Parcel Reviews DOI-BLM-MT-C020-2016-0022-EA

1.0 PURPOSE AND NEED

1.1 Introduction

It is the policy of the Bureau of Land Management (BLM) to make mineral resources available for use and to encourage development of mineral resources to meet national, regional, and local needs. This policy is based on various laws, including the Mineral Leasing Act of 1920 and the Federal Land Policy and Management Act of 1976. The Federal Onshore Oil and Gas Leasing Reform Act of 1987 Sec. 5102(a)(b)(1)(A) directs the BLM to conduct quarterly oil and gas lease sales in each state whenever eligible lands are available for leasing. The Montana State Office conducts mineral estate lease auctions for lands managed by the Federal Government, whether the surface is managed by the Department of the Interior (BLM or Bureau of Reclamation), United States Forest Service, or other departments and agencies. In some cases the BLM holds subsurface mineral rights on split estate lands where the surface estate is owned by another party, other than the Federal Government. Federal mineral leases can be sold on such lands as well. The Montana State Office has historically conducted four lease sales per year.

Members of the public file Expressions of Interest (EOI) to nominate parcels for leasing by the BLM. From these EOIs, the Montana State Office provides draft parcel lists to the appropriate field offices for review. The BLM field offices then review legal descriptions of nominated parcels to determine: if they are in areas open to leasing; if new information has come to light which might change previous analyses conducted during the land use planning process; if there are special resource conditions of which potential bidders should be made aware; and which stipulations should be identified and included as part of a lease. Ultimately, all of the lands in proposed lease sales are nominated by private individuals, companies, or the BLM, and therefore represent areas of high interest.

This environmental assessment (EA) has been prepared to disclose and analyze the potential environmental consequences from leasing all six nominated lease parcels encompassing a total of 1,028.59 surveyed Federal mineral acres located in the Miles City Field Office (MCFO), to be included as part of a competitive oil and gas lease sale tentatively scheduled to occur in May 4, 2016.

The analysis area includes the six nominated parcels in Richland, Roosevelt, Sheridan, and Garfield counties (Map 1).

1.2 Purpose and Need for the Proposed Action

The purpose of offering parcels for competitive oil and gas leasing is to provide opportunities for private individuals or companies to explore for and develop Federal oil and gas resources in Richland, Roosevelt, Sheridan, and Garfield counties after receipt of necessary approvals and to sell the oil and gas in public markets.

This action is needed to help meet the energy needs of the people of the United States. By conducting lease sales, the BLM provides for the potential increase of energy reserves for the U.S., a steady source of income, and at the same time meets the requirement identified in the Energy Policy Act, Sec. 362(2), Federal Oil and Gas Leasing Reform Act of 1987, and the Mineral Leasing Act of 1920, Sec. 17. Oil and gas companies filed Expressions of Interest (EOI) to nominate parcels for leasing by the BLM Montana. The BLM needs to respond to the EOIs by determining whether or not to recommend these lease parcels for competitive oil and gas lease sale and, if so, with any stipulations attached.

The decision to be made is whether or not to sell oil and gas leases on the lease parcels identified, and, if so, identify stipulations that would be included with specific lease parcels at the time of lease sale.

1.3 Conformance with Land Use Plan(s)

This EA is tiered to the information and analysis and conforms to the decisions contained in the 2015 Rocky Mountain Region Record of Decision (ROD) and Miles City Approved Resource Management Plan (MCFO RMP). The MCFO RMP, and its associated Final EIS, is the governing land use plan for the MCFO. The lease parcels to be analyzed for sale are within areas determined to be open to oil and gas leasing in the MCFO RMP. An electronic copy of the MCFO RMP, ROD, and associated Final EIS can be located via the internet on the BLM home page, www.blm.gov/mt. On the home page, locate the heading titled "*Montana/Dakotas*," then select "*What We Do*," then click on the "*Planning*" link.

A more complete description of activities and impacts, related to oil and gas leasing, development, production, etc. can be found in the MCFO Final EIS Minerals Appendix, pages MIN-1 to MIN-35.

Analysis of the lease parcels is documented in this EA, and was conducted by MCFO resource specialists who relied on professional knowledge of the areas involved, review of current databases, file information, and some site visits to ensure that appropriate stipulations were recommended for a specific parcel. It was determined that the lease parcels to be analyzed for sale are within areas determined to be open to oil and gas leasing in the MCFO RMP.

At the time of this review it is unknown whether or not a particular parcel will be sold and a lease issued. It is also unknown when, where, or if future well sites, roads, and facilities might be proposed. Assessment of potential activities and impacts was based on potential well densities discerned from the Reasonably Foreseeable Development (RFD) Scenario developed for this environmental assessment (Appendix C), which is based on information contained in the MCFO RFD developed for the MCFO Final EIS within the Mineral Appendix (BLM, 2015b). The RFD contains projections of the number of possible oil and gas wells that could be drilled and produced in the MCFO area and used to analyze projected wells for the nominated lease parcels. Detailed site-specific analysis and mitigation of activities associated with any particular lease would occur when a lease holder submits an application for permit to drill (APD). A more complete description of mitigation, BMPs, and conditions of approval related to oil and gas lease activities can be found at pages Min-7 to Min-13 of the Minerals Appendix and MMCAA-1 to MMCAA-8 of the Mitigation Measures and Conservation Actions Appendix in the MCFO Final

EIS, Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development-The Gold Book, and online at http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices.html. Offering the parcels for sale and issuing leases would not be in conflict with any local, county, or state laws or plans.

1.4 Public Scoping and Identification of Issues

Public scoping for this project was conducted through a 15-day scoping period advertised on the BLM Montana State Office website, local newspapers, the MCFO website, and posted online in the National Environmental Policy Act (NEPA) notification log. Scoping was initiated October 6, 2015.

The BLM coordinates with Montana Fish, Wildlife, and Parks (MFWP) and the United States Fish and Wildlife Service (USFWS) to manage wildlife habitat because BLM management decisions can affect wildlife populations which depend on the habitat. The BLM manages habitat on BLM lands, while MFWP is responsible for managing wildlife species populations. The USFWS also manages some wildlife populations but only those Federal trust species managed under mandates such as the Endangered Species Act, Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act. Managing wildlife is factored into project planning at multiple scales and is to be implemented early in the planning process. Consultation was conducted between the BLM and the USFWS for threatened and endangered species within the MCFO RMP planning area (BLM, 2015a). The USFWS concurred with the MCFO RMP Biological Assessment on July 10, 2015 (Appendix Q; BLM, 2015a).

Coordination with MFWP was conducted for the six lease parcels being reviewed and in the completion of this EA in order to prepare the analysis, identify protective measures, and apply stipulations and lease notices associated with these parcels being analyzed. A letter was sent to the USFWS and MFWP during the 15-day scoping period and for this 30-day public comment period requesting comments on the six parcels being reviewed. Refer to Section 5.2 of this EA for a more complete summary of the scoping comments received.

The BLM consults with Native Americans under various statutes, regulations, and executive orders, including the American Indian Religious Freedom Act, the National Historic Preservation Act, the Native American Graves Protection and Repatriation Act, the National Environmental Policy Act, and Executive Order 13175-Consultation and Coordination with Indian Tribal Governments. The BLM sent letters to tribes in Montana, North and South Dakota and Wyoming for the 15-day scoping period informing them of the potential for the lease parcels to be leased and inviting them to submit issues and concerns BLM should consider in the environmental analysis. Letters were sent to the Tribal Presidents and the Tribal Historical Preservation Officer (THPO) or other cultural contacts for the Cheyenne River Sioux Tribe, Crow Tribe of Montana, Crow Creek Sioux Tribe, Eastern Shoshone Tribe, Ft. Peck Tribes, Lower Brule Sioux Tribe, the Mandan, Hidasta, and Arkira Nation, Northern Arapaho Nation, Northern Cheyenne Tribe, Oglala Sioux Tribe, Rosebud Sioux Tribe of Indians, Standing Rock Sioux Tribe, and Turtle Mountain Band of Chippewa. In addition to scoping letters, THPOs also received file search results from the preliminary review of parcels conducted by BLM. The BLM sent a second letter with a copy of this EA to the tribes informing them about the 30-day

public comment period for the EA and to solicit any information BLM should consider before making a decision whether or not to offer any or all of the nominated parcels for sale. Site specific resource concerns were identified by the BLM through the preliminary review process conducted prior to a 15-day public scoping period. Lease stipulations (as required by Title 43 Code of Federal Regulations 3131.3) were added as necessary to each parcel as identified by the BLM to address site specific resource concerns.

The BLM focuses its analysis on “issues that are truly significant to the action in question, rather than amassing needless detail” (40 CFR 1500.1(b)). Issues have a relationship with the proposed action; are within the scope of analysis; and are amenable to scientific analysis.

The issues carried forward through analysis in this EA are associated with air resources, greenhouse gas emission and climate change, socioeconomics, cultural resources, paleontological resources, water resources, recreation and visual resources, wildlife habitat, Special Status and Sensitive Species, vegetation, livestock grazing management, invasive, non-invasive species and noxious weeds.

The BLM considered the following issues but did not analyze them further because they were determined to not be present or not potentially impacted by this project: coal, locatable minerals, salable minerals, lands with wilderness characteristics, ERMAs, ACECs, BLM Sensitive Plant Species, cave and karst resources, wild and scenic rivers; wilderness study areas. Thus, the EA contains no further discussion of these issues.

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

2.1 Alternative A - No Action

For 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 all expressions of interest to lease (parcel nominations) would be denied or rejected.

The No Action Alternative would exclude all six lease parcels, covering 1,028.59 surveyed Federal mineral acres (79.88 BLM administered surface, 488.80 private/State surface, and 459.91 State administered surface) from the competitive oil and gas lease sale (Maps 1-7). Surface management would remain the same and ongoing oil and gas development would continue on surrounding Federal, private, and State leases.

2.2 Alternative B – Proposed Action

The Proposed Action Alternative would be to offer six lease parcels of Federal minerals for oil and gas leasing, covering 1,028.59 surveyed Federal mineral acres (79.88 BLM administered surface, 488.80 private/State surface, and 459.91 State administered surface), in conformance with the existing land use planning decisions. Parcel number, size, and detailed locations and associated stipulations are listed in Appendix A. Maps 1-7 indicate the detailed location of each parcel.

2.3 Additional Considerations for Alternatives B

For the split-estate lease parcels, the BLM provided courtesy notification to private landowners that the Federal oil and gas estate under their surface would be included in this lease sale. In the event of activity on such split estate lease parcels, the lessee and/or operator would be responsible for adhering to BLM requirements as well as reaching an agreement with the private surface landowners regarding access, surface disturbance, and reclamation.

The terms and conditions of the standard federal lease and federal regulations would apply to each parcel offered for sale in the Alternative. Stipulations shown in Appendix A would be included with identified parcels offered for sale. Standard operating procedures for oil and gas operations on federal leases include measures to protect the environment and resources such as groundwater, air, wildlife, historical and prehistorical concerns, and other resources as mentioned in the MCFO RMP. Conditions of Approval (COAs) would be attached to permits issued to explore and develop the parcels to address site-specific concerns or new information.

Federal oil and gas leases would be issued for a 10-year period and would remain valid for as long thereafter as oil or gas is produced in paying quantities, required payments are made and lease operations are conducted in compliance with regulations and approved permits. If a lessee fails to produce oil and gas by the end of the initial 10 year period, does not make annual rental payments, or does not comply with the terms and conditions of the lease, the BLM would terminate the lease. The lessee can relinquish the lease. The oil and gas resources could be offered for sale at a future lease sale.

Drilling of wells on a lease would not be permitted until the lessee or operator secures approval of a drilling permit and a surface use plan as specified in 43 CFR 3162. This would require another environmental review process at the time of application by the BLM.

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This chapter describes the existing environment (i.e., the physical, biological, and socioeconomic values and resources) within the analysis area, which includes the six nominated parcels in Richland, Roosevelt, Sheridan, and Garfield counties (Map 1), that could be affected by implementation of the alternatives described in Chapter 2. The existing environment is described by the different resources found throughout the counties listed above.

Unless otherwise stated, resource analysis in this chapter, and Chapter 4, will be described in approximate acres due to the scaling and precision parameters associated with the Geographic Information System (GIS), in addition to being referenced to a different land survey.

3.2 Air Resources

Air resources include air quality, air quality related values (AQRVs), and climate change. As part of the planning and decision making process, BLM considers and analyzes the potential effects of BLM and BLM-authorized activities on air resources. Air resource impacts are affected by pollutant emissions and emission characteristics, atmospheric chemistry, dispersion

meteorology, and terrain. AQRVs include effects on soil and water, such as sulfur and nitrogen deposition and lake acidification, and aesthetic effects, such as visibility.

The Environmental Protection Agency (EPA) has primary responsibility for setting ambient air quality standards, including those for seven criteria air pollutants subject to National Ambient Air Quality Standards (NAAQS). Pollutants regulated under NAAQS include carbon monoxide (CO), lead, nitrogen dioxide (NO₂), ozone, particulate matter with a diameter less than or equal to 10 microns (PM₁₀), particulate matter with a diameter less than or equal to 2.5 microns (PM_{2.5}), and sulfur dioxide (SO₂). Two additional pollutants, nitrogen oxides (NO_x) and volatile organic compounds (VOCs) are regulated because they form ozone in the atmosphere. The EPA also sets national emission standards for many types of equipment and activities. Many air quality permitting and regulation activities are delegated to the Montana Department of Environmental Quality (MDEQ), which has also set state ambient air quality standards.

Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years. Climate change includes both historic and predicted climate shifts that are beyond normal weather variations.

3.2.1 Air Quality

The EPA air quality index (AQI) is an index used for reporting daily air quality (<http://www.epa.gov/oar/data/geosel.html>) to the public. The index tells how clean or polluted an area's air is and whether associated health effects might be a concern. The EPA calculates the AQI for five criteria air pollutants regulated by the Clean Air Act (CAA): ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. For each of these pollutants, EPA has established NAAQS to protect public health. An AQI value of 100 generally corresponds to the primary NAAQS for the pollutant. The following terms help interpret the AQI information:

- **Good** – The AQI value is between 0 and 50. Air quality is considered satisfactory and air pollution poses little or no risk.
- **Moderate** – The AQI is between 51 and 100. Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people. For example, people who are unusually sensitive to ozone may experience respiratory symptoms.
- **Unhealthy for Sensitive Groups** – When AQI values are between 101 and 150, members of “sensitive groups” may experience health effects. These groups are likely to be affected at lower levels than the general public. For example, people with lung disease are at greater risk from exposure to ozone, while people with either lung disease or heart disease are at greater risk from exposure to particle pollution. The general public is not likely to be affected when the AQI is in this range.
- **Unhealthy** – The AQI is between 151 and 200. Everyone may begin to experience some adverse health effects, and members of the sensitive groups may experience more serious effects.
- **Very Unhealthy** – The AQI is between 201 and 300. This index level would trigger a health alert signifying that everyone may experience more serious health effects.

AQI data show that there is little risk to the general public from air quality in the analysis area (Table 1). Based on available 2012–2014 data for Richland County in the northern portion of the planning area, 86 percent of the days were rated “good” and the three-year median daily AQI was 35.

Table 1. US EPA – Air Data Air Quality Index Report (2012–2014)

County ¹	# Days in Period	# Days Rated Good or No Data	Percent of Days Rated Good or No Data	# Days Rated Moderate	# Days Rated Unhealthy for Sensitive Groups	# Days Rated Unhealthy	# Days Rated Very Unhealthy
Richland	1,096	946	86%	147	3	0	0

¹The Richland County monitor is located near Sidney, MT. Source: EPA 2015.

The area managed by the MCFO is in compliance with all NAAQS. Maximum concentrations as a percentage of the NAAQS are summarized in Table 2 based on monitoring data available for 2012 through 2014. Data are not provided for CO and lead, which are not monitored within the analysis area.

Table 2. Monitored Concentrations Representative of the Study Area

Pollutant	Averaging Time	NAAQS	Monitored Values ^{a, b}	
			Concentration	Percentage
NO ₂	1 hour	100 ppb	12 ppb	12%
O ₃	8 hour	0.075 ppm	0.056 ppm	75%
PM ₁₀	24 hour	150 µg/m ³	0 ^c	See footnote c
PM _{2.5}	24 hour	35 µg/m ³	15	43%
	Annual	12 µg/m ³	7.0 µg/m ³	58%
SO ₂	1 hour	75 ppb	4 ppb	5%

^a Representative concentrations are based on data from the Sidney monitoring station in Richland County.

^b Monitored concentrations are the 2nd highest for 24-hour PM₁₀; three-year average (2012-2014) of the annual 4th highest daily maximum for 8-hour O₃; three-year average of the 98th percentile for 24-hour PM_{2.5} and 1-hour NO₂; three-year average of the 99th percentile for 1-hour SO₂; and three-year arithmetic mean for annual PM_{2.5}.

^c MDEQ reports “0” as the design value because the form of the PM₁₀ NAAQS is “number of exceedances” and monitored values did not exceed the standard.

Source: MDEQ 2015.

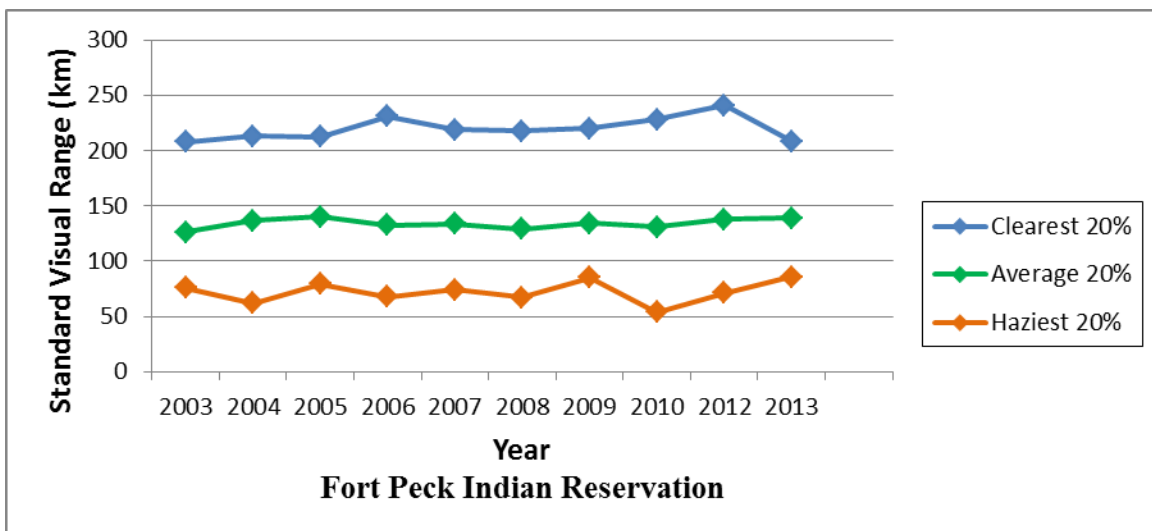
Although ozone concentrations above the NAAQS have been monitored in some rural areas in other states with oil and gas activity, moderate ozone concentrations have been monitored in Montana oil and gas areas. Based on 2012-2014 data from a monitors located near Sidney a, Montana, ozone concentrations are approximately 75 percent of the ozone NAAQS (MDEQ, 2015).

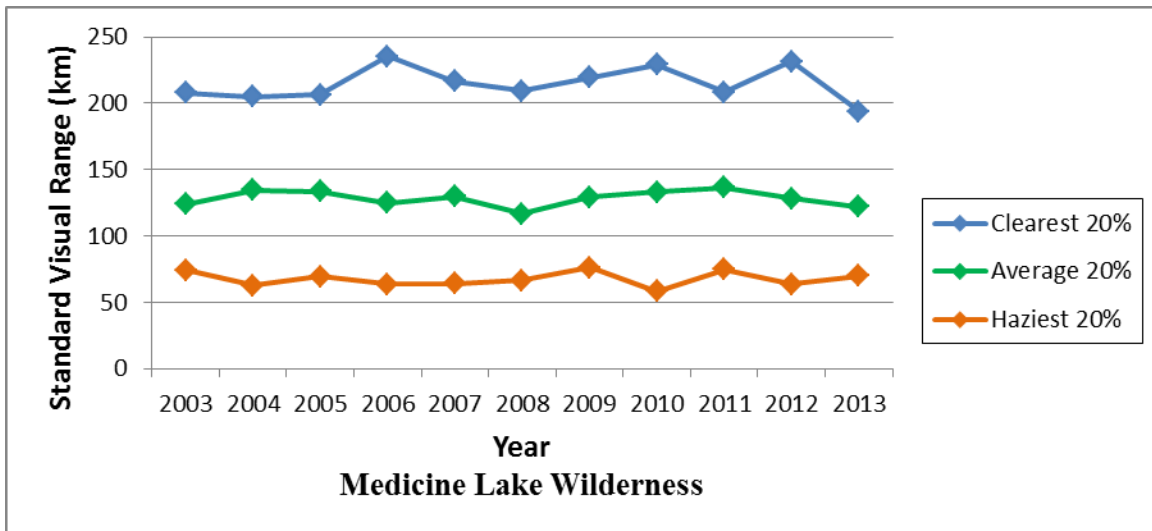
Hazardous air pollutants (HAPs) would also be emitted from oil and gas operations, including well drilling, well completion, and gas and oil production. Recent air quality modeling performed for the MCFO indicates that concentrations of benzene, ethylbenzene, formaldehyde, n-hexane, toluene, and xylene would be less than 14 percent of applicable health-based standards and that the additional risk of cancer would be less than 0.18 in one million (BLM, 2013).

Air resources also include visibility, which can be assessed in terms of the standard visual range (in kilometers or miles) that a person can distinguish a large dark object on the horizon. Visibility degradation is primarily due to anthropogenic sulfate, nitrate, and particulate emissions and due to wildfires. Air pollutants affecting visibility can be transported hundreds of miles. Figure A illustrates visibility trends based on IMPROVE monitoring data from 2003-2013 at the two Class I areas near the analysis area: the Fort Peck Indian Reservation and the Medicine Lakes Wilderness. Because visibility is highly variable throughout the year, it is characterized by three groupings: the clearest 20% days, average 20% days, and haziest 20% days. A slight improving trend in standard visual range is apparent on average and haziest days at the Fort Peck Indian Reservation, although the improving trend on the clearest days was broken by lower visual range in 2013. At the Medicine Lake Wilderness, visual range was relatively stable for the average and haziest days, but also declined on the clearest days in 2013.

The closest deposition monitoring station is located in the Theodore Roosevelt National Park South Unit in North Dakota. Sulfate, nitrate, and acid deposition rates at this site were among the lowest in the nation during 2013 (NADP 2014). Wet deposition was 5 kilograms per hectare (kg/ha) for nitrate and 3 kg/ha for sulfate. Precipitation pH was 5.9 which is not considered to be acidic. Hydrogen ion wet deposition was extremely low at less than 0.01 kg/ha. Lake acidification is unlikely with these deposition values and has not been reported at lakes in the area.

Figure 1. Visibility Trends at the Fort Peck Indian Reservation and the Medicine Lake Wilderness.





Source: Data derived from IMPROVE 2014.

3.2.2 Climate Change

Climate change is defined by the Intergovernmental Panel on Climate Change (IPCC) as “a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use” (IPCC, 2013). Climate change and climate science are discussed in detail in the climate change Supplementary Information Report for Montana, North Dakota, and South Dakota, Bureau of Land Management (Climate Change SIR, 2010) and in the MCFO Final EIS (BLM, 2015b).

The IPCC states: “Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased” (IPCC, 2013). The global average surface temperature has increased approximately 1.5°F from 1880 to 2012 (IPCC, 2013). Warming has occurred on land surfaces, oceans and other water bodies, and in the troposphere (lowest layer of earth’s atmosphere, up to 4-12 miles above the earth).

In Montana’s northeastern region, temperatures and precipitation have been increasing from 1895-2014 (NOAA, 2015). Table 3 provides annual and three-month changes, averaged by decade. The largest temperature increases occurred in January-March with an increase of 0.7°F per decade. Precipitation during January-March decreased by 0.04 inches per decade, but increased during other months.

Table 3. Climate Change Trends in Northeastern Montana

Period	Temperature Change (°F/decade)		Precipitation Change (inches/decade)
	Minimum	Maximum	
Annual	+0.2	+0.3	+0.06
January-March	+0.7	+0.7	-0.04
April-June	+0.0	+0.2	+0.05
July-September	+0.1	+0.3	+0.04
October-December	+0.1	+0.1	+0.02

Earth has a natural greenhouse effect wherein naturally occurring gases such as water vapor, CO₂, methane, and N₂O absorb and retain heat. Without the natural greenhouse effect, earth would be approximately 60°F cooler (Climate Change SIR, 2010). Current ongoing global climate change is caused, in part, by the atmospheric buildup of greenhouse gases (GHGs), which may persist for decades or even centuries. Each GHG has a global warming potential that accounts for the intensity of each GHG’s heat trapping effect and its longevity in the atmosphere (Climate Change SIR, 2010). The buildup of GHGs such as CO₂, methane, N₂O, and halocarbons since the start of the industrial revolution has substantially increased atmospheric concentrations of these compounds compared to background levels. At such elevated concentrations, these compounds absorb more energy from the earth’s surface and re-emit a larger portion of the earth’s heat back to the earth rather than allowing the heat to escape into space than would be the case under more natural conditions of background GHG concentrations.

A number of activities contribute to the phenomenon of climate change, including emissions of GHGs (especially CO₂ and methane) from fossil fuel development, large wildfires, 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 due to their differences in global warming potential (described above) and lifespans in the atmosphere. For example, CO₂ may last 50 to 200 years in the atmosphere while methane has an average atmospheric life time of 12 years (Climate Change SIR, 2010).

Some information and projections of impacts beyond the project scale are becoming increasingly available. Chapter 3 of the climate change SIR describes impacts of climate change in detail at various scales, including the state scale when appropriate. The EPA identifies eastern Montana as part of the Great Plains region. The following summary characterizes potential changes identified by the EPA (EPA, 2008) that are expected to occur at the regional scale, where the Proposed Action and its alternatives are to occur.

- The region is expected to experience warmer temperatures with less snowfall.
- Temperatures are expected to increase more in winter than in summer, more at night than in the day, and more in the mountains than at lower elevations.

- Earlier snowmelt means that peak stream flow would be earlier, weeks before the peak needs of ranchers, farmers, recreationalist, and others. In late summer, rivers, lakes, and reservoirs would be drier.
- More frequent, more severe, and possibly longer-lasting droughts are expected to occur.
- Crop and livestock production patterns could shift northward; less soil moisture due to increased evaporation may increase irrigation needs.
- Drier conditions would reduce the range and health of ponderosa and lodgepole pine forests, and increase the susceptibility to fire. Grasslands and rangelands could expand into previously forested areas.
- Ecosystems would be stressed and wildlife such as the mountain lion, black bear, long-nose sucker, marten, and bald eagle could be further stressed.

Other impacts could include:

- Increased particulate matter in the air as drier, less vegetated soils experience wind erosion.
- Shifts in vegetative communities which could threaten plant and wildlife species.
- Changes in the timing and quantity of snowmelt which could affect both aquatic species and agricultural needs.

Projected and documented broad-scale changes within ecosystems of the U.S. are summarized in the Climate Change SIR. Some key aspects include:

- Large-scale shifts have already occurred in the ranges of species and the timing of the seasons and animal migrations. These shifts are likely to continue (USGCRP, 2009, as cited by Climate Change SIR, 2010). Climate changes include warming temperatures throughout the year and the arrival of spring an average of 10 days to 2 weeks earlier through much of the U.S. compared to 20 years ago. Multiple bird species now migrate north earlier in the year.
- Fires, insect epidemics, disease pathogens, and invasive weed species have increased and these trends are likely to continue. Changes in timing of precipitation and earlier runoff would increase fire risks.
- Insect epidemics and the amount of damage that they may inflict have also been on the rise. The combination of higher temperatures and dry conditions have increases insect populations such as pine beetles, which have killed trees on millions of acres in western U.S. and Canada. Warmer winters allow beetles to survive the cold season, which would normally limit populations; while concurrently, drought weakens trees, making them more susceptible to mortality due to insect attack.

More specific to Montana, additional projected changes associated with climate change described in Section 3.0 of the Climate Change SIR (2010) include:

- Temperature increases in Montana are predicted to be between 3 to 5°F at the mid-21st century. As the mean temperature rises, more heat waves are predicted to occur.
- Precipitation increases in winter and spring in Montana may be up to 25 percent in some areas. Precipitation decreases of up to 20 percent may occur during summer, with potential increases or decreases in the fall.

- For most of Montana, annual median runoff is expected to decrease between 2 and 5 percent. Mountain snowpack is expected to decline, reducing water availability in localities supplied by meltwater.
- Water temperatures are expected to increase in lakes, reservoirs, rivers, and streams. Fish populations are expected to decline due to warmer temperatures, which could also lead to more fishing closures.
- Wildland fire risk is predicted to continue to increase due to climate change effects on temperature, precipitation, and wind. One study predicted an increase in median annual area burned by wildland fires in Montana based on a 1°C global average temperature increase to be 241 to 515 percent.

While long-range regional changes might occur within this analysis area, it is impossible to predict precisely when they could occur.

3.3 Soil Resources

The soil-forming factors (climate, parent material, topography, biota, and age) are variable across the planning area, which results in soils with diverse physical, chemical, and biotic properties. Important properties of naturally functioning soil systems include biotic activity, diversity, and productivity; water capture, storage, and release; nutrient storage and cycling; contaminant filtration, buffering, degradation, immobilization, and detoxification; and biotic system habitat.

Soils sensitive to disturbances occur within proposed parcels. These soils would be difficult to reclaim following degradation. The following site characteristics are considered to be at high risk of degradation from disturbance and therefore classified as sensitive soils: soils on steep slopes, highly compactable soils, hydric soils, and soils poorly suited to reclamation (i.e. soils with high salt content, limited precipitation, poor water-holding capacity, inadequate rooting depth, or highly erosive qualities).

The lease parcels are located within four counties including Roosevelt, Richland, Sheridan, and Garfield. The acreage of the lease parcels comprises less than 1 percent of each county. The following describes the common soil properties of lease parcels within each parcel:

Garfield County contains proposed parcels MTM 10543-KH. Ecological sites within these parcels fall within MLRA 58A, Northern Rolling High Plains. The soils within this parcel are mainly comprised of loams, silt loams, and silty clays. The soils in this parcel do contain the characteristics to be classified as sensitive soils.

Richland County contains proposed parcel MTM 105431-H5. Ecological sites for this parcel are typical of MLRA 54A, Rolling Soft Shale Plain. The soils within this parcel are mainly comprised of silt loams, silty clay loams, clays, and some areas of Lambert badland-complex. Soils considered prime farmlands, if irrigated, occur within approximately 40% of this lease parcel and have high reclamation potential. In addition, this parcel also contains areas which contain the characteristics to be classified as sensitive soils.

Roosevelt County contains proposed parcel MTM 105431-KK. Ecological Site Descriptions for this parcel is found with MLRA 54A, Rolling Soft Shale Plains. The soils with this parcel are a

mainly comprised of fine sandy loam and a havrelon-trembles complex. Soils considered prime farmlands, if irrigated, occur within this lease parcel and have high reclamation potential.

Sheridan County contains proposed parcels MTM 102757-V8, MTM 102757-6X, and MTM 102757-6Y. These parcels fall within MLRA 53A, Northern Dark Brown Glaciated Plains. The majority of the soils in this parcel are highly influence by the presence of water. The remainder of the soils varies from a silty clay loam to saline soils to gravely sandy loam. A portion of parcel MTM 102757-6Y does contain the characteristics to be classified as sensitive soils. The remaining soils do have high reclamation potential.

3.4 Water Resources

3.4.1 Surface Hydrology

Surface water resources across the MCFO are present as lakes, reservoirs, rivers, streams, wetlands, and springs. Water resources are essential to the residents of eastern Montana to support agriculture, public water supplies, industry, and recreation. Water resources and riparian areas are crucial to the survival of many BLM-sensitive fish, reptiles, birds, and amphibians.

Perennial streams retain water year-round and have variable flow regimes. Intermittent streams flow during the part of the year when they receive sufficient water from springs, groundwater, or surface sources such as snowmelt or storm events. Ephemeral streams flow only in direct response to precipitation. Intermittent and ephemeral streams play an important role in the hydrologic function of the ecosystems within the lease parcels by transporting water, sediment, nutrients, and debris and providing connectivity within a watershed. They filter sediment, dissipate energy from snowmelt and storm water runoff, facilitate infiltration, and recharge groundwater (Levick et al. 2008). The pools of intermittent streams retain water in the summer months, supporting riparian vegetation and providing water resources for wildlife and livestock.

Stream morphology is influenced by a number of factors including: stream flow regime, geology, soils, vegetation type, climate, and land use history. Stream conditions reflect a number of historic and current impacts, ranging from agriculture to mining. Surficial geology is generally represented by Tertiary sandstones, siltstones, and shales, with some alluvium and glacial till which tends to form fine grain soils (loams to clays), that are highly erosive. Streambeds consist typically of sand and silt, with few bedrock channels. Stream morphology is highly influenced by the presence and type of riparian vegetation because streambeds and stream banks generally lack control features (e.g., rocks, cobbles, bedrock).

Approximately 50 acres of 100-year floodplains are present within 6 of the proposed lease parcels. These floodplains are generally associated with The Musselshell River and various unnamed intermittent streams. Floodplain function is essential to watershed function, water quality, soil development, stream morphology, and riparian-wetland community composition. Floodplains reduce flood peaks and velocities, thereby reducing erosion; enhancing nutrient cycling; reducing frequency and duration of low flows; and increasing infiltration, water storage, and aquifer recharge. Floodplains enhance water quality by facilitating sedimentation and filtering overland flow. Floodplains support high plant productivity, high biodiversity, and habitat for wildlife.

The lease parcels are located within 3 watersheds [HUC 8 (Hydrological Unit Code); subbasins]: Lower Musselshell (HUC 10040205), Charlie-Little Muddy (HUC 10060005), and Brush Lake Closed Basin (HUC 10060007). The acreage of the lease parcels encompasses less than 0.1 percent of each watershed.

The Lower Musselshell watershed contains proposed parcel MTM 105431-KH. The lease parcel is located in Garfield County. The Charlie-Little Muddy watershed contains proposed parcels MTM 105431-H5 in Richland County, and KK in Roosevelt County. The Brush Lake Closed Basin watershed contains proposed parcels MTM 102757-V8, 6X, and 6Y, located in Sheridan County. Any beneficial use of produced water requires water rights to be issued by Montana Department of Natural Resources and Conservation (MDNRC) as established by law. Several sources of water are available for oil and gas operations in the planning area are described in the Minerals Appendix on pages MIN-19 to MIN-21 of the MCFO Final EIS (BLM, 2015b).

3.4.2 Groundwater

The quality and availability of groundwater varies greatly across the region. Residents in eastern Montana commonly get their ground water from aquifers consisting of unconsolidated, alluvial valley-fill materials, glacial outwash, or consolidated sedimentary rock formations and some coal beds.

The importance of groundwater and its characteristics in Eastern Montana are defined in Chapter 3 of the MCFO Final EIS (pages 3-32 through 3-37; BLM, 2015b). The chapter goes into further detail describing several aquifers within the Northern Great Plains regional aquifer system. Alluvial aquifers within the area are typically shallow and largely consist of Quaternary alluvium and undifferentiated Quaternary/Tertiary sediments, which include sand and gravel deposits. The quality of groundwater from alluvial aquifers is generally good, but can be highly variable. Primary bedrock aquifers of this region occur in sandstones and coal beds of the Tertiary Fort Union Formation (Cenozoic rocks) and the sandstones of the Cretaceous Hell Creek and Fox Hills formations (Mesozoic rocks). Paleozoic Madison Formation aquifers are commonly found in karst or sandstone areas, but are rarely used for wells due to their depth.

Source water protection areas outline sites susceptible to contamination. These sites should be managed to avoid contamination to public water systems. Within the MCFO, there are 110,000 acres delineated for source water protection areas (BLM, 2015b). Of the six proposed lease parcels, none are located in a source water protection area.

3.5 Vegetation Resources

The vegetation within the analysis area is characteristic of the Eastern Sedimentary Plains of Montana in the 10 to 14-inch precipitation zone and the Northern Dark Brown Glaciated Plains in the 10 to 14-inch precipitation zone, which lie within the Northern Great Plains. The Northern Great Plains is known for its diverse vegetation types, soil types, and topography. Vegetation is comprised of both tall and short grasses as well as both warm and cool season grasses. A variety of grass-like plants, forbs, shrubs and trees also add to the vegetation diversity of this rangeland type. Plant species diversity increases in woody draws and riparian/wetland zones.

Existing influences on local distribution of plant communities include soils, topography, surface disturbance, availability of water, management boundary fence lines, and soil salinity. Vegetation communities have been affected by human activities for over a century. Some of these activities include: infrastructure developments (roads, powerlines, pipelines, etc.), chemical applications, logging, livestock grazing, farming, and wildfire rehabilitation, prevention, manipulation, and suppression.

The BLM Standards of Rangeland Health (Standards) for BLM administered lands address upland health, riparian health, air quality, water quality, and habitat for native plants and animals. Meeting these Standards ensures healthy, productive, and diverse vegetative resources on public lands. The BLM's policy for implementing the Standards for Rangeland Health (43 CFR §4180.2) provides that all uses of public lands are to complement the established rangeland standards. Application of 43 CFR §4180.2 provides the mechanism to adjust livestock grazing to meet or progress towards meeting Standards for Rangeland Health. Effects of other uses such as oil and gas development or off-highway vehicle use are evaluated against the Standards to provide rationale directing management of these uses.

Six vegetation communities have been identified within the analysis area: native mixed grass prairie, sagebrush/mixed grasslands, ponderosa pine-mixed grassland, agricultural lands, improved or restored pastures, and riparian-wetlands.

There are numerous ecological sites identified within the analysis area, but the primary ones include the following; Sandy (Sy), Shallow (Sw), Silty (Si), Clayey (Cy) and Overflow (Ov). The total dry-weight production expected to be found on these sites during a normal growing season ranges from approximately 800 to 1,500 lbs. /acre.

The native mixed grassland community is dominated by perennial grasses. Perennial grasses can be both warm season and cool season grasses. These perennial grasses can also be both tall and short grasses. Some of the more common grasses include western wheatgrass (*Pascopyrum smithii*), needle-and-thread (*Hesperostipa 15rostr*), green needlegrass (*Nassella viridula*), blue grama (*Bouteloua gracilis*), and prairie junegrass (*Koeleria macrantha*). Various forbs and shrubs are present but, occur as a minor species composition component throughout the community.

The sagebrush/ mixed grassland community occurs on lower valley slopes near drainages, especially where soils are deeper. This community can include a combination of silver sagebrush (*Artemisia cana*) and Wyoming big sagebrush (*Artemisia 15rostrate15 ssp. Wyomingensis*). This setting is common throughout the analysis area. The sagebrush/grassland vegetation community has a perennial grass and forb understory, similar to the species found in a mixed native grassland community. The expected species composition on this community consists of 70-75 percent native grass species, 10-15 percent forbs, and 5-10 percent shrubs and half-shrubs.

The ponderosa pine-mixed grassland community generally occurs on moderate-to-steep upland slopes on shallow soils. Ponderosa pine is a minor component of the community canopy cover but is characteristic of the type. Fifty-two percent of canopy cover is provided by grasses,

including bluebunch wheatgrass (*Pseudoroegneria spicata*), western wheatgrass, and prairie junegrass, with forbs comprising about 41 percent of cover and 50 percent of herbaceous production. This community type is very limited within the analysis area.

Improved or restored pastures consists of cultivated areas planted with introduced grasses (crested wheatgrass, smooth brome (*Bromus inermis*), intermediate wheatgrass (*Thinopyrum intermedium*), and alfalfa (*Medicago sativa*), specifically for the improved vegetation production for livestock consumption. This setting is limited in the analysis area.

The cultivated plant community is comprised of monocultures of crops which may include small grains, alfalfa, or other crops grown primarily as supplemental feed sources for livestock production operations. These areas have been completely disturbed from the native vegetation potentials. This setting is absent or very limited in the analysis area.

Competition from invasive, non-native plants constitutes a potential threat to native plant species and wildlife habitat within the analysis area. Several invasive, non-native plant species are found in the analysis area including: crested wheatgrass (*Agropyron cristatum*), Japanese brome (*Bromus japonicas*), cheatgrass (*Bromus tectorum*), and foxtail barley (*Hordeum jubatum*). Crested wheatgrass occurs in areas as a result of being planted to increase forage production or to stabilize soils by reducing erosion. Cheatgrass, Japanese brome, and foxtail barley are all aggressive invasive species that out-compete desirable vegetation for water and soil nutrients.

Noxious weeds are invasive species and occur in scattered isolated populations throughout the analysis area. The most common species of noxious weeds are leafy spurge, Russian knapweed, spotted knapweed, field bindweed and Canada thistle. Noxious weed control is the responsibility of the land owner or land managing agency. Chemical and biological control methods are utilized, with chemical control being the more predominant.

3.6 Wetland and Riparian Areas

Wetland areas are defined as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient, and which, under normal circumstances, do support, a prevalence of vegetation adapted for life in saturated soil conditions.” Riparian areas are defined as “a form of wetland transition between permanently saturated wetlands and upland areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels are typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil” (Prichard et. al 1995).

Riparian and wetland areas are among the most productive and important ecosystems (Prichard et. al. 1995). Characteristically, riparian and wetland areas display a greater diversity of plant, fish, wildlife, and other animal species and vegetative structure than adjoining ecosystems. Healthy riparian and wetland systems filter and purify water as it moves through the riparian-wetland zone, reduce sediment loads and enhance soil stability, provide micro-climate

moderation when contrasted to temperature extremes in adjacent areas, and contribute to groundwater recharge and base flow (Eubanks, 2004).

Riparian areas are considered to be some of the most biologically diverse habitats. Some of the more common vegetative species that occur in riparian-wetland areas include prairie cordgrass (*Spartina pectinata*), switchgrass (*Panicum virgatum*), Canada wildrye (*Elymus canadensis*), American licorice (*Glycyrrhiza lepidota*), sedges (*Carex spp.*), rushes (*Juncus spp.*), willow (*Salix spp.*), chokecherry (*Prunus virginiana*), buffaloberry (*Shepherdia argentea*), cottonwood (*Populus spp.*), needleleaf sedge (*Carex duriuscula*), sandbar willow (*Salix exigua*), Nebraska sedge (*Carex nebrascensis*), softstem bulrush (*Schoenoplectus tabernaemontani*), beaked sedge (*Carex rostrata*), yellow willow (*Salix lutea*), common three-square (*Schoenoplectus pungens*), and green ash (*Fraxinus pennsylvanica*). Weedy and invasive species common to riparian areas are knapweed (*Centaurea stoebe*), leafy spurge (*Euphorbia esula*), Russian olive (*Elaeagnus augustifolia*), saltcedar (*Tamarisk ramosissima*), kochia (*Bassia prostrata*), thistle (*Cirsium arvense*), sweet clover (*Melilotus officinalis*), cocklebur (*Xanthium strumarium*), and gumweed (*Grindelia squarrosa*).

Wetlands provide watering points for wildlife and livestock and provide habitat diversity. Species include sedges (*Carex spp.*), rushes (*Juncus spp.*), bulrush (*Schoenoplectus spp.*), cattail (*Typha spp.*), wild rose (*Rosa spp.*), and snowberry (*Symphoricarpos spp.*). At higher elevations wetlands are associated primarily with springs, seeps, and intermittent streams. Precipitation-dependent wetland sites fluctuate annually, in a range from dry to wet, in direct response to seasonal moisture, temperature, and wind.

From the Montana Natural Heritage Program (MTNHP) provisional mapping GIS data and the USFWS National Wetland Inventory (NWI) GIS data, 5 proposed lease parcels contain approximately 228 acres of delineated riparian or wetland areas (see Table 4). Table 4 is not a comprehensive list of riparian and wetland areas due to ongoing mapping efforts by the MTNHP for parcels MTM 105431-H5, KH, KK, MTM 102757-6Y, 6X, and V8.

Table 4. Riparian and Wetland Areas by Lease Parcel¹

Lease Parcel	Riparian/Wetland Type	Acres
MTM 105431-KH	Freshwater Pond	0.1
	Riparian Scrub-Shrub	6.2
	Riverine	2.6
MTM 102757-6Y	Freshwater Emergent Wetland	41
	Freshwater Pond	0.1
	Lake	104
MTM 102457-6X	Freshwater Emergent Wetland	3.3
MTM 102757-V8	Freshwater Emergent Wetland	24.8
	Freshwater Pond	1.4
	Lake	37.9
	Other	2

Lease Parcel	Riparian/Wetland Type	Acres
MTM 105431-KK	Freshwater Emergent Wetland	5

Source: Natural Heritage Map Viewer. Montana Natural Heritage Program. Accessed on October 9, 2015, from <http://mtnhp.org/MapView/>

¹This list is not comprehensive due to ongoing mapping efforts by the MTNHP.

3.7 Special Status Species

3.7.2 Special Status Animal Species

Special status species (SSS), collectively, are USFWS Federally listed or proposed species, and the BLM sensitive species from the 2014 Montana/Dakota's sensitive species list. The BLM sensitive species also include both Federal candidate species and delisted species within 5 years of delisting.

3.7.2.1 Aquatic Wildlife

For aquatic wildlife that occur in, or their ranges overlap with, proposed lease parcels, there are 7 fish, 2 amphibians, and 2 aquatic reptile species that are special status or sensitive species (Table 5). All of these species depend on perennial and intermittent streams or rivers with intact floodplains, wetlands, and riparian areas that have functional habitat. One fish species, the pallid sturgeon (*Scaphirhynchus albus*), was federally listed as endangered by the U.S. Fish and Wildlife Service in 1990 (Federal Register: September 6, 1990 (Vol. 55, No. 175)). Threats to the pallid sturgeon are habitat modification, small population size, limited natural reproduction, hybridization, pollution and contaminants, and commercial harvest. The pallid sturgeon inhabits large river systems. In Eastern Montana the Yellowstone River (from the MT/ND border upstream to near Forsyth, MT) and Missouri River (from the MT/ND border upstream to near Fort Benton) are considered pallid sturgeon habitat. Additionally, the Yellowstone and Missouri rivers are classified as having the highest concern for fish species (particularly ESA species and species of concern) habitat under the MFWP Crucial Area Planning System (CAPS, 2010). The USFWS recently took further action by listing the shovelnose sturgeon (*Scaphirhynchus platorynchus*), which closely resembles the pallid sturgeon, as a threatened species where its range overlaps with the Pallid sturgeon (Federal Register: September 1, 2010 (Vol. 75, No. 169)).

Table 5. Aquatic SSS that occur in or their ranges overlap with proposed lease parcels

Species	USFWS Status	BLM Sensitive	Proposed Lease Parcel
Pallid Sturgeon	Endangered	Special Status	MTM 105431-KK
Northern Redbelly X Finescale Dace	None	Sensitive	MTM 105431-KH
Paddlefish	None	Sensitive	MTM 105431-KK
Pearl Dace	None	Sensitive	MTM 102757-V8, 6X, 6Y MTM 105431-KK, H5
Sauger	None	Sensitive	MTM 105431-KH, KK
Iowa Darter	None	Sensitive	MTM 102757-V8, 6X, 6Y

Species	USFWS Status	BLM Sensitive	Proposed Lease Parcel
			MTM 105431-KK, H5
Sturgeon Chub	None	Sensitive	MTM 105431-KK, H5
Snapping Turtle	None	Sensitive	MTM 105431-KK, H5
Spiny Softshell	None	Sensitive	MTM 105431-KH, KK, H5
Plains Spadefoot	None	Sensitive	ALL
Great Plains Toad	None	Sensitive	ALL

Source: Montana Field Guide. Montana Natural Heritage Program and Montana Fish, Wildlife and Parks. Accessed on October 8, 2015, from <http://FieldGuide.mt.gov/>

3.7.2.2 Terrestrial Wildlife

Evaluating wildlife values at the landscape scale is key to understanding potential impacts of a project. Wildlife values, including terrestrial conservation species, species richness, game quality, and aquatic conservation connectivity, have been mapped at the landscape level for Montana by MFWP through their Crucial Areas Planning System (CAPS) 2010.

The lease parcels were reviewed in the CAPS GIS website as an overlay to potential aquatic, terrestrial, and habitat values. This course-scale landscape analysis of wildlife resources provides one tool for understanding the context of the wildlife values at a large scale. Fine-scaled tools, data, and resource information based on inventory and monitoring data, as well as local knowledge from BLM and MFWP employees, are used to further examine resource issues at the site-specific level for the specific resources contained in the lease parcels considered in this EA.

The analysis area covers a variety of habitat consistent with the Northern Great Plains. Lease parcels are located within short and mixed grass prairies, riparian habitats, cultivated lands, and others. See Section 3.5 for a detailed description of vegetation.

Some of these analysis areas provide habitat for species considered as BLM “special status species”. Table 6 presents the following: a list of species; whether the analysis area is within the current range of the species; and if so, whether suitable habitat is present within the lease parcels.

Table 6. Analysis area occurrence of BLM terrestrial sensitive species and USFWS threatened, endangered, candidate or proposed terrestrial species.

Species	USFWS Status	Special Status Species (SSS) and BLM Sensitive Species	In Current Range	Suitable Habitat Present
Mammals				
Swift fox	None	Sensitive	Yes	Yes

Species	USFWS Status	Special Status Species (SSS) and BLM Sensitive Species	In Current Range	Suitable Habitat Present
Long-eared Myotis	None	Sensitive	Yes	Yes
Northern long-eared bat	Threatened	SSS	Yes	No
Townsend's big-eared bat	None	Sensitive	Yes	Yes
Birds				
Franklin's gull	None	Sensitive	Yes	Yes
Interior least tern	Endangered	SSS	Yes	Yes
Black tern	None	Sensitive	Yes	Yes
White-faced ibis	None	Sensitive	Yes	Yes
Whooping crane	Endangered	SSS	Yes	Yes
Piping plover	Threatened, with critical habitat	SSS	Yes	Yes
Mountain plover	None	Sensitive	Yes	No
Long-billed curlew	BCC	Sensitive	Yes	Yes
Greater sage-grouse	None	Sensitive	Yes	Yes
Burrowing owl	BCC	Sensitive	Yes	No
Trumpeter swan	None	Sensitive	Yes	No
Bald eagle	BCC	Sensitive	Yes	Yes
Golden eagle	None	Sensitive	Yes	Yes
Ferruginous hawk	None	Sensitive	Yes	Yes
Peregrine falcon	None	Sensitive	Yes	No
Sage thrasher	BCC	Sensitive	Yes	Yes
Sprague's pipit	Candidate	Sensitive	Yes	Yes
Loggerhead shrike	BCC	Sensitive	Yes	Yes
Chestnut-collared longspur	BCC	Sensitive	Yes	Yes
McCown's longspur	BCC	Sensitive	Yes	Yes
Baird's sparrow	BCC	Sensitive	Yes	Yes
Brewer's sparrow	BCC	Sensitive	Yes	Yes
American bittern	BCC	Sensitive	Yes	Yes
Red-headed woodpecker	BCC	Sensitive	Yes	Yes
Amphibians				
Great Plains toad	None	Sensitive	Yes	Yes
Plains spadefoot toad	None	Sensitive	Yes	Yes
Reptiles				
Snapping turtle	None	Sensitive	Yes	Yes
Spiny softshell	None	Sensitive	Yes	Yes
Greater short-horned lizard	None	Sensitive	Yes	Yes
Milk snake	None	Sensitive	Yes	Yes
Western hog-nosed snake	None	Sensitive	Yes	Yes

Table 6 sources: Montana Bird Distribution Committee 2012; Werner, Maxell, Hendricks, and Flath. 2004; Foresman 2001; MTNHP, 2010; BLM, 2009, MFWP (2010)

*Gray wolf has been delisted so has been moved to the sensitive list

**Grizzly bear has been delisted for the Greater Yellowstone ecosystem. In that area it is a Bureau sensitive species.

3.7.2.3 Threatened, Endangered, Candidate, and Proposed Species

Threatened, endangered, or candidate wildlife species may occupy habitat infrequently or seasonally within the analysis area. These species include the Whooping Crane, Interior Least Tern, Piping Plover and Sprague's pipit.

The USFWS has identified a primary migration corridor for the Aransas-Wood Buffalo population of whooping cranes (http://ecos.fws.gov/docs/recovery_plan/070604_v4.pdf). Lease parcels 6X, 6Y, V8, H5, and KK are located within this primary migration corridor. Nesting by whooping cranes has not been documented in the analysis area; however, stopover observations have been documented in eastern Montana.

Interior least terns migrate through the planning area, in the spring and fall; nesting habitat includes gravel islands associated with large rivers. Lease parcels in Richland and Sheridan County are close to what would be considered suitable least tern nesting habitat.

Piping Plover are known to nest in the northeastern portion of the MCFO. Many observations have been made in the Medicine Lake National Wildlife Refuge area. Lease parcels V8 and 6Y are located within identified piping plover habitat.

The Sprague's pipit is a USFWS candidate species occurring within the analysis area. Sprague's pipits are strongly tied to native prairie (land which has never been plowed) throughout their life cycle (Owens and Myres 1973, pp. 705, 708; Davis 2004, pp. 1138-1139; Dechant et al. 1998, pp. 1-2; Dieni et al. 2003, p. 31; McMaster et al. 2005, p. 219). Montana Natural Heritage Tracker has documented observations of Sprague's pipits in Daniels, Sheridan, Roosevelt, McCone, Richland, Dawson, Prairie, Custer, and Fallon Counties within the MCFO. Therefore, the proposed lease parcels have been identified as providing potential suitable habitat for Sprague's pipits based on a Sprague's pipit suitable habitat model utilized by the Montana Department of Fish, Wildlife, and Parks (<http://apps.fwp.mt.gov/gis/maps/caps/>), and aerial photography (NAIP, 2011). Ground-truthing of the parcels has not occurred to document actual habitat use by Sprague's pipit, or that suitable habitat exists within all of the parcels identified by the model. However, it is likely that at least portions of these parcels provide suitable habitat for Sprague's pipits. These include parcels V8, 6X, 6Y, and H5.

Further information about the previously described Threatened, Endangered, Candidate, and Proposed Species is available in Chapter 3 of the MCFO Final EIS (pages 3-53 through 3-55; BLM 2015b) and Appendix Q- Biological Assessment in the MCFO RMP (BLM, 2015a).

3.7.2.4 Other Sensitive Species

As noted in Table 6 above, up to 38 wildlife species considered as BLM "sensitive" have the potential to occur within the analysis area. These include 25 birds, 5 mammals, 3 amphibians, and 5 reptiles. This list is a combination of recent and historic observations. In some instances, historic observations are the only known record. If a species is noted as in range, it signifies that habitat within the field office would be considered within the documented range of occupancy of

habitat by a particular species during some phase of its life cycle. This might be only for a short time frame, during migrations, seasonally, or possibly year-round. Documentation of occupation of habitat by specific wildlife species is considered good across this area for some species, (e.g., sage grouse) and lacking for other species (small mammals, herptiles, raptors, etc.). However, the table documents the potential for wildlife species occurrence if at least one lease parcel is located within a particular sensitive species' known range of habitat occupation based on available science and research.

Various bird surveys throughout different years have been conducted across the MCFO, which may have included some of the lease parcel areas or at least similar habitats. Surveys have been conducted by the United States Geological Survey, The Bird Ecology Lab, Rocky Mountain Bird Observatory, MTNHP, and other interested "birders." Migratory bird species diversity varies across the MCFO area. According to P.D. Skaar's Montana Bird Distribution, 6th edition (Lenard et al., 2003) species diversity ranges from less than 40 species per "latilong" (~3,200 square miles) to more than 200 across the analysis area.

The analysis area provides potential nesting, foraging, and migratory habitat for various species of raptors; however, recent surveys for raptor nests have not occurred or information within or adjacent to the proposed parcels is limited. There are no known nests in or within ½ mile of the proposed parcels. However, species that would be expected within the analysis area include red-tailed hawks, great-horned owls, northern harriers, bald and golden eagles, sharp-shinned hawks, and cooper's hawks.

3.8 Fish and Wildlife

3.8.1 Aquatic Wildlife

Aquatic resource conditions of streams are strongly related to riparian vegetation, upland range conditions, land use impacts, and quality and quantity of in-stream water. Habitat conditions in Eastern Montana vary between and within water bodies; the upper and middle reaches of smaller streams may be intermittent, while the lower reaches may receive perennial flows, resulting in different habitat conditions and different aquatic communities within the same stream. Prairie fish are adapted to these cycles of drying and flooding and thrive in these intermittent pools, provided land-use impacts are not severe (Bramblett et al. 2005). However, prairie streams are highly sensitive to disturbance, and due to this factor many prairie stream ecosystems are already imperiled due to anthropogenic activities (Dodds et al. 2004).

The aquatic resources in the MCFO are discussed in further detail in Chapter 3 of the MCFO Final EIS (pages 3-45 through 3-48; BLM, 2015b).

Based on known fish presence (MFWP, 2010), there are approximately 3 miles of fish-bearing streams within the proposed lease parcels, but due to ongoing inventory efforts, the discovery of more prairie streams that support native fish and other aquatic wildlife would occur. As discussed in Chapter 3 of the MCFO Final EIS (pages 3-47 through 3-48; BLM, 2015b), existing factors limiting or affecting aquatic resources in the MCFO include the lack of a normative flow regime; loss or degradation of riparian habitat; past and current oil and gas development; un-passable fish & aquatic wildlife culverts, oil skimmers, and other stream crossings; and excess siltation due to the various land use activities.

3.8.2 General Wildlife

A diversity of topography and vegetation types exists across the analysis area. This diversity provides habitat for many wildlife species in addition to those previously mentioned.

Current and historic land uses within or adjacent to the lease parcels include grazing, farming, hunting, energy development, and others. A few areas contain blocks of well-functioning habitats, while other areas are composed of small, fragmented patches of native habitat and cultivated lands. In some areas, existing anthropogenic disturbance at some frequency can be expected to reduce habitat suitability for some species of wildlife intolerant to human activities.

The analysis area supports a variety of game and nongame species. Limited wildlife species and habitat surveys have been conducted within a portion of the analysis area. Although the entire area has not been comprehensively surveyed for all wildlife resources, past surveys document what species occur, and provides insight into what other species can be expected to occur within existing habitat types.

Mule deer are the most abundant big game species and use the greatest variety of habitats, generally preferring sagebrush, grassland, and conifer types (BLM, 1984). Habitat to support mule deer exists within all of the lease parcels. Parcel MTM 105431-KH lies within identified big game crucial winter range. Further discussion of mule deer and big game crucial winter range is located in Chapter 3 of the MCFO Final EIS (pages 3-47 through 3-49; BLM 2015b).

White-tailed deer are common in the analysis area. White-tailed deer prefer riparian drainage bottoms, hardwood draws, and conifer areas, but they will also use a variety of other habitats including farmlands. During the winter, white-tailed deer using forested areas prefer dense canopy classes, moist habitat types, uncut areas, and low snow depths. Suitable winter range is a key habitat factor for white-tailed deer, and winter concentration areas occur almost exclusively in riparian and wetland habitats and dense pine (Youmans and Swenson, 1982). Although white-tailed deer move on and off winter range, as dictated by seasonal habitat requirements, the animals do not migrate for long distances (Hamlin, 1978).

Pronghorn are widely distributed across the analysis area. They are generally associated with grasslands and shrublands, but also seasonally use agricultural fields. Winter ranges for pronghorn generally occur within sagebrush grasslands with greater densities of big sagebrush than the surrounding areas. Potential exists for other big game species to occupy the areas. Species include elk, moose, mountain lion, and black bear although presence would likely occur as individual's transition to preferred habitats elsewhere.

The potential for big game movements or migrations through eastern Montana are not fully understood. At a local level, it is reasonable to assume big game movements occur at least seasonally. Migration corridors have not been identified through any of the lease parcels.

Sharp-tailed grouse occupy portions of the analysis area. These native grouse prefer hardwood draws, riparian areas, and prairie grasslands intermixed with shrubs such as chokecherry and buffaloberry. All, or portions of lease parcels MTM 102757-6Y and MTM 102757-6X, are located within 2 miles of sharp-tailed grouse leks. These parcels are expected to provide at least

seasonal habitat for sharp-tailed grouse.

Wild turkeys, pheasants, and Hungarian partridge are all species that have been introduced to eastern Montana and would be expected to utilize available habitats within portions of the parcels.

3.9 Cultural Resources

The BLM is responsible for identifying, protecting, managing, and enhancing cultural resources located on public lands or those that may be affected by BLM management actions on non-Federal lands. Cultural resources include archaeological, historic, architectural properties, and traditional lifeway values important to Native Americans. Sites can vary with regard to their intrinsic value as well as their significance to scientific study; therefore, management practices employed are commensurate with their designation. Significant cultural resource values include; their use to gather scientific information on human culture, history, interpretive and educational value, values associated with important people and events of significance in history, and often aesthetic value, as in a prehistoric rock art panel or an historic landscape.

A generalized prehistory of eastern Montana can be categorized in a chronological framework, and time periods are distinguished on the basis of differences in material culture traits or artifacts and subsistence patterns: the PaleoIndian period (ca. 12,500 BP-7800 BP), Archaic period (ca. 7800 BP-1500 BP), Prehistoric period (ca. 1500 BP-200 BP), Protohistoric period (ca. 250 BP-100 BP), and Historic Periods (A.D. 1805-A.D. 1960) (Aaberg et al. 2006).

Cultural sites are evaluated with reference to their eligibility for listing on the National Register of Historic Places (NRHP). Each site is considered on a case-by-case basis.

A recent Class I overview of cultural resources was prepared for the analysis area (Aaberg et al. 2006). The cultural environment of the MCFO as of May 2005 contained 7,065 prehistoric and 2,869 historic archeological sites as well as 1,929 paleontological localities. Archeological properties (historic and prehistoric sites) occur in all counties encompassed by the field office. The four counties with nominated lease parcels contain 12.4 percent of all prehistoric and 31.3 percent of all historic resources within the MCFO. Each of the four counties contains the following percentages of resource site types within its boundaries: Garfield 2.2 percent prehistoric, 5.1 percent historic, Sheridan 4.5 percent prehistoric, 13.9 percent historic, Roosevelt 3.7 percent prehistoric, 6.2 percent historic, Richland 2.0 percent prehistoric, 6.1 percent historic and Roosevelt 3.7 percent prehistoric, 6.2 percent historic.

The overall archeological site density of the MCFO (historic and prehistoric) is estimated at one site per 93 acres (Aaberg et al. 2006). Prehistoric sites are estimated to be distributed at one site per 130.8 acres (4.9 per square mile) and historic sites at one site per 322 acres (two per square mile) for all surveyed acres within the MCFO. Approximately 10% to 15% of all sites are found to be or have the potential to be eligible for listing in the National Register of Historic Places.

A review of Montana SHPO and BLM Cultural Resource Databases shows five previously recorded cultural resource sites identified within the boundaries of lease parcels. Two have stone features (24SH1203 & 24SH1204), one is a historic irrigation project (24RL0204), one is a

historic railroad, Great Northern Railroad (24RL0308), one is a historic trail (24SH0733). See Cultural project Number: MT-020-15-155.

3.10 Native American Religious Concerns

The BLM's management of Native American Religious concerns is guided through its 8120 Manual: *Tribal Consultation Under Cultural Resources Authorities* and 8120 Handbook: *Guidelines for Conducting Tribal Consultation*. Further guidance for consideration of fluid minerals leasing is contained in BLM Washington Office Instruction Memorandum 2005-003: Cultural Resources, Tribal Consultation, and Fluid Mineral Leasing. The 2005 memo notes leasing is considered an undertaking as defined in the National Historic Preservation Act. Generally areas of concern to Native Americans are referred to as "Traditional Cultural Properties" (TCPs) which are defined as cultural properties eligible for the National Register of Historic Places because of its association with cultural practices or beliefs that (a) are rooted in that community's history and (b) are important in maintaining the continuing cultural identity of the community.

Areas of tribal concern in southeast Montana are listed in Appendices B-E of the Ethnographic Overview of Southeast Montana (Peterson and Deaver, 2002). Based on input from various tribes, the 2002 Ethnographic Overview also identified 12 sensitive site types. These include battlefield and raiding sites, burials, cairns, communal kills, fasting beds (vision quests), homesteads, medicine lodges, rock art, settlements (campsites), stone rings, spirit homes, and environmental places (plant gathering areas, mineral and fossil collection areas).

The Crow Tribe's 2002 document noted rock art, fasting sites, siege sites, camp sites, mourning sites, final resting places (burials), buffalo jumps, and environmental areas, including animal habitats and natural areas of concern such as springs. The Northern Cheyenne Tribe in its 2002 document noted large ring sites (both in terms of ring diameters and ring numbers), isolated fasting beds, rock art sites, and large diameter fasting structure as having religious significance to the tribe.

One parcel (MTM 102757-V8) contains two sites with stone features of interest to tribes. The sites have not been evaluated for listing on the National Register of Historic Places. Prior to any surface disturbance, the sites would be evaluated for National Register eligibility including tribal participation in the evaluations.

3.11 Paleontology

According to Section 6301 of the Paleontological Resource Protection Act of 2009 Omnibus Public Lands Bill, Subtitle D, SEC. 6301, paleontological resources are defined as "any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth" (Paleontological Resource Protection Act of 2009 Omnibus Lands Bill, Subtitle D, SEC. 6301-3612 (P.L. 59-209; 34 Stat. 225; 16 U.S.C. 431-433). All vertebrate fossils, be they fossilized remains, traces, or imprints of vertebrate organisms, are considered significant. Paleontological resources do not include archaeological and cultural resources.

The BLM utilizes the Potential Fossil Yield Classification (PFYC) as a planning tool for identifying areas with high potential to yield significant fossils. The system consists of ranking

mapped rock units with numbers ranging from 1-5 (low to high), with 1 being very low potential and 5 being very high potential to have significant fossil resources. It should be pointed out that the potential to yield significant fossil resources is never 0. Rock units not typically fossiliferous can in fact contain fossils in unique circumstances, and such finds would be all the more significant. In many cases, mapped geologic units have an unknown fossil potential. This is especially true when informal units are mapped based upon lithology or origin, so they are given an unknown rank.

The BLM classified geologic formations that have a high Potential Fossil Yield Classification (PFYC) of 3 or higher, or are ranked as unknown, should be specifically reviewed for paleontological resources. The parcels involved in this evaluation have one or more of the geologic units listed in Table 7.

Table 7. Geologic units and PFYC rank within the lease parcels.

Rock Unit	PFYC rank
Young alluvium	2
Alluvium of uncertain age	Unknown
Glacial deposits	Unknown
Fort Union Formation/Group	4
Carlile Formation	3
Greenhorn Formation	3

All or parts of the 6 parcels include geologic units with a PFYC of 3 or higher, or unknown, and so they must be further analyzed by a professional BLM-permitted consultant prior to ground disturbing actions.

3.12 Visual Resources

BLM Visual Resource classifications are only applied to BLM surface acres, as such the affected environment for visual resources only consists of approximately 80 acres of BLM -administered surface in the analysis area (Table 8).

A Class II VRM area classification means that the character of the landscape has unique combinations of visual features such as land, vegetation, and water. The existing character of the landscape should be retained. Activities or modifications of the environment should not be evident or attract the attention of the casual observer. Changes caused by management activities must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

There are no parcels with BLM surface ownership that are within Class III or Class IV.

Table 8. VRM Classes for the analysis area by lease parcel.

Leasing Areas	VRM Class II Acres	VRM Class III Acres	VRM Class IV Acres
<i>GARFIELD COUNTY</i>	<i>80 total acres</i>	<i>0 total acres</i>	<i>0 total acres</i>
MTM 105431-KH	80	0	0

3.13 Livestock Grazing

One of the parcels (MTM 105431-KH) in part, has 80 acres of BLM surface ownership and a grazing authorization. Parcel MTM 105431-KH is located in Garfield County and is within the Rowton Allotment No. 00656 grazing authorization number 2502404. The 80 acres of BLM surface ownership is rated at 10 Animal Unit Months (AUMs). Cattle are the only class of livestock authorized to graze on the Rowton Allotment No. 00656. The season of use varies during May 1 – November 3. The Rowton Allotment No. 00656 contains range improvement projects that include fences, stock water pipelines, and reservoirs but none of the projects occur on the lease parcel. The remainder of the lease parcels does not contain any BLM administered lands and are lands with private and State surface ownership.

3.14 Recreation and Travel Management

The BLM only manages recreational opportunities and experiences on BLM-administered surface. The affected environment consists of approximately 80 acres of BLM-administered surface. Recreational activities enjoyed by the public on BLM lands within the analysis area include hunting, hiking, camping, photography, and winter activities such as snowshoeing and snowmobiling. Benefits and experiences enjoyed by recreational users include opportunities for solitude, spending time with families, enhancing leisure time, improving sports skills, enjoying nature and enjoying physical exercise.

Out of the approximately 80 BLM-administered acres proposed for lease, 0 acres have legal public access. The type of public use on the 80 acre lease parcel can be characterized as casual dispersed recreational activities including hiking, hunting, camping, and wildlife viewing. There is no public easement or rights-of-way across private property for legal land access to the associated 80 acre lease parcels. The lack of public access limits use of the BLM parcels for recreational use by the general public.

The affected environment is within Public Lands Not Designated as Recreation Management Areas, where focus is to meet basic recreation services and needs. The MCFO Final EIS Chapter 3, pp. 3-112 (BLM, 2015b) further discusses recreation setting characteristics classifications and recreation management area categories.

3.15 Lands and Realty

The analysis area consists of six parcels that include 1,027.87 surveyed surface acres of which 79.88 surveyed acres are BLM administered surface and 947.99 surveyed acres are Non-Federal surface (private). Table 9 below categorizes the 6 parcels by surface ownership and county.

There is one lease parcel with authorized BLM Rights-of Way (ROWs), MTM-049342, approved on BLM administered surface.

Table 9. Number of parcels, surface ownership, and acres by county.

County	Parcels	Owner-ship	Acres
GARFIELD			

County	Parcels	Owner-ship	Acres
GARFIELD			
	1 partial parcel (MTM-105431-KH)	Federal	79.88
	1 partial parcel (MTM-105431-KH)	Non-Federal	319.69
	1 TOTAL		399.57
ROOSEVELT			
	1 parcel (MTM-105431-KK)	Non-Federal	13.19
	1 TOTAL		13.19
RICHLAND			
	1 parcel (MTM-105431-H5)	Non-Federal	115.92
	1 TOTAL		115.92
SHERIDIAN			
	1 parcel (MTM-102757-V8)	Non-Federal	134.18
	1 parcel (MTM-102757-6X)	Non-Federal	80.00
	1 parcel (MTM-102757-6Y)	Non-Federal	285.73
	3 TOTAL		499.91

*Parcel MTM-105431-KH contains both Federal and Non-Federal surface.

Souce: BLM Federal Land Status Records (LSR), 2015, Montana Master Title Plats (MTPs). BLM LR2000, 2015a, Authorized Rights-of-Way, accessed October 1, 2015.

3.16 Minerals

It is the policy of the BLM to make mineral resources available for development and to encourage development of these resources to meet national, regional, and local needs, consistent with national objectives of an adequate supply of minerals at reasonable prices. At the same time, the BLM strives to assure that mineral development occurs in a manner which minimizes environmental damage and provides for the reclamation of the lands affected.

Currently there are 1,260 Federal oil and gas leases covering approximately 735,978 oil and gas Federal mineral acres in the MCFO (Table 10). The number of acres leased and the number of leases can vary on daily basis as leases are relinquished, expired, or are terminated.

Exploration and development activities would only occur after a lease is issued and the appropriate permit is approved. Table 10 lists existing development within the count with a lease parcel. Exploration and development proposals would require completion of a separate environmental document to analyze specific proposals and site-specific resource concerns before BLM approved the appropriate permit. Further details on oil and gas standard operating procedures can be found in the Minerals Appendix, pages Min-1-103, of the MCFO Final EIS (BLM, 2015b).

Table 10. Existing oil and gas leasing and development by county.

County	Garfield	Richland	Roosevelt	Sheridan
Acres of Federal Oil and Gas Minerals	271,751 Acres	88,364 Acres	27,557 Acres	26,292 Acres
Acres of Leased Federal Oil and Gas Minerals	4,071 Acres	80,772 Acres	22,721 Acres	12,793 Acres
Existing Federal Wells*	1 OSI, 1ABD, 21 P+A, 4 POW, 1WIW, 1WSW	1 DSI, 1 OSI, 15 P+A, 84 POW, 1 WDW	1 P+A, 10 POW	6 P+A, 8 POW
Existing Non-Federal Wells	1 ABD, 5WIW, WSW, 229 P+A, 5 POW, 4 OSI, 1 TA	33 ABD, 30 WIW, 543 P+A, 1077 POW, 123 OSI, 7 TA	2 ABD, 45 WIW, 2 WSW, 2 DSI, 690 P+A , 258 POW, 83 OSI, 24 TA, 4 MW	24 ABD, 66 WIW, 1 WSW, 2 DSI, 659 P+A, 159 POW, 141 OSI, 10 TA

* OSI=Oil Well Shut-In, ABD=Abandoned Well (awaiting reclamation approval), P+A=Plugged and Abandoned Well (final reclamation approved), POW=Producing Oil Well, WIW=Water Injection Well, WSW=Water Source Well, DSI=Drilling Shut-In Well, WDW=Water Disposal Well
 Source: AFMSS Database, accessed on October 2015; BLM LR2000, 2015b; Montana Board of Oil and Gas Conservation, BLM accessed on May 2015.

3.17 Special Designations

3.17.1 Lewis and Clark National Historic Trail

None of the lease parcels with BLM-administered public lands fall within the boundaries of the Lewis and Clark National Historic Trail or any existing or proposed Special Recreation Management Areas (SRMAs).

However, one Lease parcel, MTM 105431-KK, (13.19 acres) is located within a 3 mile sensitive Setting Consideration Zone (SCZ) and within the Lewis and Clark National Historic Trail (NHT) and SRMA. However, this parcel is located on private surface and not on BLM administered public lands. The Lewis and Clark NHT is managed in accordance with the National Trail System Act of 1968, as amended (16 USC 1241-1251) to identify and protect the historic route and its historic remnants and artifacts for public use and enjoyment. The trail would be managed to preserve the historic and cultural resources that are related to the events that occurred during the Lewis and Clark Expedition. The National Park Service (NPS), who is the lead agency for trail administration, established the overall management vision through their 1982 Comprehensive Management Plan and 2012 Foundation Document. BLM works collaboratively with NPS to manage trail resources in conformance with these plans and guidance thought BLM Manual 6280. The BLM MCFO Final EIS pages 3-127 to 3-128, further discusses and analyzes the affected environment of the Lewis and Clark National Historic Trail and general location around lease parcel MTM 105431-KK.

Any changes in the landscape within view of the Lewis and Clark NHT will be guided by Class II visual resource management objectives and the Lewis and Clark SRMA.

3.18 Social and Economic Conditions

3.18.1 Social and Environmental Justice

The social section focuses on the areas in the immediate vicinity of the parcels proposed for leasing. This area includes the four Montana counties of Garfield, Richland, Roosevelt, and Sheridan. The social environment of these counties is described in detail in the MCFO Final EIS (3-129 through 3-146; BLM, 2015b) so there is only a brief description provided here. The 2010 Census reported that this four county region had a population of 24,734 residents. More than 80% of the region's population lived within Richland (9,746 residents) and Roosevelt (10,425 residents) counties with the remaining in Garfield (1,206 residents) and Sheridan (3,384 residents) counties (U.S. Census, 2014). US Census estimates in 2013 indicate all four counties saw an increase in population since the 2010 Census with Garfield having an estimated 1,290 residents in 2013, Richland County having 11,214 residents, Roosevelt County having 11,125 residents, and Sheridan County having 3,668 residents (U.S. Census, 2014).

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, states "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations..." (Executive Order 12989).

Minority populations as defined by Council on Environmental Quality (CEQ) guidance under the National Environmental Policy Act (CEQ, 1997) include individuals in the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population is identified where "(a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater..." (CEQ, 1997). Additionally, "[a] minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds" (CEQ, 1997). Low-income populations are determined by the U.S. Census Bureau based upon poverty thresholds developed every year.

U.S. Census data is used to determine whether the populations residing in the study area constitute an "environmental justice population" through meeting either of the following criteria:

- At least one-half of the population is of minority or low-income status; or
- The percentage of population that is of minority or low-income status is at least 10 percentage points higher than for the entire State of Montana.

Based upon the 2013 data in the MCFO Final EIS (BLM, 2015b), Roosevelt County meets the criteria for a low-income environmental justice population with 26.6% of the population in poverty while only 16.1% of the Montana statewide population is in poverty. Roosevelt County also meets the criteria for a minority environmental justice population since 62.8% of the residents identify as a minority as opposed to the 13.0% found across the state of Montana. The

minority population in Roosevelt County is greatly driven by the 58.3% of the population that identify themselves as American Indian/Alaska Native. This is likely due to the location of the Fort Peck Reservation. Additionally, as noted in sections 3.8 Cultural Resources and 3.9 Native American Religious Concerns, parcels offered contain cultural resources and sites of interest to tribes; however, prior to any surface disturbance, sites of interest will be evaluated with tribal participation. Please see section 1.4 Public Scoping and Identification of Issues for the discussion of outreach efforts.

3.18.2 Economics

Parcels nominated for leasing in May 2016 are located in the eastern Montana counties of Garfield, Richland, Roosevelt, and Sheridan counties. Economic conditions and trends are discussed in the MCFO Final EIS (BLM, 2015b) so this discussion is focused on economic aspects related to oil and gas lease sales. Production levels across these four counties saw a slight increase over 2013 productions levels of 20,777,076 bbls of oil and 20,630,323 mcf of associated natural gas (MT DNRC, Oil and Gas Conservation Commission, 2015). In 2014 these counties produced 21,310,393 bbls of oil and 20,652,483 mcf of associated natural gas, with the majority of production occurring in Richland County (15,914,521 bbls of oil and 16,861,613 mcf of associated natural gas) (MT DNRC, Oil and Gas Conservation Commission, 2015).

Current BLM leases exist in all four counties with Richland County having the most acres under lease (over 80,000 acres), Garfield having the least (approximately 4,000 acres), Roosevelt having over 22,000 acres under lease and Sheridan County having over 12,000 acres under lease (BLM LR2000, 2015b). Although Federal minerals in Richland and Roosevelt counties are associated with only a fraction of the region's oil and gas activity, the leasing and development of these minerals supports local employment and income and generates public revenue for surrounding communities. The economic contributions of Federal fluid minerals are largely influenced by the number of acres leased and estimated levels of production and can be measured in terms of the jobs, income, and public revenue it generates.

Mineral rights can be owned by private individuals, corporations, Indian tribes, or by local, State, or Federal Governments. Typically companies specializing in the development and extraction of oil and gas lease the mineral rights for a particular parcel from the owner of the mineral rights. Federal oil and gas leases are generally issued for 10 years unless drilling activities result in one or more producing wells. Once production has begun on a Federal lease, the lease is considered to be held by production and the lessee is required to make royalty payments to the Federal Government. Currently there are over 46,000 acres held by production across the four counties (BLM LR2000, 2015b).

Leasing mineral rights for the development of Federal minerals generates public revenue through the bonus bids paid at lease auctions and annual rents collected on leased parcels not held by production. Nominated parcels approved for leasing are offered by the BLM at a minimum rate of \$2.00 per acre at the lease sale. These sales are competitive and parcels with high potential for oil and gas production command bonus bids in excess of the minimum bid. Recent auctions for federal mineral rights across the four counties have yielded an averaged bonus bid of Richland and Roosevelt counties have yielded an averaged bonus bid of \$640 per acre, with a high of \$1,159 per acre in Roosevelt County. In addition to bonus bids, lessees are required to pay rent

annually until production begins on the leased parcel, or until the lease expires. These rent payments are equal to \$1.50 an acre for the first five years and \$2.00 an acre for the second five years of the lease.

Federal oil and gas production in Montana is subject to production taxes or royalties. The Federal oil and gas royalties on production from public domain minerals equal 12.5 percent of the value of production (43 CFR 3103.3.1). Forty-nine percent of these royalties from public domain minerals are distributed to the State, of which 25 percent is distributed back to the county of production (Title 17-3-240, MCA). Royalty payments for fiscal year 2014 for the four counties was over \$6.5 million with Richland County receiving over \$5 million, Roosevelt County receiving over \$1 million, Sheridan County receiving close to \$400,000, and Garfield receiving a little over \$50,000 (Office of Natural Resource Revenue, 2015). These revenues help fund traditional county functions such as enforcing laws, administering justice, collecting and disbursing tax funds, providing for orderly elections, maintaining roads and highways, providing fire protection, and/or keeping records. Other county functions that may be funded include administering primary and secondary education and operating clinics/hospitals, county libraries, county airports, local landfills, and county health systems.

Additionally, activities related to oil and gas leasing, exploration, development, and production form a basic industry that brings money into the State and region and creates jobs in other industries. While industries related to natural resources and mining accounted for 14.4% of the jobs in the private sector in 2014 for the four county area, employment associated with trade, transportation, and utilities accounted for 30.2% of the jobs in 2014 for the four county area (BLS, 2015). Across the four county area, in 2014 jobs in goods-producing related sectors, such as natural resource and mining, construction, and manufacturing had an average annual pay of \$58,129, whereas average annual pay for service-providing related sectors, such as trade, transportation, utilities, information, education, health services, leisure and hospitality was \$34,281 (BLS, 2015).

4.0 ENVIRONMENTAL IMPACTS

4.1 Assumptions and Reasonably Foreseeable Development Scenario Summary

This chapter describes the environmental effects (direct, indirect, and cumulative) that would result from the alternatives and are tiered to the MCFO Final EIS. The analysis contained within the MCFO Final EIS remains adequate. The MCFO RMP determined which areas are available for oil and gas leasing and under what conditions those leases are to be offered and sold.

The act of leasing parcels would not impact the resources. The only direct effects of leasing are the creation of valid existing rights and impacts related to revenue generated by the lease sale receipts.

Potential indirect effects associated with a lease sale would result from any future developments. The BLM assumes there is a high interest in development of any leased parcels but, even if lease parcels are leased, it is uncertain whether or not development would actually occur; and if so, it is speculative to assume where specific wells would be drilled and where facilities would be placed. This would not be determined until the BLM receives an APD in which detailed information about proposed wells and facilities would be provided for particular leases.

Upon receipt of an APD, the BLM would initiate a more site-specific NEPA analysis with public review opportunities to more fully analyze and disclose site-specific effects of specifically identified activities. In all potential exploration and development scenarios, the BLM would require the use of BMPs documented in “Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development” (USDI and USDA, 2007), also known as the “Gold Book”; necessary APD COAs (Min-7 to Min-13; BLM, 2015), mitigation measure, and conservation actions (MMCAA-1 to MMCAA-8; BLM, 2015) to protect sensitive resources, and to ensure compliance with laws, regulations, and the land use plan.

The BLM has applied lease stipulations to the lease parcels being analyzed in accordance to the MCFO RMP. The BLM will apply site specific mitigation measure during the review of an APD or sundry notice to modify the operations of the authorized land uses or activities to meet resource specific goals and objects established in the MCFO RMP. Therefore, no additional mitigation measures are listed below for any of the resources.

For split-estate leases, the BLM would notify the private landowners that oil and gas exploration or development activities are proposed on their lands and they are encouraged to attend the onsite inspection to discuss the proposed activities. In the event of activity on such split estate leases, the lessee and/or operator would be responsible for adhering to BLM requirements as well as reaching an agreement with the private surface landowners regarding access, surface disturbance, and reclamation.

The RFD for this EA (Appendix C) is based on information contained in the RFD developed for the MCFO Final EIS, which contains the number of potential oil and gas wells that could be drilled and produced in the MCFO area, and was used to analyze the potential number of wells drilled for the nominated lease parcels. These well numbers are only an estimate based on

historical drilling and geologic data. A detailed description of the RFD forecast for this EA is found in Appendix C.

No surface disturbance would occur as a result of issuing leases. For analysis purposes in this EA, cultural resources use the potential number of acres disturbed by exploration and development activities as applied in the surface disturbance tables in the MCFO Final EIS Minerals Appendix, page MIN-93, to determine the number of cultural site potentially impacted within the nominated lease parcels. The potential acres of disturbance reflect acres typically disturbed by construction, drilling, and production activities, including infrastructure installation throughout the MCFO. Typical exploration and development activities and associated acres of disturbance were used as assumptions for analysis purposes in this EA.

The assumptions were not applied to Alternative A because the lease parcels would not be offered for lease; therefore, no wells would be drilled or produced on the lease parcel, and no surface disturbance would occur on those lands from exploration and development activities.

Environmental consequences are discussed below by alternative to the extent possible at this time for the resources described in Chapter 3.

4.2 Alternative A (No Action Alternative)

4.2.1 Direct Effects Common to All Resources

Under Alternative A, the 6 parcels, covering 1,028.59 surveyed Federal mineral acres (79.88 surveyed BLM administered surface, 459.91 State surface, and 488.80 private surface), would not be offered for competitive oil and gas lease sale. Under this alternative, the State and private minerals could still be leased in surrounding areas. Surface management would remain the same and ongoing oil and gas development would continue on surrounding Federal, private, and State leases.

There would not be new impacts from oil and gas exploration or production activities on the Federal lease parcel lands at this time. No additional natural gas or crude oil would enter the public markets, and no royalties would accrue to the Federal or State treasuries from the parcel lands. The No Action Alternative would result in the continuation of the current land and resource uses on the lease parcels. Economic contributions from activities associated with oil and gas development would remain consistent with existing conditions discussed in this EA Section 3.18.2 Economics above, as well as the economic conditions discussed in pages 3-139 through 3-149 of the MCFO Final EIS (BLM, 2015b).

4.3 Alternative B (Proposed Action)

Under Alternative B, 6 lease parcels of Federal minerals for oil and gas leasing, covering 1,028.59 surveyed Federal mineral acres (79.88 surveyed BLM administered surface, 459.91 State surface, and 488.80 private surface) would be offered for competitive oil and gas lease sale. No parcels would be deferred.

4.3.1 Direct Effects Common to All Resources

The action of leasing the parcels in Alternative B would, in and of itself, have no direct impact on resources. Direct effects of leasing are the creation of a valid existing right and those related to the revenue generated by the lease sale receipts. Therefore, most of the impacts listed in this EA are potential indirect impacts that would result from leasing the parcels. In addition, the BLM has determined a no affect on any threatened or endangered species for the six lease parcels located within the MCFO planning area.

4.3.2 Indirect Effects Common to All Resources

Any potential effects on resources from the sale of leases would occur during lease exploration and development activities, which would be subject to future BLM decision-making and NEPA analysis upon receipt of an APD or sundry notice.

Oil and gas exploration and development activities such as construction, drilling, production, infrastructure installation, vehicle traffic and reclamation could be indirect effects from leasing the lease parcels in Alternative B. As mentioned above, it is speculative to make assumptions about whether a particular lease parcel would be sold and, even if so, it is speculative to assume when, where, how, or if future surface disturbing activities associated with oil and gas exploration and development such as well sites, roads, facilities, and associated infrastructure would be proposed. It is also not known how many wells, if any, would be drilled and/or completed, the types of technologies and equipment would be used and the types of infrastructure needed for production of oil and gas. Thus, the types, magnitude and duration of potential impacts cannot be precisely quantified at this time, and would vary according to many factors.

Overall impacts to resources from oil and gas exploration and development activities such as well sites, roads, facilities, and associated infrastructure are described in the MCFO Final EIS (BLM, 2015b). The six lease parcels being analyzed in this EA have been designated open with appropriate stipulations.

4.3.3 Air Resources

The direct, indirect, and cumulative impacts from oil and gas development on air resources are discussed in Chapter 4 of the MCFO Final EIS (pages 4-4 through 4-30; BLM, 2015b). This analysis included discussion of short term and long term impacts. Application of CSU 12-23 and LN 14-18 would provide for conservation of air resources. The RFD for this alternative, Appendix C, would be in conformance with the emission impacts described in the document; and therefore are analyzed for air resources in the MCFO Final EIS (BLM, 2015b).

4.3.4 Soil Resources

The direct, indirect, and cumulative impacts from oil and gas development on soil resources are discussed in Chapter 4 of the MCFO Final EIS (pages 4-30 through 4-35, and pages 4-43 through 4-45; BLM, 2015b). This analysis included discussion on the short term and long term

disturbance impacts that are contained in the Disturbance Appendix (BLM, 2015b). In summary, analysis provided that the application of the CSU 12-24 and NSO 11-69 would provide for the conservation soil resources. In addition, the document provided that the areas without soil stipulations would recover from disturbance due to having increased reclamation potential. The RFD for this alternative, Appendix C, would be in conformance with the disturbance impacts set in the document; and therefore are analyzed for soil resources in the MCFO Final EIS (BLM, 2015b).

4.3.5 Water Resources

The direct, indirect, and cumulative impacts from oil and gas development on water resources are discussed in Chapter 4 of the MCFO Final EIS (pages 4-46 through 4-69; BLM, 2015b). This analysis included discussion on the short term and long term disturbance impacts that are contained in the Disturbance Appendix (BLM, 2015b). In summary, analysis provided that the application of stipulations NSO 11-70 and NSO 11-71 would provide for the conservation of water resources. The RFD for this alternative, Appendix C, would be in conformance with the disturbance impacts set in the document; and therefore are analyzed for water resources in the MCFO Final EIS (BLM, 2015b).

4.3.6 Vegetation Resources

The direct, indirect, and cumulative impacts from oil and gas development on vegetation resources are discussed in Chapter 4 of the MCFO Final EIS (pages 4-69 through 4-78; BLM, 2015b). This analysis included discussion on the short term and long term disturbance impacts that are contained in the Disturbance Appendix (BLM, 2015). In summary, the effects to vegetation resources would be short-term removal of vegetation and native species diversity, mitigated by measures taken in a reclamation plan. The RFD for this alternative, Appendix C, would be in conformance with the disturbance impacts set in the document; and therefore are analyzed for vegetation resources in the MCFO Final EIS (BLM, 2015b).

4.3.7 Riparian-Wetland Habitats

The direct, indirect, and cumulative impacts from oil and gas development on riparian-wetland areas are discussed in Chapter 4 of the MCFO Final EIS (pages 4-79 through 4-94; BLM, 2015b). This analysis included discussion on the short term and long term disturbance impacts that are contained in the Disturbance Appendix (BLM, 2015b). In summary, analysis provided that the application of stipulation CSU 12-25 and NSO 11-70, applied to lease parcels in Appendix A, would provide for the conservation of riparian-wetland resources. The RFD for this alternative, Appendix C, would be in conformance with the disturbance impacts set in the document; and therefore are analyzed for riparian-wetland in the MCO Final EIS (BLM, 2015b).

4.3.8 Wildlife

4.3.8.1 Aquatic Wildlife

The direct, indirect, and cumulative impacts from oil and gas development on aquatic resources are discussed further in Chapter 4 of the MCFO Final EIS (pages 4-105 through 4-133; BLM, 2015b). This analysis included discussion on the short term and long term disturbance impacts that are contained in the Disturbance Appendix (BLM, 2015b).

In summary, analysis provided that the application of the TES 16-2 stipulation on all lease parcels, and NSO 11-78 stipulation on parcel MTM 105431-KK would provide for the protection of the federally endangered pallid sturgeon habitat (BLM, 2015b). The BLM has determined that issuing a lease for the proposed parcel (MTM 105431-KK) along the Missouri River would have a no affect on the pallid sturgeon. If development were to occur, additional mitigation would be included as conditions of approval on the APD or sundry notice. If oil and gas development is proposed for this parcel (MTM 105431-KK), BLM would consult with the USFWS pursuant to section 7(a)(2) of ESA.

As noted in Chapter 3, up to 11 aquatic species that BLM has designated as “sensitive” have the potential to occur within the proposed lease parcels. Aquatic sensitive species are afforded protection through LN 14-19. In addition, they are afforded some protection through stipulations CSU 12-25 and NSO 11-70, applied to lease parcels in Appendix A, which provide for the protection of the unique biological and hydrological features associated with streams, lakes, ponds, reservoirs, floodplains, wetland, and riparian areas (BLM, 2015b). For those species afforded some protection through existing stipulations, impacts could be minimized, but not eliminated.

4.3.8.2 General Wildlife

The direct, indirect, and cumulative impacts from oil and gas development on wildlife resources are discussed in Chapter 4 of the MCFO Final EIS (pages 4-105 through 4-179; BLM, 2015). This analysis included discussion on the short term and long term disturbance impacts that are contained in the Disturbance Appendix (BLM, 2015). In summary, analysis provided that the application of the TES 16-2, CSU 12-26, CSU 12-27, LN 14-19, LN 14-20, LN 14-27 and NSO 11-75 would provide for the conservation of wildlife resources such as big game, sharp-tailed grouse, special status species, migratory birds and piping plovers. The RFD for this alternative, Appendix C, would be in conformance with the disturbance impacts set in the document; and therefore are analyzed for wildlife resources in the MCFO Final EIS (BLM, 2015b).

Habitat within one or a portion of all the lease parcels exists to support USFWS threatened, endangered, or candidate, species including the Whooping Crane, Interior Least Tern, Piping Plover and Sprague’s pipit. The BLM has determined that the act of issuing leases within the previously mentioned threatened or endangered habitat will not affect that respective species. However, impacts to those species are possible from subsequent oil and gas development activities permitted at the APD stage. If development were to occur, additional mitigation would be included as conditions of approval on the APD or sundry notice. If oil and gas development is proposed for this parcel (MTM 105431-KK), BLM would consult with the USFWS pursuant to section 7(a)(2) of ESA and the BLM Special Status Species 6840 Manual. An outcome of the consultation process could be that conditions of approval are attached to the permit or the permit could not be approved. In the event oil and gas development takes place within identified Sprague’s pipit habitat, BLM would conference with the USFWS at the APD stage pursuant to section 7(a)(4) of ESA.

4.3.9 Cultural Resources

The following lease parcels have sites within their boundaries: Lease parcels (MTM 102757-V8, 6X, 6Y) are located in Sheridan County consisting of 499.91 acres. Based on modeling, the parcel might contain one cultural site of which less than one could have the potential to be eligible or considered eligible for listing on the National Register of Historic Places.

Lease parcel (MTM 105431-KK) is located in Roosevelt County consisting of 13.19 acres. Based on modeling, the parcel may contain 1 cultural site of which could have the potential to be eligible or considered eligible for listing on the National Register of Historic Places.

Lease parcel (MTM 105431-H5) are located in Richland County consisting of 115.92 acres. Based on modeling, the parcel might contain up to 2 cultural sites of which one to two could have the potential to be eligible or considered eligible for listing on the National Register of Historic Places.

Lease parcel (MTM 105431-KH) are located in Garfield County consisting of 399.57 acres. Based on modeling, the parcel might contain up to 13 cultural sites (12.7) of which one to two could have the potential to be eligible or considered eligible for listing on the National Register of Historic Places.

Leasing approximately 1028.59 acres of Federal minerals within the four counties described above could indirectly affect 12 cultural sites based upon modeling (Aaberg et al., 2006). Of the modeled 12 cultural sites, 1 to 2 sites may have the potential to be eligible or considered eligible for listing on the National Register of Historic Places.

Of the 1,028.59 acres, approximately 16.8 acres could be disturbed from the projected development of four wells, listed in Appendix C. This disturbance has the potential to affect one site which may have the potential to be eligible for listing on the National Register of Historic Places.

The direct, indirect, and cumulative impacts from oil and gas development on cultural resources are discussed in Chapter 4 of the MCFO Final EIS (pages 4-193 through 4-204; BLM, 2015b). In summary, analysis provided that the application of the CR-16-1, CSU12-35, LN14-22, LN14-24, LN14-25, NSO11-84, NSO11-86, NSO 11-88 and NSO 11-89, applied to lease parcels in Appendix A, would provide for the conservation and preservation of cultural resources. In addition, the document provided that the areas without cultural stipulations would be considered in compliance with all relevant cultural resource laws, regulations, protocols and policies. The RFD for this alternative, Appendix C, would be in conformance with the disturbance impacts set in the document; and therefore are analyzed for cultural resources in the MCFO Final EIS (BLM, 2015b).

4.3.10 Native American Religious Concerns

Leasing parcels located near the Fort Peck Reservation in Richland and Sheridan Counties would not interfere with the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act (AIRFA) or EO 13007. Leasing parcels in this area would not prevent tribes from visiting sacred sites or prevent possession of sacred objects.

4.3.11 Paleontology

The direct, indirect, and cumulative impacts from oil and gas development on paleontological resources are discussed in Chapter 4 of the MCFO Final EIS (pages 4-204 through 4-214; BLM, 2015b). In summary, analysis provided that the application of CR 16-1, LN 14-29, and LN 14-30, applied to lease parcels in Appendix A, would provide for the conservation and preservation of paleontological resources. In addition, the document provided that the areas without the paleontological stipulations would be considered in compliance with all relevant paleontological resource laws, regulations, protocols and policies. The RFD for this alternative, Appendix C, would be in conformance with the disturbance impacts set in the document; and therefore are analyzed for paleontological resources in the MCFO Final EIS (BLM, 2015b).

4.3.12 Visual Resources

The direct, indirect, and cumulative impacts from oil and gas development on visual resources are discussed in Chapter 4 of the MCFO Final EIS (pages 4-215 through 4-226; BLM, 2015b). In summary, analysis provided that the application of CSU 12-33, applied to parcel MTM 105431-KH, would provide the necessary mitigation for visual resources. In addition, the document provided that the areas without the visual resources stipulation would be considered in compliance with all relevant visual resources regulations, protocols and policies. The RFD for this alternative, Appendix C, would be in conformance with the disturbance impacts set in the document; and therefore are analyzed for visual resources in the MCFO Final EIS (BLM, 2015b).

4.3.13 Livestock Grazing

The direct, indirect, and cumulative impacts from oil and gas development on livestock grazing are discussed in Chapter 4 of the MCFO Final EIS (pages 4-244 through 4-253; BLM, 2015b). This analysis included discussion on the short term and long term disturbance impacts that are contained in the Disturbance Appendix (BLM, 2015b). In summary, the indirect effects to livestock grazing on only 80 acres of BLM administered surface would be short-term removal of vegetation, and mitigated by measures within a reclamation plan. The RFD for this alternative, Appendix C, would be in conformance with the disturbance impacts set in the document; and therefore are analyzed for livestock grazing in the MCFO Final EIS (BLM, 2015b).

4.3.14 Recreation and Travel Management

The direct, indirect, and cumulative impacts from oil and gas development on recreation and travel management are discussed in Chapter 4 of the MCFO Final EIS (4-277 through 4-304; BLM, 2015). This analysis included discussion on the short term and long term disturbance impacts that are contained in the Disturbance Appendix (BLM, 2015). In summary, the indirect effects to recreation and travel management on the isolated 80 acres of BLM administered surface with no legal public access, would be short-term user conflicts, public safety issues, and newly created routes mitigated by measures within a reclamation plan. The RFD for this alternative, Appendix C, would be in conformance with the disturbance impacts set in the document; and therefore are analyzed for recreation and travel management in the MCFO Final EIS (BLM, 2015b).

4.3.15 Lands and Realty

Under this alternative, six parcels that include 1,027.87 surveyed surface acres, of which 79.88 surveyed acres are BLM administered surface and 947.99 surveyed acres are Non-Federal surface would be offered for lease.

Facilities associated with oil and gas development could cause disturbance to the existing right-of-way (ROW). There is one existing ROW located on the following lease parcel; MTM-105431-KH, a ROW for a buried telephone line. Additional ROWs could be required across Federal surface for “off-lease” or third party facilities required for potential development of the parcels.

The direct, indirect, and cumulative impacts from oil and gas development on lands and realty are discussed in Chapter 4 of the MCFO Final EIS (pages 4-193 through 4-204; BLM, 2015). In summary, analysis provided that the application of LN 14-28, applied to parcel MTM 105431-KH, would provide the necessary mitigation for existing ROW within the parcel. In addition, the document provided that the areas without the lease notice would be considered in compliance with all relevant lands and realty regulations, protocols and policies. The RFD for this alternative, Appendix C, would be in conformance with the disturbance impacts set in the document; and therefore are analyzed for lands and realty in the MCFO Final EIS (BLM, 2015b).

4.3.16 Minerals

Issuing a lease provides opportunities to explore for and develop oil and gas resources; however, exploration and development activities must be conducted in accordance with an approved APD. Additional natural gas or crude oil produced from any or all of the parcels in Alternative B would enter the public markets. Additional subsurface information would be obtained from drilling wells. Royalties and taxes could accrue to the Federal and State treasuries from the lease parcel lands.

Under Alternative B, all of the lease parcels would be offered for lease subject to major (NSO) or moderate (CSU) constraints and/or standard lease terms and conditions.

Stipulations applied to various areas with respect to occupancy, timing limitation, and control of surface use could affect oil and gas exploration and development, both on and off the Federal lease parcel. Leases issued with major constraints (NSO stipulations) could decrease some lease values, increase operating costs, and require relocation of well sites, and modification of field development. Leases issued with moderate constraints (timing limitation and controlled surface Use (CSU) stipulations) could result in similar but reduced impacts, and delays in operations and uncertainty, on the part of operators, regarding restrictions. All the lease parcels contain both major constraints and moderate constraints, see Appendix A.

Overall direct, indirect, and cumulative impacts to oil and gas development are discussed in Chapter 4 of the MCFO Final EIS (pages 4-259 through 4-268; BLM, 2015b).

4.3.17 Special Designations

4.3.17.1 National Historic/Scenic Trails

There are no lease parcels located within the Lewis and Clark National Historic Scenic Trail or the Lewis and Clark Special Recreation Management Area (SRMA). There is one lease parcel, MTM 105431-KK, (13.19 acres) that is located within a 3 mile sensitive Setting Consideration Zone (SCZ) and within the Lewis and Clark National Historic Trail (NHT) and SRMA, however, it is not on BLM administered lands.

Potential effects from surface disturbances associated with exploration and development activities after leasing have the potential to alter the characteristics of the Lewis and Clark National Historic Trail, a cultural and historic property, by diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Direct, indirect, and cumulative impacts from oil and gas development on the Lewis and Clark National Historic Trail are further discussed in Chapter 4 of the MCFO Final EIS (pages 4-193 through 4-204 and 4-294; BLM, 2015b). In summary, analysis provided that the application of LN 14-22, applied to parcel MTM 105431-KK, would provide the necessary mitigation for the Lewis and Clark National Historic Trail. In addition, the document provided that the areas without the lease notice would be considered in compliance with all relevant laws, regulations, protocols and policies. The RFD for this alternative, Appendix C, would be in conformance with the disturbance impacts set in the document; and therefore are analyzed for the Lewis and Clark National Historic Trail in the MCFO Final EIS (BLM, 2015b).

4.3.18 Social and Economic Conditions

4.3.18.1 Social and Environmental Justice

The direct, indirect, and cumulative impacts from oil and gas development on social conditions and environmental justice populations are discussed in Chapter 4 of the MCFO Final EIS (4-360 through 4-385; BLM, 2015b). The analysis indicates that the pace and scale of oil and gas development can often concern local communities. Rapid development can drive important social changes due to the influx of people to these areas who find employment in the oil and gas industry and ancillary service industries. Rapid population growth for unprepared communities can cause stress on community resources such as educational infrastructure, roads and utilities, emergency services, and community cohesion. Should oil and gas leasing and subsequent development occur, impacts to people living near or using the area in the vicinity of the lease would potentially occur. Oil and gas exploration, drilling, or production, would potentially inconvenience these people through increased traffic and traffic delays, noise, and visual impacts. These impacts would be particularly noticeable in rural areas in which oil and gas development has not occurred previously. The level of inconvenience would depend on the activity affected, traffic patterns within the area, noise levels, the length of time and season in which these activities occurred, and other factors. Creation of new access roads would potentially allow increased public access and exposure of private property to vandalism. For leases in which the surface is privately owned and the mineral estate is federally owned, surface owner agreements, standard lease stipulations, and BMPs would potentially address many of the concerns of private surface owners.

Executive Order 12898 requires the analysis of disproportionately high and adverse human health effects and environmental effects on environmental justice populations. Environmental effects may include “ecological, cultural, human health, economic, or social impacts on minority communities, low-income communities, or Indian tribes when those impacts are interrelated to impacts on the natural or physical environment” (page 26; CEQ, 1997). As discussed previously, Roosevelt County met the criteria for having environmental justice populations which are heavily influenced by the American Indian/Native American population in the county. Adverse effects to historical and current cultural and traditional uses and values in this area are correlated to the amount of surface-disturbing or other disruptive activities allowed under this alternative. Please refer to sections 4.3.10 Cultural Resources and 4.3.11 Native American Religious Concerns for the discussion of potential impacts associated with this alternative. The BLM has considered all input from persons or groups regardless of age, income status, race, or other social or economic characteristics. The outreach and public involvement activities taken by the MCFO for this effort, including the consultation of tribes, are described in sections 1.4 Public Scoping and Identification of Issues, 5.1 Persons, Agencies, and Organizations Consulted, and 5.2 Summary of Public Participation.

4.3.18.2 Economics

The collection of revenues would result from leasing the parcels proposed under Alternative B. Revenues generated by leasing Federal minerals are the bonus bids paid at the lease auction and annual rents collected on leased parcels not held by production. These revenues are collected by the Federal government which then distributes 49% of the revenues associated with public domain minerals back to the state where the leased occurred. Twenty-five percent of the revenues received by the state are distributed to the county where the lease occurred (Title 17-3-240, MCA). Rent payments are \$1.50 per acre for the first five years and \$2.00 per acre for the second five years of the lease.

Revenue estimates are based upon data from previous MCFO lease sales that included parcels in Garfield, Richland, Roosevelt, and Sheridan counties. An attempt was made to calculate average percent of acres offered that sold and average bonus bids based upon multiple lease sales that occurred in the last three years. The lease sales used include the May 6, 2015; October 21, 2014; May 21, 2014; May 8, 2013; October 23, 2012; and May 8, 2012 lease sales in order to capture data for each county. Estimates for all of the counties except Garfield County are based upon two or more of these previous lease sales data. Since May 2012, the MCFO offered parcels in Garfield County once in the May 8, 2013 lease sale. The data used for Sheridan County was based upon the two MCFO lease sales that occurred in 2012. These were the most recent MCFO lease sales that offered parcels in Sheridan County.

Revenue estimates are initially based upon the number of acres being offered and the average percent of acres offered that sold since not all parcels offered are sold during a lease sale. Using the average percent of acres offered that sold can provide a more realistic estimate of revenue especially for counties in which not all of the parcels offered are sold. Revenue estimates provided in Table 11 are associated with the parcels offered under Alternative B and do not include existing lease rents. Table 11 provides estimates on annual rent and bonus bid revenue collected by the Federal government and then redistributed to the state and counties. To estimate annual rent revenue it was assumed that rent would be collected during the full term of the leases

(10 years) since it is unknown if and when the lease will be held by production, terminated, or relinquished. This calculation of rent revenue provides the maximum amount of annual rent revenue that may be collected.

For the parcels offered under Alternative B, it is estimated that the Federal government will collect a maximum of \$1,179.59 in rent revenue every year during the first five years of the leases, with most of that stemming from rent revenue generated in Sheridan County (\$749.87 each year). Out of the yearly \$1,179.59 rent revenue collected, the Federal government will retain \$601.59 and distribute \$575.00 to the State of Montana every year during the first five years of the leases. Out of the four counties, Sheridan County is likely to receive the greatest amount of rent revenue every year (a maximum of \$91.86 yearly during the first five years and \$122.48 yearly during the second five years of the lease)(Table 4-1).

Table 11 provides estimated bonus bid revenues using both the minimum rate of \$2.00 per acre and the calculated average bonus bid based upon previous lease sales. These bonus bid revenue represents the estimated total amount generated during the lease sale and the revenue amounts redistributed to the state and counties. Based upon the minimum rate of \$2.00 per acre the Federal government is estimated to collect \$1,572.69 from this lease sale and retain \$802.12 and distribute \$770.67 to the State of Montana of which \$39.16 would be redistributed to Garfield County, \$27.80 to Richland County, \$3.23 to Roosevelt County, and \$122.48 to Sheridan County. However, past parcels offered and sold by the MCFO often receive bonus bid rates greater than \$2.00 per acre and using average bid prices calculated for each county may provide more realistic bonus bid revenues. Based upon average bonus bid prices, \$381,080.01 is estimated to be collected by the Federal government out of which \$194,350.80 would be retained and \$186,729.20 distributed to the State of Montana. Due to differences in acres offered, average percent of acres offered that sold, and average bonus bids, the four counties would receive differing amounts of revenue with Sheridan County estimated to receive the greatest amount of bonus bid revenue from this lease sale (\$32,692.30) with Richland County receiving the second greatest amount (\$12,077.76). Garfield County would collect the least amount of bonus bid revenue from this lease sale (\$39.16) and Roosevelt would receive \$1,872.96. The direct, indirect, and cumulative impacts from potential oil and gas development are discussed in Chapter 4 of the MCFO Final EIS (pages 4-360 through 4-385; BLM, 2015). Oil and gas development effect employment and labor income generated by 1) payments to counties associated with the leasing and rent of Federal minerals, 2) royalty payments associated with production of Federal oil and gas, and 3) economic activity generated from drilling and associated activities. The degree of these type of economic effect is based upon the level and pace of development.

Table 11. Estimated Federal, State, and County Revenue Associated with the Lease Sale.

	Garfield	Richland	Roosevelt	Sheridan
Public Domain Acres Being Offered for Lease:	399.57	115.92	13.19	499.91
Average Percent of Acres Offered that Sold in Previous Lease Sales:	4.0%	97.9%	100%	100%

Average Bonus Bid Price per Acre based on Previous Lease Sales:	\$2.00	\$868.93	\$1,159.17	\$533.85
Maximum Annual Rent Revenue Estimate in Nominal Dollars, 2015 Dollars				
Federal Rent Revenue				
First 5 years	\$239.74	\$170.20	\$19.79	\$749.87
Second 5 years	\$319.66	\$226.93	\$26.38	\$999.82
State of Montana Rent Revenue				
First 5 years	\$117.47	\$83.40	\$9.69	\$367.43
Second 5 years	\$156.63	\$111.20	\$12.93	\$489.91
County Rent Revenue				
First 5 years	\$29.37	\$20.85	\$2.42	\$91.86
Second 5 years	\$39.16	\$27.80	\$3.23	\$122.48
One Time Bonus Bid Revenue Estimate in Nominal Dollars, 2015 Dollars				
Federal Bonus Bid Revenue				
minimum of \$2.00/acre	\$319.66	\$226.93	\$26.38	\$999.82
using average bid price	\$319.66	\$98,593.95	\$15,289.45	\$266,876.95
State of Montana Bonus Bid Revenue				
minimum of \$2.00/acre	\$156.63	\$111.20	\$12.93	\$489.91
using average bid price	\$156.63	\$48,311.03	\$7,491.83	\$130,769.71
County Bonus Bid Revenue				
minimum of \$2.00/acre	\$39.16	\$27.80	\$3.23	\$122.48
using average bid price	\$39.16	\$12,077.76	\$1,872.96	\$32,692.43

4.3.19 Cumulative Impacts- Alternative B

Cumulative impacts are those impacts resulting from the incremental impact of an action when added to other past, present, and reasonably foreseeable actions regardless of what agency or person undertakes such other actions (40 CFR 1508.7). This section describes cumulative impacts associated with this project on resources. The ability to assess the potential cumulative impacts at the leasing stage for this project is limited for many resources due to the lack of site-specific information for potential future activities. Upon receipt of an APD for any of the lease parcels addressed in this document, more site-specific planning would be conducted in which the ability to assess contributions to cumulative impacts in a more detailed manner would be greater due to the availability of more refined site-specific information about proposed activities.

Cumulative effects from oil and gas development for all resources in the MCFO are described in Chapter 4 of the MCFO Final EIS (BLM, 2015b). Anticipated exploration and development activities associated with the lease parcels considered in this EA are within the range of assumptions used and effects described in this cumulative effects analysis for the resources analyzed above. This previous analysis is hereby incorporated by reference for resources discussed above.

5.0 CONSULTATION AND COORDINATION

5.1 Persons, Agencies, and Organizations Consulted

Coordination with MFWP was conducted for the lease parcels being reviewed and in the completion of this EA in order to prepare the analysis, identify protective measures, and apply stipulations and lease notices associated with these parcels being analyzed. Recommendations by the USFWS applied in previous lease sale EAs were also applied to the lease parcels being reviewed. A letter was sent to the USFWS and MFWP during the 15-day scoping and 30-day public comment periods requesting comments on the parcels being reviewed.

The BLM consults with Native Americans under Section 106 of the National Historic Preservation Act. The BLM sent letters to tribes in Montana, North and South Dakota and Wyoming at the beginning of the 15 day scoping period informing them of the potential for the parcels to be leased and inviting them to submit issues and concerns BLM should consider in the environmental analysis. Letters were sent to the Tribal Presidents and THPO or other cultural contacts for the Cheyenne River Sioux Tribe, Crow Tribe of Montana, Crow Creek Sioux Tribe, Eastern Shoshone Tribe, Ft. Peck Tribes, Lower Brule Sioux Tribe, the Mandan, Hidasta, and Arkira Nation, Northern Arapaho Nation, Northern Cheyenne Tribe, Oglala Sioux Tribe, Rosebud Sioux Tribe of Indians, Standing Rock Sioux Tribe, and Turtle Mountain Band of Chippewa. In addition to scoping letters, THPOs also received file search results from the preliminary review of parcels conducted by BLM. The BLM sent a second letter with a copy of the EA to the tribes informing them about the 30-day public comment period for the EA and solicit any information BLM should consider before making a decision whether to offer any or all of the parcels for sale.

5.2 Summary of Public Participation

5.2.1 Scoping

Public scoping for this project was conducted through a 15-day scoping period advertised on the BLM Montana State Office website, news release to local newspapers, and posting on the field office website NEPA notification log. Scoping was initiated October 6, 2015.

There were no substantive comments submitted during scoping. However, two written comments were submitted requesting a copy of the EA for their review.

5.3 List of Preparers

Table 12. List of Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Susan Bassett	Air Specialist	Air Resources
Jesse Hankins	Wildlife Biologist	Wildlife
Christina Stuart	Fisheries Biologist	Water Resources/Riparian Vegetation
CJ Truesdale	Archaeologist	Cultural/Special Designations
Martin Wells	Hydrologic Technician	Soils/ Water Resources
Kevin Kovacs	Natural Resource Specialist	GIS
Jon David	Rangeland Management Specialist	Livestock Grazing/Vegetation/Invasive

		Species
Doug Melton	Archeologist	Native American Religious Concerns
Greg Liggitt	Paleontologist	Paleontology
Beth Klempel	Realty Specialist	Lands/Realty
Paul Helland	Petroleum Engineer	Fluid Minerals/RFD
Jessica M. Montag	Socioeconomic Specialist	Social, Environmental Justice, and Economic Conditions
Irma Nansel	Planning & Environmental Coordinator	EA Lead
Kathy Bockness	Planning & Environmental Coordinator	NEPA
Terra Gusler	Legal Land Examiner-Sale Lead	Expressions of Interest/Lease Sale

In addition to the primary preparers listed above, the following individuals provided document review:

Diane Friez	District Manager
Eric Lepisto	Acting Field Manager
Shane Findlay	Supervisory Mineral Resource Specialist
Wendy Warren	Supervisory Land Use Specialist
Reyer Rens	Supervisory Rangeland Management Specialist
Chris Morris	Supervisory Land Use Specialist

6.0 REFERENCES

- Aaberg, S.A., R. Hanna, C. Crofutt, J. Green, and M. Vischer. 2006. Miles City Resource Management Plan (RMP) and Environmental Impact Statement (EIS) Class I Overview of Paleontological & Cultural Resources in Eastern Montana (March 2006). Prepared by Aaberg Cultural Resource Consulting Service under subcontract to ALL Consulting and prepared for the United States Department of the Interior, Bureau of Land Management, Miles City Field Office. March 2006, Billings, MT.
- Bald Eagle Protection Act of 1940 (16 U.S.C. 668-668d, 54 Stat. 250) as amended -- Approved June 8, 1940, and amended by P.L 86-70 (73 Stat. 143) June 25, 1959; P.L. 87-884 (76 Stat. 1346) October 24, 1962; P.L. 92-535 (86 Stat. 1064) October 23, 1972; and P.L. 95-616 (92 Stat. 3114) November 8, 1978.
- BLM Federal Land Status Records (LSR), 2015, Montana Master Title Plats (MTPs), October 1, 2015
- BLM LR2000, 2015a, Authorized Rights-of-Way, October 1, 2015.
- BLM LR2000, 2015b
- BLS, 2015. Quarterly Census of Employment and Wages, Annual Averages, 2014. June 2, 2015 revision. Retrieved September 1, 2015 from <http://www.bls.gov/cew/datatoc.htm>
- Bramblett, R.G., T.R. Johnson, A.V. Zale, and D.G. Heggem. 2005. Development and evaluation of a fish assemblage index of biotic integrity for Northwestern Great Plains streams. *Transactions of the American Fisheries Society*. 134: 624-640.
- CAPS, 2010. Montana, Fish, Wildlife and Parks Crucial Area Planning System. <http://fwp.mt.gov/gis/maps/caps/>
- Center for Climate Strategies (CCS). 2007. Montana Greenhouse Gas Inventory and Reference Case Projections 1990-2020. Center for Climate Strategies and Montana Department of Environmental Quality. September 2007.
- Climate Change SIR. 2010. Climate Change Supplementary Information Report for Montana, North Dakota, and South Dakota, Bureau of Land Management. Report on Greenhouse Gas Emissions and Climate Change for Montana, North Dakota, and South Dakota. Technical report prepared for the Montana/Dakotas Bureau of Land Management by URS Corporation. URS Project 22241790.
- Dodds, W.K., K. Gido, M.R. Whiles, K.M. Fritz, and W.J. Matthews. 2004. Life on the edge: The ecology of Great Plains prairie streams. *BioScience*, 54(3): 205-216.
- EPA, 2008. <http://www.epa.gov/Region8/climatechange/pdf/ClimateChange101FINAL.pdf>
- EPA. 2015. AirData Website (<http://www.epa.gov/airdata/>). Accessed October 15.

Eubanks, Ellen. 2004. Riparian Restoration. 0423 1201P. San Dimas, CA: U.S. Department of Agriculture, Forest Service, San Dimas Technology and Development Center. 137 p.
http://www.fs.fed.us/t-d/php/library_card.php?p_num=0423%201201P

Federal Register: September 15, 2010 (Volume 75, Number 178)]

Foresman, K.R. 2001. The Wild Mammals of Montana. Special publication No 12. American Society of Mammalogists. Lawrence, KS.: Allen Press.

Hamlin, K.L. 1978. Population ecology and habitat relationships of mule deer and white-tailed deer in the prairie agricultural habitats of eastern Montana. Montana Deer Studies. Montana Department of Fish, Wildlife and Parks, Project W-120-R-10, Job Progress Report.

IMPROVE, 2014. IMPROVE and RHR Summary Data website. Regional Haze Rule Summary data through 1988-2013 (posted July 2014). Interagency Monitoring of Protected Visual Environments (IMPROVE). Available at:
http://vista.cira.colostate.edu/improve/Data/IMPROVE/summary_data.htm.

IPCC, 2013. Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp.

Lenard, S., J. Carlson, J. Ellis, C. Jones, and C. Tilly. 2003. P.D. Skaar's Montana Bird Distribution, 6th Edition. Montana Audubon, Helena, Montana.

Levick, L., J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy, M. Scianni, D. P. Guertin, M. Tluczek, and W. Kepner. 2008. The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest. U.S. Environmental Protection Agency and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 pp.
<http://azriparian.org/docs/arc/publications/EphemeralStreamsReport.pdf> accessed 7/22/10.

MFWP 2010. Montana Fish, Wildlife and Parks, Fisheries Information System
<http://fwp.mt.gov/fishing/mFish/>

Montana Bird Distribution Committee. 2012. Skaar's Montana Bird Distribution, 7th Edition. Montana Audubon, Helena, Montana 208 pp + foldout map.

[Migratory Bird Treaty Act of 1918](#) (16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755) as amended by: Chapter 634; June 20, 1936; 49 Stat. 1556; P.L. 86-732; September 8, 1960; 74 Stat. 866; P.L. 90-578; October 17, 1968; 82 Stat. 1118; P.L. 91-135; December 5,

1969; 83 Stat. 282; P.L. 93-300; June 1, 1974; 88 Stat. 190; P.L. 95-616; November 8, 1978; 92 Stat. 3111; P.L. 99-645; November 10, 1986; 100 Stat. 3590 and P.L. 105-312; October 30, 1998; 112 Stat. 2956.

Montana Department of Environmental Quality. 2012. Montana Nonpoint Source Management Plan. MDEQ, Watershed Protection Section. MDEQ, Helena. Available at: http://www.deq.mt.gov/wqinfo/nonpoint/2012NonpointPlan/NPSPlan_Complete_07162012.pdf

Montana Department of Environmental Quality, 2015. State of Montana Air Quality Monitoring Network Plan (Draft), MDEQ, Air Quality Bureau, Helena. Available at: <http://deq.mt.gov/airmonitoring/nwHome.mcpX>.

Montana Department of Natural Resources and Conservation (MT DNRC), 2015. Oil and Gas Conservation Commission. Accessed October 2015. County Drilling and Production Statistics. <http://www.bogc.dnrc.mt.gov/WebApps/DataMiner/>

Montana Field Guide, 2010. Montana Plants Field Guide (<http://fieldguide.mt.gov>, October 2015).

Montana Fish, Wildlife & Parks. Crucial Areas Planning System (CAPS). Published April 2015. Accessed October 13, 2015 <http://fwp.mt.gov/fishAndWildlife/conservationInAction/crucialAreas.html>.

Montana Natural Heritage Program. Natural Heritage Tracker Program. Retrieved on October 6, 2015 from <http://mtnhp.org/Tracker/NHTMap.aspx>.

Montana natural Heritage Program. Natural Heritage Map Viewer. Retrieved on October 6, 2015 from <http://mtnhp.org/mapviewer/>

NADP, 2014. National Atmospheric Deposition Program (NADP): 2013 Annual Summary. NADP Data Report 2013-01. Illinois State Water Survey, University of Illinois at Urbana-Champaign, IL. September. Available at: <http://nadp.sws.uiuc.edu/lib/data/2013as.pdf>

NOAA, 2015. National Centers for Environmental Information Climate at a Glance website. Accessed on October 15, 2015. Available at: <http://www.ncdc.noaa.gov/cag/>

Office of Natural Resource Revenue, 2015. Reported Revenue Data by County and by Sales Year-2014. BLM requested data provided by ONRR.

Peterson L. and S. Deaver. 2002. An Ethnographic Overview of Southeast Montana, February 2001. Prepared for the BLM State Office, Billings, MT.

Prichard, D., et al. 1993, Revised 1995. Riparian Area Management. Process for Assessing Proper Functioning Condition. U.S. Department of the Interior Bureau of Land

- Management. Technical Reference 1737-9. 51 pp.
<ftp://ftp.blm.gov/pub/nstc/techrefs/Final%20TR%201737-7.pdf>
- Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>. Accessed [10/5/2015].
- U.S. Census, 2014. Annual Estimates for the Resident Population for Selected Age Groups by Sex for the United States, States, Counties, and Puerto Rico Commonwealth and Municipios: April 1, 2010 to July 1, 2013. Release date June 2014.
- U. S. Fish and Wildlife Service. 2010. Black-footed ferret website
<http://www.fws.gov/mountain-prairie/species/mammals/blackfootedferret/>
- U.S. Fish and Wildlife Service. 2014, Northern Myotis website
<http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=A0JE>
- U.S. Fish and Wildlife Service. 2002. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Northern Great Plains Breeding Population of the Piping Plover; Final Rule 50 CFR Part 17. 57638 Federal Register / Vol. 67, No. 176.
<http://www.fws.gov/mountain-prairie/species/birds/pipingplover/>.
- U.S. Fish and Wildlife Service. 2010. Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to List Sprague's Pipit as Endangered or Threatened throughout Its Range.
- USDI (United States Department of the Interior) and USDA (United States Department of Agriculture). 2007. Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development. BLM/WO/ST-06/021+3071/REV 07. Bureau of Land Management. Denver, Colorado. 84 pp.
- USDI BLM. 2014. Instruction Memorandum No. MT-2014-067. 2014 Montana/Dakota's Special Status Species List.
- USDI Bureau of Land Management Miles City Field Office, September 2015. (BLM, 2015a). Record of Decision and Approved Resource Management Plan.
- USDI Bureau of Land Management Miles City Field Office, June 2015. (BLM, 2015b). Proposed Resource Management Plan and Final Environmental Impact Statement.
- USEPA. 2010. Knowledge Building Series: Climate Change 101. EPA Climate Change Information, USEPA Region 8.
- Werner, J. K., B.A. Maxwell, P. Hendricks, D.L. Flath. 2004. Amphibians and Reptiles of Montana. Missoula, MT.: Mountain Press Publishing Company.

Youmans, H.B. and Swenson, J.E. 1982. Winter distribution of habitat use by mule deer and white-tailed deer in southeastern Montana. Appendix to Big Game Survey and Inventory (Deer).

Appendix A - Parcel description and proposed leasing stipulations.

PARCEL NUMBER	PARCEL DESCRIPTION	PROPOSED FOR LEASING ALTERNATIVE B	PROPOSED FOR DEFERRAL-NO LEASING
MTM 105431-KH	T. 14 N, R. 30 E, PMM, MT SEC. 2 LOTS 1-3; SEC. 2 S2NE,SE,W,SE; GARFIELD COUNTY 399.57 AC PD	CR 16-1 (ALL LANDS) CSU 12-23 (ALL LANDS) CSU 12-24 (ALL LANDS) CSU 12-25 SEC. 2 SENW,NWSE,S2SE; CSU 12-26 (ALL LANDS) CSU 12-33 SEC. 2 LOT 3; SEC. 2 SENW; LN 14-18 (ALL LANDS) LN 14-19 (ALL LANDS) LN 14-20 (ALL LANDS) LN 14-23 (ALL LANDS) LN 14-28 (ALL LANDS) LN 14-29 (ALL LANDS) LN 14-30 (ALL LANDS) NSO 11-70 SEC. 2 LOTS 1,3; SEC. 2 S2NE,SE,W,SE; TES 16-2 (ALL LANDS)	NONE

MTM 102757-V8	<p>T. 36 N, R. 58 E, PMM, MT SEC. 2 LAKE BED RIPAR TO LOTS 3,4 DESC BY M&B (43.89 AC); SEC. 2 LOTS 3,4; SEC. 2 NESE; SEC. 10 NWNE; SHERIDAN COUNTY 134.18 AC PD</p>	<p>CR 16-1 (ALL LANDS) CSU 12-23 (ALL LANDS) CSU 12-25 SEC. 2 LAKE BED RIPAR TO LOTS 3,4 DESC BY M&B (43.89 AC); SEC. 2 LOTS 3,4; SEC. 10 NWNE; CSU 12-27 SEC. 2 LOTS 3,4; SEC. 2 NESE; LN 14-18 (ALL LANDS) LN 14-20 (ALL LANDS) LN 14-22 (ALL LANDS) LN 14-23 (ALL LANDS) LN 14-24 (ALL LANDS) LN 14-25 (ALL LANDS) LN 14-27 (ALL LANDS) LN 14-29 (ALL LANDS) LN 14-30 (ALL LANDS) NSO 11-70 (ALL LANDS) NSO 11-75 SEC. 2 LOTS 3,4; SEC. 2 NESE; NSO 11-84 SEC. 10 NWNE; TES 16-2 (ALL LANDS)</p>	NONE
MTM 102757-6X	<p>T. 36 N, R. 58 E, PMM, MT SEC. 8 NWSW,SESW; SHERIDAN COUNTY 80.00 AC PD</p>	<p>CR 16-1 (ALL LANDS) CSU 12-23 (ALL LANDS) CSU 12-25 (ALL LANDS) CSU 12-27 (ALL LANDS) LN 14-18 (ALL LANDS) LN 14-20 (ALL LANDS) LN 14-23 (ALL LANDS) LN 14-27 (ALL LANDS) LN 14-30 (ALL LANDS) NSO 11-70 SEC. 8 SESW; TES 16-2 (ALL LANDS)</p>	NONE

MTM 102757-6Y	<p>T. 36 N, R. 58 E, PMM, MT SEC. 12 LAKEBED RIPAR TO LOTS 1,7 DESC BY M&B (75.60 AC); SEC. 12 LAKEBED RIPAR TO LOTS 5,6 DESC BY M&B (24.60 AC); SEC. 12 LOTS 1,3,5-7; SEC. 13 LAKEBED RIPAR TO LOT 3 DESC BY M&B (20.66 AC); SEC. 13 LOT 3; SHERIDAN COUNTY 285.73 AC PD</p>	<p>CR 16-1 (ALL LANDS) CSU 12-23 (ALL LANDS) CSU 12-24 SEC. 12 LOTS 1,3,5-7; CSU 12-25 (ALL LANDS) CSU 12-27 SEC. 12 LAKEBED RIPAR TO LOTS 1,7 DESC BY M&B (75.60 AC); SEC. 12 LAKEBED RIPAR TO LOTS 5,6 DESC BY M&B (24.60 AC); SEC. 12 LOTS 1,3,5-7; LN 14-18 (ALL LANDS) LN 14-20 (ALL LANDS) LN 14-23 (ALL LANDS) LN 14-27 (ALL LANDS) LN 14-30 (ALL LANDS) MT 15-1 (ALL LANDS) NSO 11-70 (ALL LANDS) NSO 11-75 (ALL LANDS) TES 16-2 (ALL LANDS)</p>	NONE
MTM 105431-KK	<p>T. 26 N, R. 59 E, PMM, MT SEC. 9 LOT 5; ROOSEVELT COUNTY 13.19 AC PD</p>	<p>CR 16-1 (ALL LANDS) CSU 12-23 (ALL LANDS) CSU 12-25 (ALL LANDS) LN 14-18 (ALL LANDS) LN 14-19 (ALL LANDS) LN 14-20 (ALL LANDS) LN 14-22 (ALL LANDS) LN 14-23 (ALL LANDS) LN 14-24 (ALL LANDS) LN 14-25 (ALL LANDS) LN 14-29 (ALL LANDS) NSO 11-70 (ALL LANDS) NSO 11-78 (ALL LANDS) NSO 11-88 (ALL LANDS) NSO 11-89 (ALL LANDS) TES 16-2 (ALL LANDS)</p>	NONE

MTM 105431-H5	T. 26 N, R. 59 E, PMM, MT SEC. 25 LOT 3 EXCL RR ROW (25.94 AC); SEC. 25 LOT 4 EXCL RR ROW (24.34 AC); SEC. 25 SWSW EXCL RR ROW (39.99 AC); SEC. 25 LOT 2; RICHLAND COUNTY 115.92 AC PD	CR 16-1 ALL LANDS CSU 12-24 SEC. 25 LOT 4 EXCL RR ROW (24.34 AC); SEC. 25 SWSW EXCL RR ROW (39.99 AC); LN 14-18 (ALL LANDS) LN 14-19 (ALL LANDS) LN 14-20 (ALL LANDS) LN 14-22 (ALL LANDS) LN 14-23 (ALL LANDS) LN 14-24 (ALL LANDS) LN 14-25 (ALL LANDS) LN 14-27 (ALL LANDS) LN 14-29 (ALL LANDS) LN 14-30 (ALL LANDS) NSO 11-69 SEC. 25 LOT 4 EXCL RR ROW (24.34 AC); SEC. 25 SWSW EXCL RR ROW (39.99 AC); NSO 11-84 (ALL LANDS) NSO 11-88 (ALL LANDS) NSO 11-89 (ALL LANDS) TES 16-2 (ALL LANDS) BOR 17-1 BOR 17-2	NONE
---------------	--	--	------

Appendix B - Miles City Field Office Stipulation Descriptions

Stipulation Number	Stipulation Name/Brief Description
	CULTURAL RESOURCES STIPULATION (CR)
CR 16-1	<p>CULTURAL RESOURCES</p> <p>This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities.</p> <p>All Field Offices</p>
	CONTROLLED SURFACE USE STIPULATION (CSU)
CSU 12-23	<p>AIR RESOURCES</p> <p>Surface occupancy and use is subject to the requirement that each diesel-fueled non-road engine with greater than 200 horsepower design rating to be used during drilling or completion activities meets one of the following two criteria: (1) the engine was manufactured to meet USEPA NOx emission standards for Tier 4 non-road diesel engines, or (2) the engine emits NOx at rates less than or equal to USEPA emission standards for Tier 4 non-road diesel engines.</p> <p>Miles City</p>
CSU 12-24	<p>SOILS, SENSITIVE SOILS</p> <p>Surface occupancy and use is subject to the following operating constraints: prior to surface occupancy and use, prior to surface disturbance on sensitive soils, a reclamation plan must be approved by the administrative officer. Sensitive soils are determined using a combination of slope and soil erodibility. The plan must demonstrate the following:</p> <ul style="list-style-type: none"> • no other practicable alternatives exist for relocating the activity, • the activity will be located to reduce impacts to soil and water resources, • site productivity will be maintained or restored, • surface runoff and sedimentation will be adequately controlled, • on- and off-site areas will be protected from accelerated erosion, • that no areas susceptible to mass wasting would be disturbed, and • surface-disturbing activities will be prohibited during extended wet periods.
CSU 12-25	<p>RIPARIAN, WETLANDS</p> <p>Surface occupancy and use is subject to the following operating constraints: prior to surface occupancy and use within 300 feet of riparian and/or wetland areas, a plan must be approved by the AO with design features that demonstrate how all actions would maintain and/or improve the functionality of riparian/wetland areas. The plan would address:</p>

Stipulation Number	Stipulation Name/Brief Description
	<ul style="list-style-type: none"> • potential impacts to riparian and wetland resources, • mitigation to reduce impacts to acceptable levels (including timing restrictions), • post-project restoration, and • monitoring (the operator must conduct monitoring capable of detecting early signs of changing riparian and/or wetland conditions).
CSU 12-26	<p>BIG GAME CRUCIAL WINTER RANGE</p> <p>Surface occupancy and use is subject to the following operating constraint: prior to surface occupancy and use within crucial winter ranges for big game wildlife, a plan must be approved by the AO that maintains the functionality of habitat.</p>
CSU 12-27	<p>SHARP-TAILED GROUSE LEKS AND NESTING HABITAT</p> <p>Surface occupancy and use is subject to design features on or within 2 miles of sharp-tailed grouse lek sites to protect breeding, nesting, and brood-rearing habitats at a level capable of supporting the long-term populations associated with the lek.</p>
CSU 12-33	<p>VRM CLASSES II</p> <p>In order to retain the existing character of the landscape (VRM Class II Objective), oil and gas development activities will be located, designed, constructed, operated, and reclaimed within 2 years from initiation of construction so that activities should not attract attention of the casual observer. This stipulation does not apply to maintenance or workover activities.</p>
	<p>LEASE NOTICE (LN)</p>
LN 14-18	<p>AIR RESOURCE ANALYSIS</p> <p>The lessee/operator is given notice that prior to project-specific approval, additional air resource analyses may be required in order to comply with the NEPA, FLPMA, and/or other applicable laws and regulations. Analyses may include equipment and operations information, emission inventory development, dispersion modeling or photochemical grid modeling for air quality and/or air quality related value impact analysis, and/or emission control determinations. These analyses may result in the imposition of additional project-specific control measures to protect air resources.</p>
LN 14-19	<p>SPECIAL STATUS SPECIES</p> <p>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.</p>

Stipulation Number	Stipulation Name/Brief Description
	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 requirements of the ESA as amended, 16 U.S.C. § et seq., including completion of any required procedure for conference or consultation.
LN 14-20	<p>MIGRATORY BIRD TREATY ACT</p> <p>The Operator is responsible for compliance with provisions of the Act by implementing one of the following measures; a) avoidance by timing; ground disturbing activities will not occur from April 15 to July 15, b) habitat manipulation; render proposed project footprints unsuitable for nesting prior to the arrival of migratory birds (blading or pre-clearing of vegetation must occur prior to April 15 within the year and area scheduled for activities between April 15 and July 15 of that year to deter nesting, or c) survey-buffer-monitor; surveys will be conducted by a BLM approved biologist within the area of the proposed action and a 300 foot buffer from the proposed project footprint between April 15 to July 15 if activities are proposed within this timeframe. If nesting birds are found, activities would not be allowed within 0.1 miles of nests until after the birds have fledged. If active nests are not found, construction activities must occur within 7 days of the survey. If this does not occur, new surveys must be conducted. Survey reports will be submitted to the appropriate BLM Office.</p>
LN 14-22	<p>CULTURAL RESOURCES SETTING CONSIDERATION ZONES</p> <p>This lease is known to contain historic properties or resources protected under NHPA that contain a Setting Consideration Zone where the integrity of the setting is known to be an important contributing element of NRHP significance of the property, and applies to the following historic properties: Wolf Mountains Battlefield NHL and Battle Butte Battlefield ACEC; Reynolds Battlefield site and Reynolds Battlefield ACEC; Cedar Creek Battlefield site and Cedar Creek Battlefield ACEC; and the Long Medicine Wheel ACEC, and all significant Cultural Resources, NRHP-eligible Properties and Districts, and TCPs, NHLs and Historic Battlefields and the Lewis and Clark National Historic Trail.</p>
LN 14-23	<p>SETBACK FROM HUMAN OCCUPIED RESIDENCES REQUIREMENT</p> <p>The lease area may contain human occupied residences. Under Regulation 43 CFR 3101.1-2 and terms of the lease (BLM Form 3100-11), the authorized officer may require reasonable measures to minimize adverse impacts to other resource values, land uses, and users not addressed in lease stipulations at the time operations are proposed. Such reasonable measures may include, but are not limited to, modification of siting or design of facilities, which may require relocating proposed operations up to 200 meters, but not off the leasehold.</p> <p>The setback requirement of 500 feet from human occupied residences has been established based upon the best information available. The following condition of approval may be applied as a result of the Application for Permit to Drill (APD) process during the on-site inspection and the environmental review unless an acceptable plan for mitigation of impacts is reached between the resident, lessee and BLM:</p>

Stipulation Number	Stipulation Name/Brief Description
	<p>Facilities will not be allowed within 500 feet of human occupied residences. The intent of this Lease Notice is to provide information to the lessee that would help design and locate oil and gas facilities to preserve the aesthetic qualities around human occupied residences.</p>
LN 14-24	<p>CULTURAL RESOURCES AND TRIBAL CONSULATION</p> <p>This lease may be found to contain historic properties or resources protected under NHPA, the American Indian Religious Freedom Act (42 U.S.C. 1996), Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 et seq.), Executive Order 13007 (May 24, 1996), or other statutes and executive orders. The BLM will not approve any ground-disturbing activities that may affect any such properties or resources until it completes its obligations (e.g., state historic preservation officer and tribal consultation) under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.</p>
LN 14-25	<p>CULTURAL RESOURCES</p> <p>The surface management agency is responsible for assuring that the leased lands are examined to determine if cultural resources are present and to specify mitigation measures. Guidance for application of this requirement can be found in NTL-MSO-85-1. This notice would be consistent with present Montana guidance for cultural resource protection related to oil and gas operations (NTL-MSO-85-1).</p>
LN 14-27	<p>SPRAGUE’S PIPIT HABITAT</p> <p>The lease area may contain habitat for the federal candidate Sprague’s pipit. The operator may be required to implement specific measures to reduce impacts of oil and gas operations on Sprague’s pipits, their habitat and overall population. Such measures would be developed during the APD and environmental review processes, consistent with lease rights. If the USFWS lists the Sprague’s pipit as threatened or endangered under the ESA, the BLM would enter into formal consultation on proposed permits that may affect the Sprague’s pipit and its habitat. Restrictions, modifications, or denial of permits could result from the consultation process.</p>
LN 14-28	<p>LAND USE AUTHORIZATIONS</p> <p>Land Use Authorizations incorporate specific surface land uses allowed on Bureau of Land Management (BLM) administered lands by authorized officers and those surface uses acquired by BLM on lands administered by other entities. These BLM authorizations include rights-of-way, leases, permits, conservation easements, and Recreation and Public Purpose leases and patents. The rights acquired, reserved, or withdrawn by BLM for specified purposes include non-oil and gas leases, conservation easements, archeological easements, road easements, fence easements, and administrative site withdrawals. The existence of such land use authorizations shall not</p>

Stipulation Number	Stipulation Name/Brief Description
	<p>preclude the leasing of the oil and gas. The locations of land use authorizations are noted on the oil and gas plats and in LR2000. The plats are a visual source noting location; LR2000 provides location by legal description through the Geographic Cross Reference program.</p> <p>The specifically authorized acreage for land use should be avoided by oil and gas exploration and development activities. All authorized surface land uses are valid claims to prior existing rights unless the authorization states otherwise.</p> <p>The right of the Secretary to issue future land use authorizations on an oil and gas lease is reserved by provision of Section 29 of the Mineral Leasing Act, 30 U.S.C.</p>
LN 14-29	<p>PALEONTOLOGICAL RESOURCES</p> <p>The lessee or operator shall immediately bring to the attention of the Surface Management Agency (SMA) any paleontological resources or any other objects of scientific interest discovered as a result of approved operations under this lease, and shall leave such discoveries intact and undisturbed until directed to proceed by the SMA.</p>
LN 14-30	<p>PALEONTOLOGICAL RESOURCES INVENTORY REQUIREMENT</p> <p>This lease has been identified as being located within geologic units rated as being moderate to very high potential for containing significant paleontological resources. The locations meet the criteria for class 3, 4 and/or 5 as set forth in the Potential Fossil Yield Classification System, WO IM 2008-009, Attachment 2-2. The BLM is responsible for assuring that the leased lands are examined to determine if paleontological resources are present and to specify mitigation measures. Guidance for application of this requirement can be found in WO IM 2008-009 dated October 15, 2007, and WO IM 2009-011 dated October 10, 2008.</p> <p>Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or project proponent shall contact the BLM to determine if a paleontological resource inventory is required. If an inventory is required, the lessee or project proponent will complete the inventory subject to the following:</p> <ul style="list-style-type: none"> ● the project proponent must engage the services of a qualified paleontologist, acceptable to the BLM, to conduct the inventory. ● the project proponent will, at a minimum, inventory a 10-acre area or larger to incorporate possible project relocation which may result from environmental or other resource considerations. ● paleontological inventory may identify resources that may require mitigation to the satisfaction of the BLM as directed by WO IM 2009-011.
MT 15-1	<p>DRAINAGE</p> <p>All of the lands contained in this lease are subject to drainage by a well located adjacent to the lease. The lessee shall, within 60 days of lease issuance, notify the field office of its plans to protect the lease from drainage or alternatively demonstrate to the authorized officer that a protective well would have little or no chance of producing in paying quantities.</p>

Stipulation Number	Stipulation Name/Brief Description
	NO SURFACE OCCUPANCY STIPULATION (NSO)
NSO 11-70	<p>STREAMS, WATERBODIES, RIPARIAN, WETLAND, AND FLOODPLAINS</p> <p>Surface occupancy and use is prohibited within perennial or intermittent streams, lakes, ponds, reservoirs, 100-year floodplains, wetlands, and riparian areas.</p>
NSO 11-75	<p>PIPING PLOVER</p> <p>Surface occupancy and use is prohibited in and within 0.25 mile of piping plover habitat.</p>
NSO 11-78	<p>PALLID STURGEON HABITAT</p> <p>Surface occupancy and use is prohibited within 0.25 mile of the water’s edge of the Missouri and Yellowstone Rivers.</p>
NSO 11-84	<p>SIGNIFICANT CULTURAL RESOURCES, NRHP – ELIGIBLE PROPERTIES AND DISTRICTS, AND TCPs</p> <p>Surface occupancy and use is prohibited in the site or within the area surrounding the site where an undertaking’s area of potential effect (APE) could have a potential effect on the site’s setting in:</p> <ul style="list-style-type: none"> ○ sites or areas designated or sites or areas that meet the criteria for allocation for designation for scientific use, conservation use, traditional use (socio-cultural use), public use, and experimental use; ○ the boundaries of sites or districts eligible for or included on the NRHP; and ○ the boundaries of TCPs, or sites or areas designated as such, or sites or areas that meet the criteria for allocation for designation for traditional use (socio-cultural use). <p>Activity is prohibited in cultural properties determined to be of particular importance to American Indian groups, TCPs, or sites designated for traditional use. (Such properties include, but are not limited to, burial locations, pictograph and petroglyph sites, vision quest locations, plant-gathering locations, and areas considered sacred or used for religious purposes.)</p>
NSO 11-88	<p>NATIONAL HISTORIC LANDMARKS (NHLs) AND HISTORIC BATTLEFIELDS AND THE LEWIS AND CLARK NATIONAL HISTORIC TRAIL</p> <p>Surface occupancy and use and surface disturbance is prohibited within NHLs and Historic Battlefield including the following historic properties: Wolf Mountains Battlefield NHL and Battle Butte Battlefield ACEC; Reynolds Battlefield site and Reynolds Battlefield ACEC; Cedar Creek Battlefield site and Cedar Creek Battlefield ACEC; and the Long Medicine Wheel ACEC, and all significant Cultural Resources, NRHP-eligible Properties and Districts, and TCPs, NHLs and Historic Battlefields and the Lewis and Clark National Historic Trail.</p>

Stipulation Number	Stipulation Name/Brief Description
NSO 11-89	<p>NATIONAL HISTORIC LANDMARKS (NHLs) AND HISTORIC BATTLEFIELDS AND THE LEWIS AND CLARK NATIONAL HISTORIC TRAIL</p> <p>Surface occupancy and use and surface disturbance is prohibited within the visible area also called the Setting Consideration Zone where the integrity of the setting is a contributing element of NRHP significance of a property, for NHLs and Historic Battlefields including the following historic properties: Wolf Mountains Battlefield NHL and Battle Butte Battlefield ACEC; Reynolds Battlefield site and Reynolds Battlefield ACEC; Cedar Creek Battlefield site and Cedar Creek Battlefield ACEC; and the Long Medicine Wheel ACEC, and all significant Cultural Resources, NRHP-eligible Properties and Districts, and TCPs, NHLs and Historic Battlefields and the Lewis and Clark National Historic Trail.</p>
TES 16-2	<p>ENDANGERED SPECIES ACT SECTION 7 CONSULTATION STIPULATION</p> <p>The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. The 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. The 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. The 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 <i>et seq.</i>, including completion of any required procedure for conference or consultation.</p>
Bureau of Reclamation	
BOR 17-1	BUREAU OF RECLAMATION - Agency special stipulations.
BOR 17-2	BUREAU OF RECLAMATION - Agency special stipulations.

Appendix C - Reasonably Foreseeable Development Scenario Forecast for the May 4, 2016 Lease Sale

The Reasonably Foreseeable Development (RFD) scenario for the area of analysis is based on information contained in the 2015 MCFO Final EIS. The MCFO RFD contains projections of the number of possible oil and gas wells that could be drilled and produced in the MCFO area and it is used to analyze the projected wells for the 6 nominated lease parcels, located in Richland, Roosevelt, Sheridan, and Garfield counties, proposed for the May 4, 2016 lease sale.

The MCFO RFD contains projections of the number of possible oil and gas wells that could be drilled and produced within each of the three development potential areas specified as high, medium, and low potential areas. GIS was used to determine the number of projected new federal wells within each development potential by taking into consideration the same assumptions and methodology used to determine the MCFO RFD. To project the number of Federal wells on the nominated acres, the proportionate percentage of nominated lease acres within the high, medium, or low potential RFD area is multiplied by the respective total number of high, medium, or low potential projected wells. Where the number of wells in a parcel within a county had a projection of equal to or greater than 1 in 1000 (0.001) the well number was rounded up to one, if the number of wells projected in a parcel within a county had a projection of less than 1 in 1000 (.001) the well number was rounded to zero.

These well numbers are only an estimate based on the MCFO RFD which is based on USGS assessments, past and current development, resource expertise, and MBOCG feedback and data, and may change in the future if new technology is developed or new fields and formations are discovered.

High Potential

The 624 lease parcel acres located in Richland, Roosevelt, and Sheridan, Counties are in the area of High Potential (6,043,000 acres total) development. The RFD scenario forecasts a range of 856 to 1,711 oil wells and 1,004 to 2,009 gas wells in this development area. The range for federal wells is 197 to 394 oil wells and 231 to 462 gas wells. The High Potential lease parcels total approximately 624 acres, approximately 0.0103 percent of the High Potential project area identified in the RFD.

Medium Potential

No lease parcels nominated lie within the area of Medium development potential.

Low Potential

The 405 lease parcel acres located in Garfield County are in the area of Low Potential (13,120,000 acres total) development. The RFD scenario forecasts a range of 325 to 650 oil wells and 382 to 764 gas wells in this development area. The range for federal wells is 197 to 394 oil wells and 231 to 462 gas wells. The Low Potential lease parcels total approximately 405 acres, approximately 0.00309 percent of the Low Potential project area identified in the RFD.

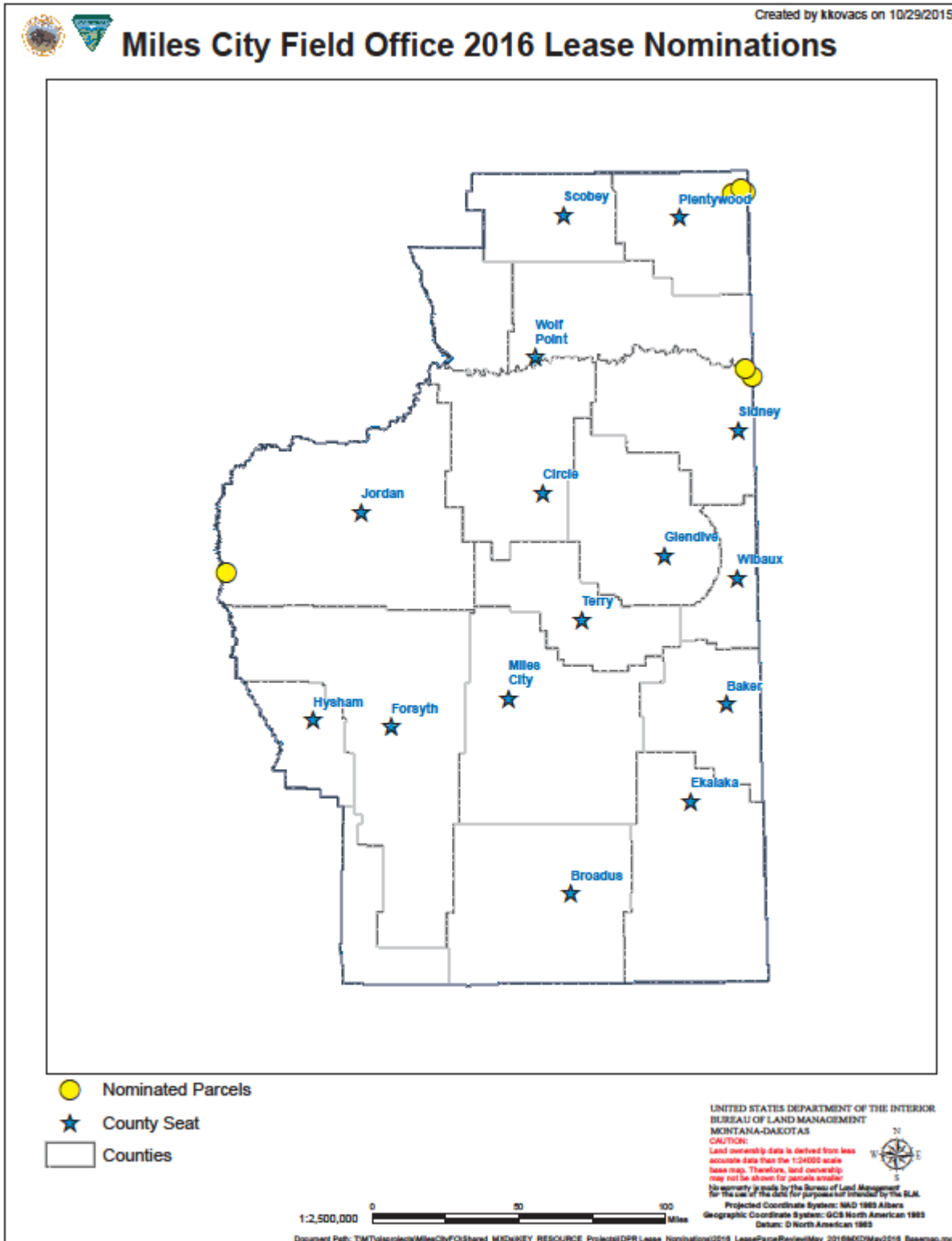
Table C-1. Nominated Lease Parcel Acres Offered within each County by Alternative

Alternative	Richland	Roosevelt	Sheridan	Garfield
Alt A	0	0	0	0
Alt B	115.92	13.19	499.91	399.57

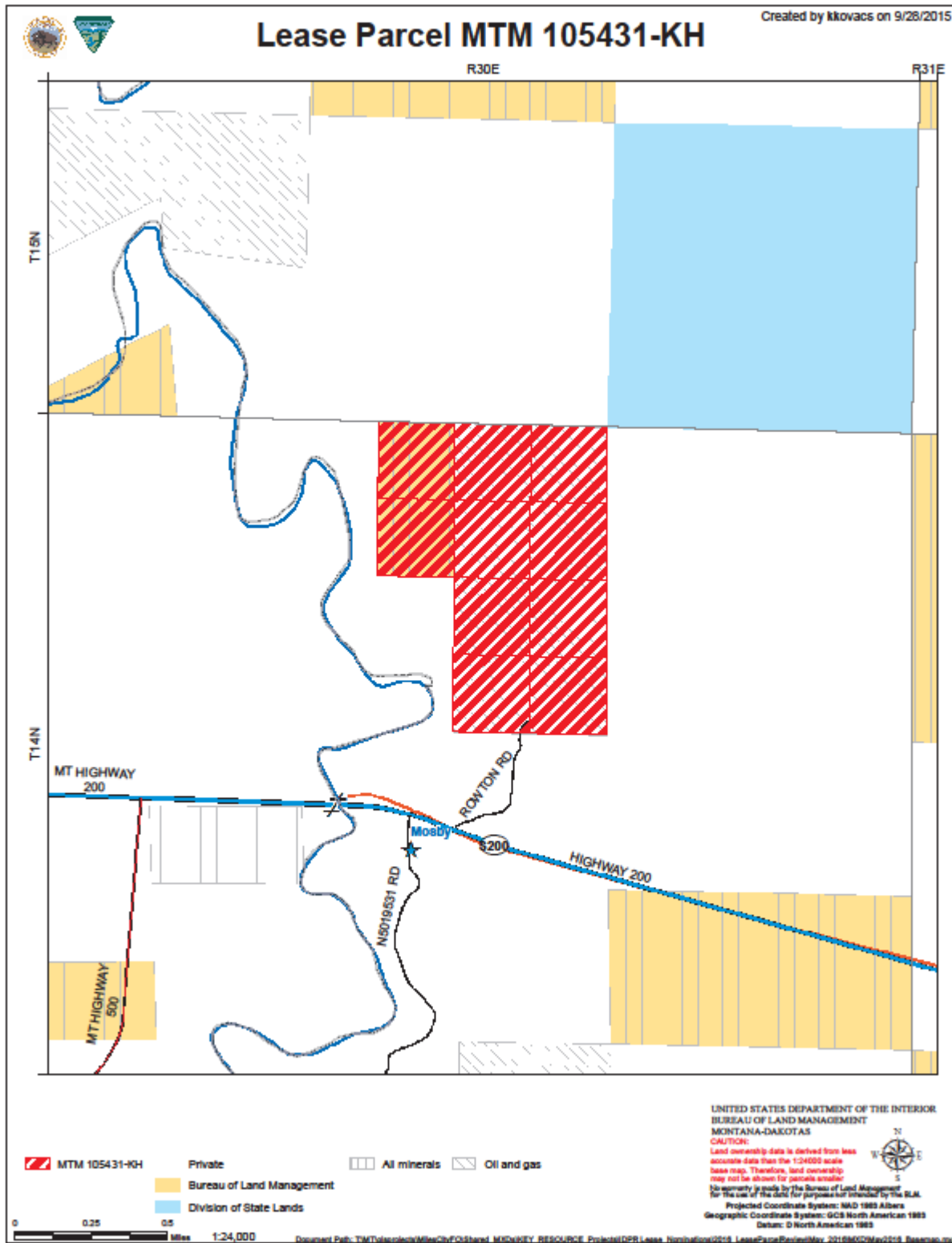
Table C-2. Projected Number of Wells within each County by Alternative

Alternative	Richland	Roosevelt	Sheridan	Garfield
Alt A	0	0	0	0
Alt B	1	1	1	1

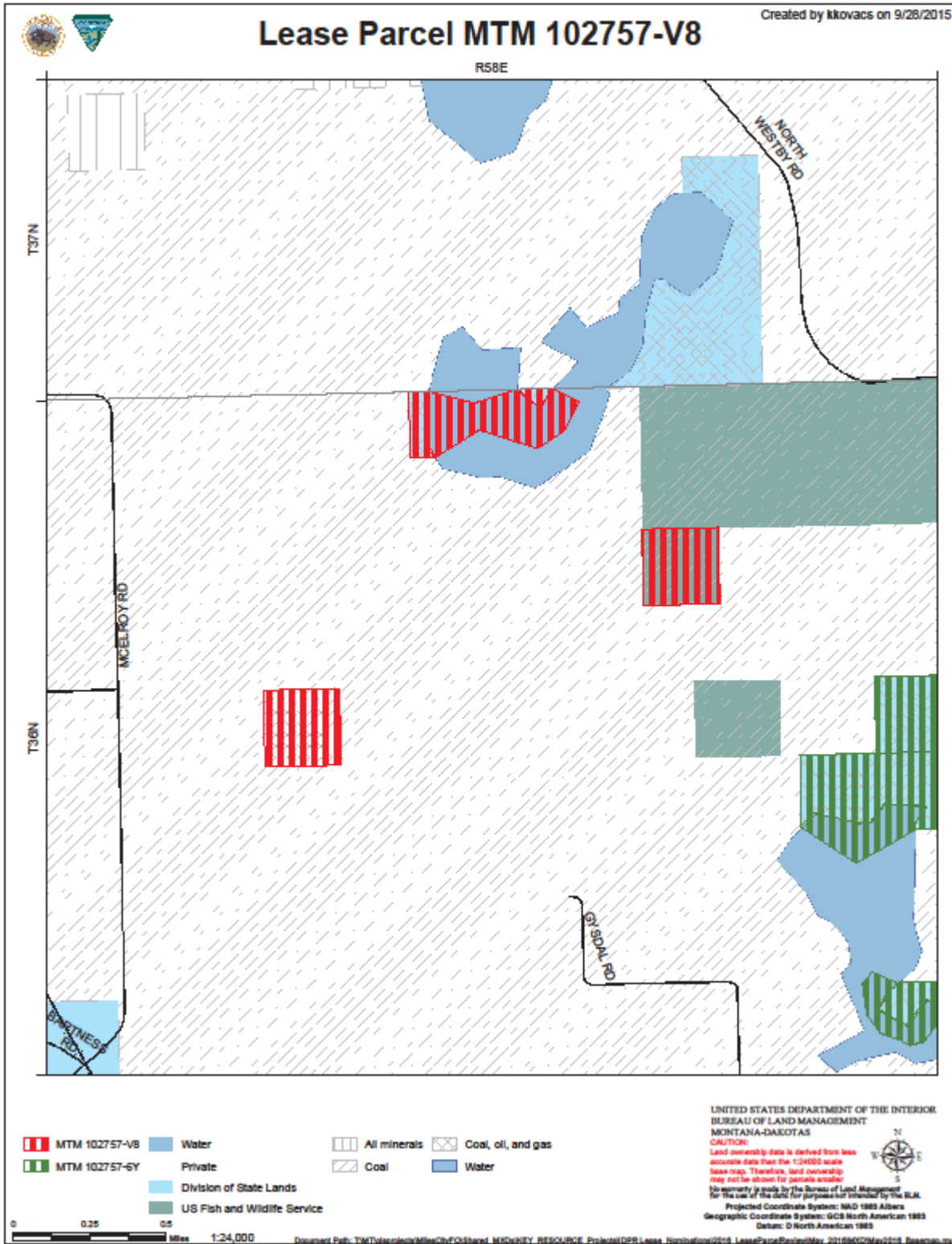
Map 1. All Nominated Lease Parcels



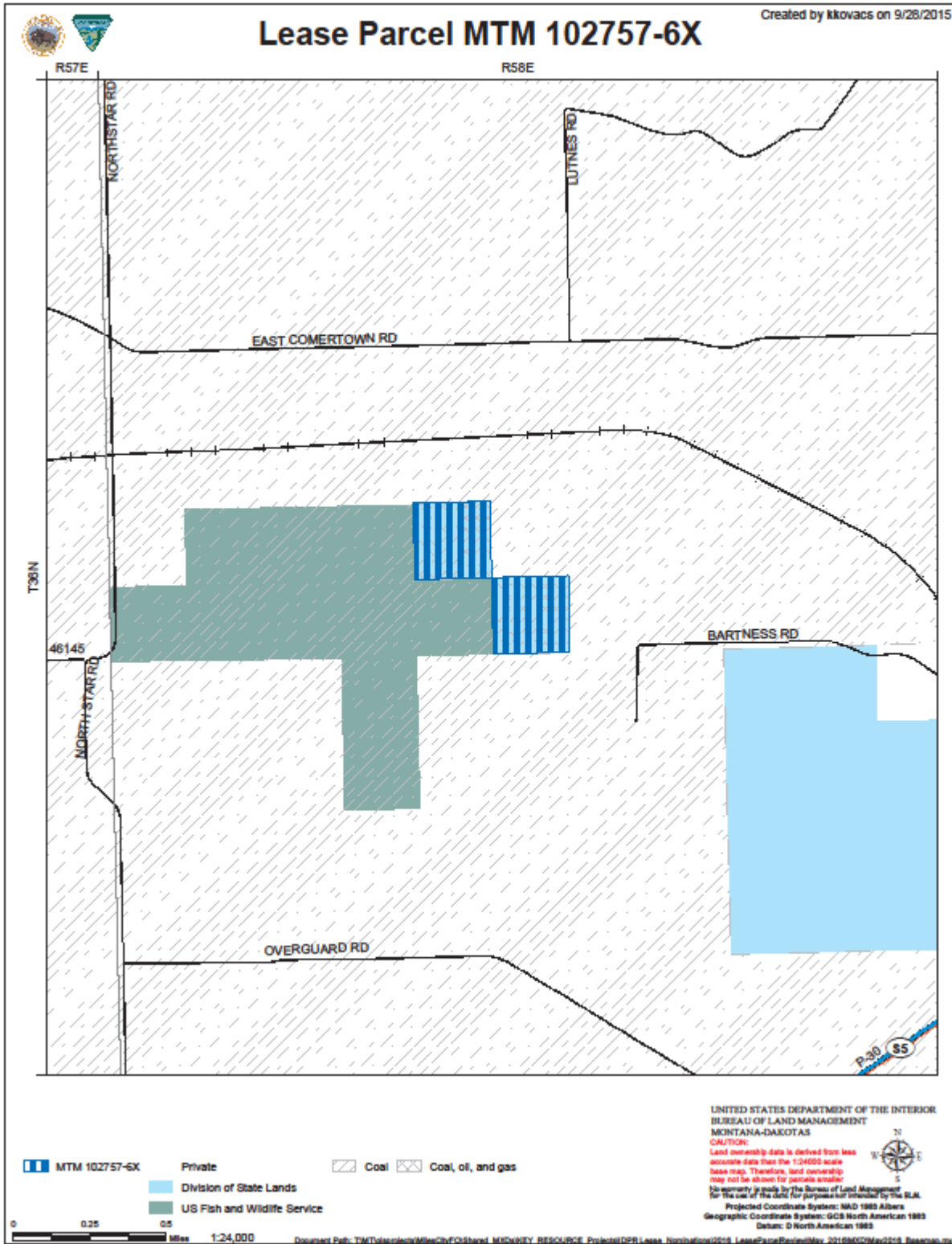
Map 2. Parcel MTM 105431-KH



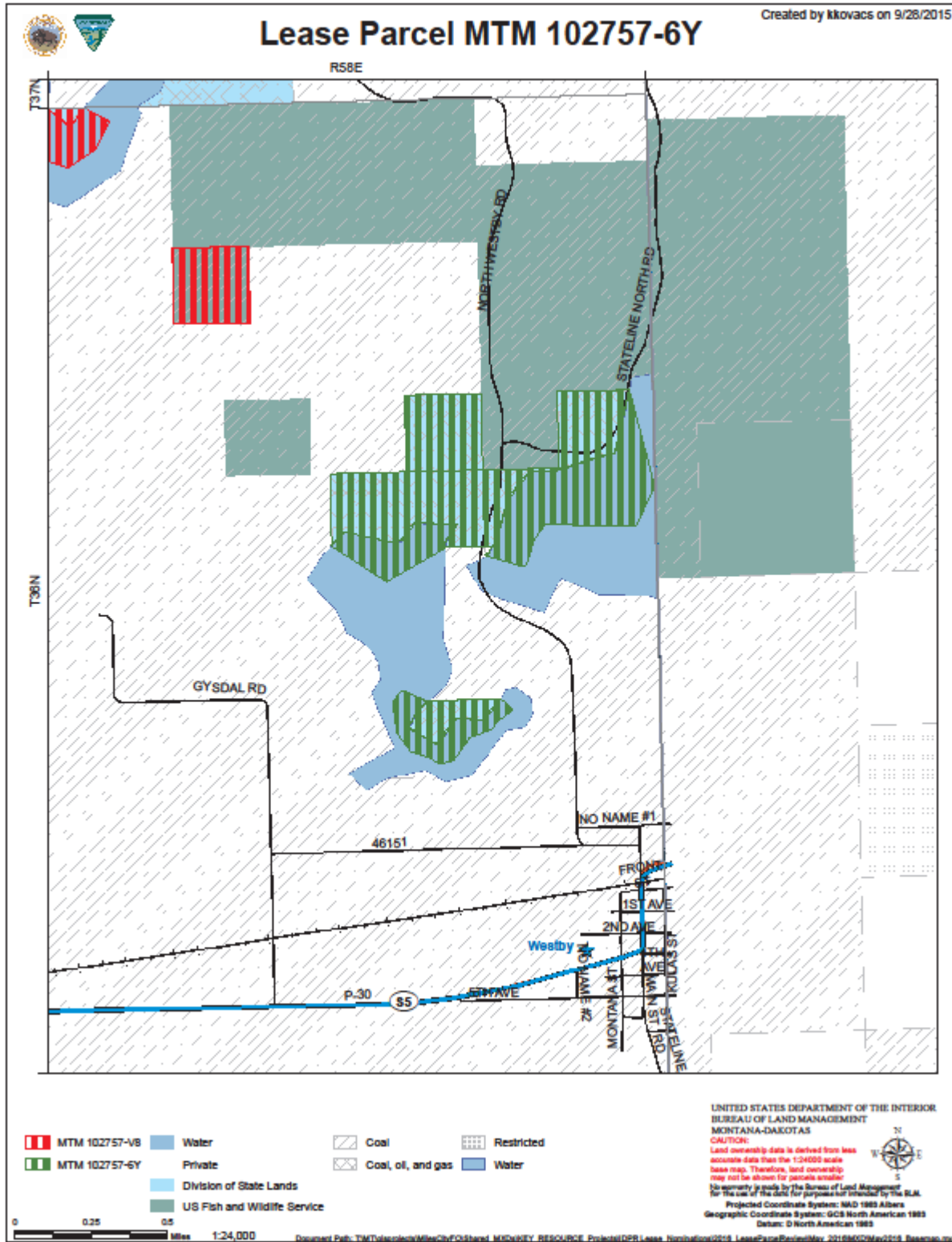
Map 3. Parcel MTM 102757-V8



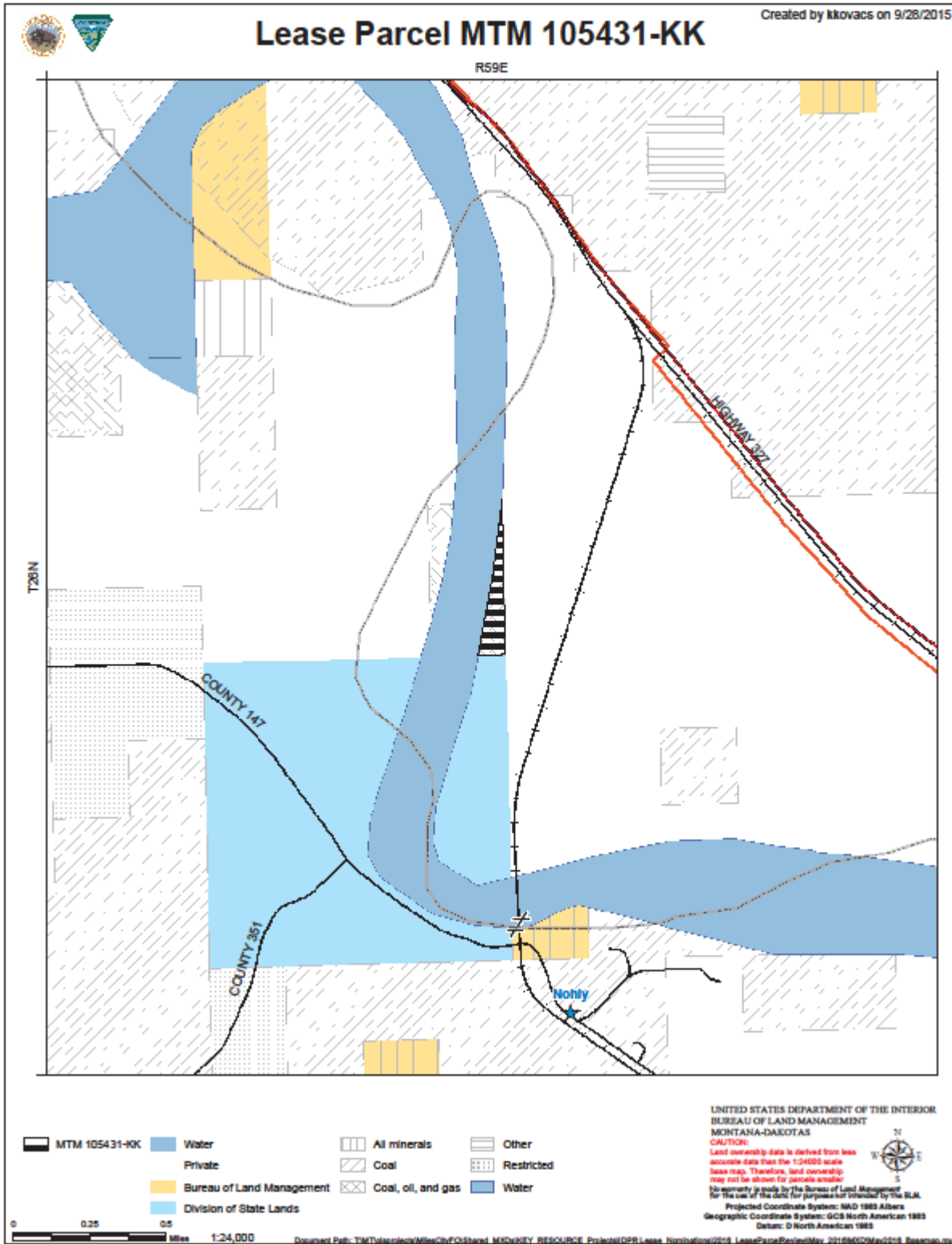
Map 4. Parcel MTM 102757-6X



Map 5. Parcel MTM 102757-6Y



Map 6. Parcel MTM 105431-KK



Map 7. Parcel MTM 105431-H5

