

Appendix E

Fluid Minerals

E.1 Oil and Gas Operations

Geophysical Exploration

Oil and gas can be discovered by either direct or indirect exploration methods, such as the mapping of rock outcrops, seeps, borehole data, and remote sensing data. In many cases, indirect methods such as seismic, gravity, and magnetic surveys are required to delineate subsurface features that may contain oil and gas. Geophysical exploration may provide information that increases the chances of drilling a discovery well and information that may discourage drilling and the associated surface disturbance. More sophisticated geophysical techniques, like three-dimensional (3-D) seismic surveys, may supply enough information to model a reservoir and optimize drilling to prevent excess wells and the associated surface disturbance. Geophysical exploration does not include core drilling for subsurface geologic information or well drilling for oil and gas.

Gravity Surveys

Gravitational prospecting detects micro-variations in gravitational attraction caused by the differences in the density of various types of rock. Gravity data are used to generate anomaly maps from which faults and general structural trends can be interpreted. These surveys are generally not considered definitive because of the many corrections required (e.g., terrain, elevation, latitude) and the poor resolution of complex subsurface structures. The instrument used for gravity surveys is a small portable device called a gravimeter. Generally, measurements are taken at many points along a linear transect, and the gravimeter is transported either by backpack, helicopter, or off-road vehicle. The only surface disturbance associated with gravity prospecting is that caused by a vehicle, if used.

Geomagnetic Surveys

Magnetic prospecting is most commonly used for locating metallic ore bodies, but is used to a limited extent in oil and gas exploration. Magnetic surveys use an instrument called a magnetometer to detect small magnetic anomalies caused by mineral and lithologic variations in the earth's crust. These surveys can detect trends in basement rock and the approximate depth to those basement rocks but, in general, they provide little specific data to aid in petroleum exploration. Many corrections are required to obtain reliable information. The generated maps lack resolution and are considered rudimentary views of subsurface geology. Magnetometers vary greatly in size and complexity and, in general, most magnetic surveys are conducted from the air by suspending a magnetometer under an airplane. Magnetic surveys conducted on the ground are nearly identical to gravity surveys and surface disturbance is minimal to nonexistent.

Seismic Reflection Surveys

Seismic prospecting is the best and most popular indirect method used for locating subsurface structures and stratigraphy that may contain hydrocarbons. Seismic energy (shock waves) is induced into the earth using one of several methods. As these waves travel downward and outward, they encounter various rock strata, each having a different seismic velocity characteristic. As the wave energy encounters the interface between rock layers, where the lower layer is of lower seismic velocity, some of the seismic energy is reflected upward. Sensing devices, commonly called geophones, are placed on the surface to detect these reflections. The geophones are connected to a recording truck that stores the data. The time required for the shock waves to travel from the shot point down to a given reflector and back to the geophone is related to depth, and this value is mapped to give an underground picture of the geologic structure. Many methods are available today that an explorationist can use to induce the initial seismic energy into the earth. All methods require preliminary surveying and laying of geophones. The thumper and vibrator methods pound or vibrate the earth to create a shock wave. Usually large trucks are used, each equipped with vibrator pads (about 4 feet square). The pads are

lowered to the ground, and vibrators on all trucks are triggered electronically from the recording truck. Information is recorded and then the trucks move forward a short distance and the process is repeated. Less than 50 square feet of surface area is required to operate the equipment at each test site. The trucks are equipped with large flotation type tires, which reduce the impact of driving over undisturbed terrain.

The drilling method uses truck-mounted drills that drill small-diameter holes to depths of 100 to 200 feet. Four to 12 holes are drilled per mile of line. Usually, a 50-pound charge of explosives is placed in the hole, covered, and detonated. The detonated explosive sends a shock wave below the earth's surface that is subsequently reflected back to the surface from various subsurface rock layers. In rugged topography, a portable drill is sometimes carried in by helicopter. Charges are placed in the hole as is done in a truck-mounted operation. Another portable technique is to carry the charges in a helicopter and place the charges on wooden sticks, or lath, about 3 feet above the ground. Usually, 10 charges in a line are detonated at once. In remote areas where there is little known subsurface data, a series of short seismic lines may be required to determine the subsurface geology. Subsequently, more extensive seismic lines are arranged to obtain the greatest amount of geologic information.

Seismic information can be obtained in two-dimensional (2-D) or 3-D configurations. To obtain 3-D seismic information, the seismic sensors and energy source are located along lines in a grid pattern. This type of survey differs from the more common 2-D surveys because of the large volume of data and the intensive computerization of the data. The results are expensive to obtain but give a more detailed and informative subsurface picture. The orientation and arrangement of the components in 3-D seismic surveys are less tolerant of adjustments to the physical locations of the lines and geophones, but they are also more compact in the area they cover. Although alignment can be fairly critical, spacing of the lines can often be changed to significantly increase the information collected. The depth of the desired geologic information will dictate the spacing of the grid lines, with smaller spacing detailing shallower formations. The 3-D surveys are very expensive and usually conducted after 2-D surveys or drilling has delineated a geologic prospect that will justify the extra cost. Extensive computer processing of the raw data is required to produce a usable seismic section from which geophysicists can interpret structural relationships to depths of 30,000 feet or more. The effective depth of investigation and resolution are determined, to some degree, by which method is used.

A typical drilling seismic operation can use 10 to 15 men operating five to seven trucks. Under normal conditions, three to five miles of line can be surveyed each day using the explosive method. The vehicles used for a drilling program include several heavy truck-mounted drill rigs, water trucks, a computer recording truck, and several light pickup trucks for the surveyors, shot hole crew, geophone crew permit man, and party chief.

Public roads and existing private roads and vehicle routes are used. Off-highway cross-country travel may be necessary to carry out tasks. Motor graders and/or dozers may be required to provide access to remote areas. Vehicle use for necessary tasks, such as geophysical exploration, including project survey and layout, would be allowed. Concern about unnecessary surface disturbance has caused government and industry to more carefully plan surveys. As a result, earth-moving equipment is now only rarely used in seismic exploration work. Several trips a day are made along a seismograph line; this usually establishes a well-defined two-track vehicle route. The repeated movement back and forth along the line (particularly the light pickup trucks) defines the vehicle route. Spreading vehicles out so that vehicle routes are not straight, and vehicles do not retrace the same route, has in some cases prevented the establishment of new vehicle routes and has reduced impacts. Drilling water, when needed, is usually obtained from the nearest source.

Each of the foregoing exploration methods has inherent strengths and weaknesses, and explorationists must decide which method is the most practical with regard to surface constraints (such as topography) while still producing useful information. Economics and past information also play a role in determining the method used. Reconnaissance-type surveys of gravity and geomagnetic can be run in areas where little information is available, with the attendant lower costs and fewer impacts. More expensive and higher impact seismic surveys are run when more detailed information is required.

Geophysical Management (Permitting Process)

Geophysical operations on and off an oil and gas lease are reviewed by the appropriate federal Surface Management Agency (i.e., Bureau of Land Management (BLM), Bureau of Reclamation, or U.S. Forest Service). Although a federal

oil and gas lease is not required before conducting geophysical operations, exploration on public lands requires review and approval following the procedures in 43 CFR Subparts 3150, 3151, and 3154. During a 13-year period (from 1998 through 2010) the planning area processed 80 seismic exploration notices or permits on public land in the planning area (Table E.1.1). An average of 6 notices or permits can be expected to be processed in any given year.

<i>Year</i>	<i>Number</i>
1998	4
1999	3
2000	2
2001	3
2002	8
2003	28
2004	7
2005	7
2006	7
2007	4
2008	5
2009	1
2010	1
Total	80

The responsibilities of the geophysical operator and the authorized officer are as follows:

- Geophysical Operator** – An operator is required to file with the authorized officer a “Notice of Intent (NOI) to Conduct Oil and Gas Exploration Operations.” The NOI shall include a map (preferably 1:24,000 scale) showing the location of the line, all access routes, and ancillary facilities. The party filing the NOI shall be bonded. A copy of the bond or other evidence of satisfactory bonding shall accompany the NOI. Proper bonding may include a \$5,000 individual, \$25,000 statewide, or \$50,000 nationwide geophysical exploration bond. In lieu of an exploration bond, a statewide or nationwide oil and gas performance bond may be used if it includes a rider for geophysical exploration. For geophysical operation methods involving surface disturbance, a pre-work field conference may be conducted. Special requirements or procedures that are identified by the authorized officer would be included in the Terms and Conditions for Notice of Intent to Conduct Geophysical Exploration. Any changes in the original Notice of Intent must be submitted in writing to the authorized officer and written approval must be secured before activities proceed. Additionally, the operator is required to comply with applicable federal, state, and local laws such as the Federal Land Policy and Management Act of 1976, the National Historic Preservation Act of 1966, and the Endangered Species Act of 1973, as amended. Operators may be required to submit an archaeological evaluation if dirt work is contemplated, or if there is reason to believe that significant cultural resources may be adversely affected. Upon completion of operations, including required rehabilitation, the operator is required to file a “Notice of Completion of Oil and Gas Exploration Operations.” The Notice should include a map that shows the actual line location, access route, and other survey details.
- Authorized Officer** – The authorized officer is required to contact the operator within five working days after the NOI is filed to explain the terms of the notice, including the “Terms and Conditions for Notice of Intent to Conduct Geophysical Exploration,” current laws, and BLM administrative requirements. The written orders or instructions should be given to the operator at the time of the prework conference or field inspection. The authorized officer is also responsible for the examination of resource values to determine appropriate surface protection and reclamation measures. After the operations are completed, as specified by the “Notice of Completion,” the authorized officer shall complete a final inspection and notify the operator within 30 days of receipt of the notice whether the terms and conditions of the NOI have been met or if additional action is required. Consent to release the bond or termination of liability shall not be granted until the terms and

conditions have been met; however, the bonding liability will automatically terminate within 90 days after receipt of the Notice of Completion unless the authorized officer notifies the operator of the need for additional reclamation work.

State Standards

In Montana, the operator is required to apply for a permit with the Montana Department of Natural Resources and Conservation (DNRC). DNRC standards for plugging shot holes, personnel safety, and so on, would be followed as specified in the State permit.

Mitigation

When a geophysical Notice of Intent is received, restrictions may be placed on the application to protect resource values or to mitigate impacts. Many of these requirements may be the same as the oil and gas lease stipulations adopted in the resource management plan (RMP). Other less restrictive measures may be used when impacts to resource values will be less severe. This is due in part to the temporary nature of geophysical exploration and the idea that decisions concerning the level of protection required should be made on a case-by-case basis.

The most critical management practice is compliance monitoring during and after seismic activity. Compliance inspections during the operation ensure that stipulations are being followed. Compliance inspections upon completion of work ensure that the lines are clean and the drill holes are properly plugged.

Oil and Gas Leasing

The Mineral Leasing Act provides that all public lands are open to oil and gas leasing unless a specific order has been issued to close an area. Based on the Federal Onshore Oil and Gas Leasing Reform Act of 1987, all leases must be exposed to competitive lease sales. Lands for which bids are not received at the lease sale will be available for noncompetitive leasing for a period not to exceed two years. All offers filed the day after the sale (referred to as day-after-the-sale filings) are considered simultaneously filed. This means that if more than one offer is filed for a specific parcel the day after the sale, a drawing must be held to determine the priority on multiple offers. Noncompetitive offers filed after that time are on a first-come first-served basis. If no offers are filed for a parcel during the two-year period after the sale, the lands must be nominated again for competitive leasing. Competitive sales will be held at least quarterly and by oral auction. Competitive and noncompetitive leases are issued for a term of 10 years or for as long as oil and/or gas are produced. Rental payments for these leases are \$1.50 per acre for the first five years and \$2.00 per acre thereafter until production is established. Royalty is received at the rate of 12½% of the total saleable production, one-half of which is typically returned to the State of Montana. Minimum royalty is the same amount as the rental.

The leasing of federal oil and gas is also affected by other acts such as the National Environmental Policy Act of 1969 (NEPA), Wilderness Act of 1964, National Historic Preservation Act of 1966, Endangered Species Act of 1973, and Federal Land Policy and Management Act of 1976. The federal regulations that govern oil and gas leasing are contained in 43 CFR Part 3100 with additional requirements and clarification found in Onshore Operating Orders and Washington Office (WO) manuals, handbooks and instruction memorandums.

The Energy Policy and Conservation Act Amendments (EPCA) of 2000, Public Law (PL) 106-469, directed the Secretary of the Interior to conduct an inventory of oil and natural gas resources beneath federal lands. The Act also directed the Department of the Interior to identify the extent and nature of any restrictions to resource development. As a result, the Departments of the Interior, Agriculture, and Energy released a report, "Inventory of Onshore Federal Oil and Natural Gas Resources Restrictions to Their Development" (referred to as the "EPCA Phase III Inventory") in May 2008.

The BLM is integrating the results of the EPCA inventory into its RMPs. The oil and gas resource inventory data are integrated into the RFD scenario that predicts future mineral development within the planning area. The restrictions and impediments to mineral resource development would be considered throughout the RMP with the intent to:

- Clearly present mitigation requirements necessary to reduce impacts of oil and gas operations on other resources.
- Ensure that such mitigation is either statutorily required or scientifically justifiable and is the least restrictive measure necessary to accomplish the desired level of resource protection. The mitigation requirements would be monitored to determine if more or less restrictive measures might accomplish the same goal.

Once a lease is issued, it grants the right to the lessee(s) to explore, extract, remove, and dispose of oil and gas deposits that may be found in the leased lands. Lease rights may be subject to lease stipulations and permit approval requirements. Stipulations and permit requirements describe how lease rights are modified. Lease constraints or requirements may also be applied to Applications for Permit to Drill (APDs) on existing leases provided the constraints or requirements are within the authority reserved by the terms and conditions of the lease. The stipulations and conditions of approval must be in accordance with existing laws, regulations and lease terms.

The BLM planning process is the mechanism used to evaluate and determine where and how federal oil and gas resources will be made available for leasing. In areas where oil and gas development may conflict with other resources, the areas may be closed to leasing. Areas where oil and gas development could coexist with other land uses or resources will be open to leasing. Leases in these areas will be issued with standard lease terms or with added stipulations based upon decisions in the land use document. Added stipulations are a part of the lease only when environmental and planning records demonstrate the necessity for the stipulations.

Consistent with WO IM No. 2010-117, the BLM will form an Interdisciplinary Parcel Review (IDPR) team of resource specialists to review lease sale parcels and ensure compliance with NEPA and other legal and policy requirements. The IDPR team will include subject matter experts for the resources potentially affected by leasing. When appropriate, the IDPR team should consider including staff specialists from other agencies when lands and/or resources administered by those agencies could be impacted by future development on the lease parcels under review. To benefit from the team's skills, experience, and expertise, the parcel reviews should be conducted in a group setting, thereby encouraging group discussion and interaction. Data and recommendations should be reviewed and discussed as a team, allowing parcels to be compared and contrasted in an open discussion. The IDPR team must be familiar with current oil and gas development technologies and impacts, and should periodically visit areas of existing oil and gas development as a team to gain a better understanding of the potential impacts of development on prospective lease sale parcels. The IDPR team will ensure the following steps are performed for the review of parcels in each lease sale, including review of split estate parcels where the mineral estate is federally owned:

- gather and evaluate existing environmental resource information;
- determine whether leasing the parcel is in conformance with the RMP;
- review parcels in light of the most current national and local program-specific guidance to determine availability of parcels for leasing and/or applicable stipulations;
- usually conduct site visits to validate existing data or gather new information in order to make an informed leasing recommendation;
- coordinate and/or consult on the parcel review and NEPA analysis with stakeholders that may be affected by the BLM's leasing decisions; and
- provide for public participation as part of the review of parcels identified for potential leasing through the NEPA compliance documentation process.

Oil and gas lease stipulations may be modified or eliminated using the exception, modification, or waiver criteria outlined in this RMP (Appendix E.4) or through more site-specific environmental analysis. Stipulations that are either too restrictive or too lenient to accomplish the desired resource protection would be changed if monitoring or new scientific data justify the change. Clarifying changes may be made to the wording of oil and gas lease stipulations as long as there is no substantial change to the mitigated protection, as justified by new scientific data or monitoring.

The authorized officer has the authority to relocate, control timing, and impose other mitigation measures under Section 6 of the Standard Lease Form, provided appropriate environmental documentation can justify the modification. This authority is invoked when specific lease stipulations are not attached to the lease or new resources are discovered on a lease. Lease stipulations are conditions of lease issuance that provide protection for other resource values or land uses by establishing authority for delay, site changes, or the denial of operations within the terms of the lease contract. These

stipulations adhere to the Uniform Format for Oil and Gas Lease Stipulations prepared by the Rocky Mountain Regional Coordinating Committee in March 1989. The stipulations are specified for each applicable parcel in the Notice of Competitive Oil and Gas Lease Sale and are intended to inform interested parties (potential lessees, operators) that certain activities will be regulated or prohibited unless the operator and the Surface Management Agency arrive at an acceptable plan for mitigation of anticipated impacts. These stipulations are attached to the whole lease, regardless of whether the protection measure affects only a specific portion of the lease. Lease stipulations are based on the perceived resource requirements and land uses as specified in NEPA documentation. New science, comprehensive documentation of resource requirements, land pattern interference, and ongoing monitoring of the effectiveness of a stipulation may allow granting of an exception, modification, or waiver to a stipulation. An *exception* is a one-time exemption to a lease stipulation and is determined on a case-by-case basis. A *modification* is a change to the provisions of a lease stipulation either temporarily or for the term of the lease. A lease stipulation *waiver* is a permanent exemption to a lease stipulation.

Master Leasing Plan

In some areas, additional planning and analysis may be necessary prior to new oil and gas leasing because of changing circumstances, updated policies, and new information. A Master Leasing Plan (MLP) is a mechanism for completing the additional planning, analysis, and decisionmaking that may be necessary for areas that meet specific criteria (WO Instructional Memorandum (IM) No. 2010-117). The preparation of an MLP is required when all four of the following criteria are met:

1. A substantial portion of the area to be analyzed in the MLP is not currently leased.
2. There is a majority federal mineral interest.
3. The oil and gas industry has expressed a specific interest in leasing, and there is a moderate or high potential for oil and gas confirmed by the discovery of oil and gas in the general area.
4. Additional analysis or information is needed to address likely resource or cumulative impacts if oil and gas development were to occur where there are:
 - multiple-use or natural/cultural resource conflicts;
 - impacts to air quality;
 - impacts on the resources or values of any unit of the national park system, national wildlife refuge, or national forest wilderness area, as determined after consultation or coordination with the National Park Service, U.S. Fish and Wildlife Service, or the U.S. Forest Service; or
 - impacts on other specially designated areas.

Five areas were considered for an MLP (Table E.1.2), including one external proposal. In July 2010, The Wilderness Society submitted a proposal for an MLP for an area called the Bitter Creek/Frenchman Breaks in northern Phillips and Valley counties.

The BLM reviewed all five areas and determined that they did not meet all four of the criteria as required by WO IM No. 2010-117 and the areas do not warrant preparation of a MLP (Table E.1.2). An MLP will not be completed for the HiLine RMP.

<i>Master Leasing Plan Area</i>	<i>Percent Unleased</i>	<i>Federal Mineral Interest</i>	<i>Development Potential</i>	<i>Additional Analysis Needed</i>
Bears Paw South	22%	47%	High	No
Bitter Creek/Frenchman Breaks	76%	56%	Low/Very Low	No
Bowdoin	22%	55%	Moderate	No
Creedman Coulee	21%	8%	High	No
North Blaine	39%	30%	Moderate	No

Bears Paw South

The Bears Paw South area is located in southern Blaine County and is adjacent to the Upper Missouri River Breaks National Monument (Figure E.1 and Map E.1, which is located at the end of the Oil and Gas Operations section). This area was considered by the BLM due to continued natural gas development and potential resource conflicts with wildlife.

The BLM reviewed this proposal and determined that the Bears Paw South did not meet all four of the criteria as required by WO IM No. 2010-117 and the proposal does not warrant preparation of an MLP.

- The area contains 177,127 acres of federal oil and gas mineral estate of which 38,400 acres (22%) are currently unleased. Therefore, this area does not meet the criteria that a substantial portion is not currently leased.
- There is not a majority federal oil and gas mineral estate in the area. The area contains 374,523 acres of which 177,127 acres (47%) are federal oil and gas mineral estate. Of the 177,127 acres of federal minerals, 108,474 acres (61%) are non-BLM managed surface.
- The oil and gas industry has expressed some interest in leasing the unleased lands in the area. The majority of the leased lands are held by production. Most of the area has high development potential (Figure E.1 and Map E.1). There is substantial gas production throughout the area and there will continue to be new wells drilled on existing leases potentially with an increase in density.
- BLM land in the Bears Paw South area is concentrated within the southcentral and northeast sections of the area. Resources include Greater Sage-Grouse winter range and nesting habitat and big game winter range. BLM lands in the southern and eastern portions of the area contain steep slopes with highly erodible soils. Oil and gas lease stipulations within the range of alternatives considered in the RMP address this area including those management actions for Greater Sage-Grouse (restoration area), winter range, and soils. This planning process involves a great deal of information and analysis to illustrate the environmental consequences of oil and gas development. There is no identified need for additional analysis or information to address likely resource or cumulative impacts.

Bitter Creek/Frenchman Breaks

In July 2010, The Wilderness Society submitted a proposal for a Master Leasing Plan (MLP) for an area called the Bitter Creek/Frenchman Breaks in northern Phillips and Valley counties (Figure E.2).

The BLM reviewed this proposal and determined that the Bitter Creek/Frenchman Breaks did not meet all four of the criteria as required by WO IM No. 2010-117 and the proposal does not warrant preparation of an MLP.

- The area contains 582,157 acres of federal oil and gas mineral estate of which 441,748 acres (76%) are currently unleased. Therefore, this area does not meet the criteria that a substantial portion is not currently leased. However, 60,700 acres are within the Bitter Creek Wilderness Study Area and are unavailable for leasing.
- There is a majority federal oil and gas mineral estate in the area. The area contains 1,045,915 acres of which 582,157 acres (56%) are federal oil and gas mineral estate. Of the 582,157 acres of federal minerals, 112,545 acres (19%) are non-BLM managed surface.
- The oil and gas industry has expressed some interest in the past in leasing in the area. Some leasing has been deferred in the area pending completion of the HiLine RMP. None of the area is considered to have high development potential (Figure E.2). About 2% of the area is considered to have moderate development potential. The remainder of the area is considered to have low to very low development potential. The southwestern portion of the area is within the Bowdoin Dome area, which was established in 1954. In the last 10 years, there have been 47 wells drilled within the area of which 39 were drilled within the Bowdoin gas field. All 39 were completed as producing gas wells. The other 8 wells were drilled outside of the Bowdoin gas field, and all 8 were dry holes. Therefore, there is not a discovery outside of the Bowdoin Dome area.

- Oil and gas lease stipulations within the range of alternatives considered in the RMP address this area including those management actions for the Frenchman Breaks ACEC, the grassland bird priority area, and crucial winter range. This planning process involves a great deal of information and analysis to illustrate the environmental consequences of oil and gas development. There is no identified need for additional analysis or information to address likely resource or cumulative impacts.

Bowdoin

The Bowdoin area is located in northern Phillips County and west-central Valley County (Figure E.3 and Map E.1, which is located at the end of the Oil and Gas Operations section). This area was considered by the BLM since it surrounds and encompasses the Bowdoin Natural Gas Project Area.

The BLM reviewed this proposal and determined that Bowdoin did not meet all four of the criteria as required by WO IM No. 2010-117 and the proposal does not warrant preparation of a MLP.

- The area contains 449,563 acres of federal oil and gas mineral estate of which 96,657 acres (22%) are currently unleased. Therefore, this area does not meet the criteria that a substantial portion is not currently leased. Most of the unleased federal mineral estate is located along the southern portion of the area. Much of this unleased area was previously leased, but the leases expired due to lack of production.
- There is a majority federal oil and gas mineral estate in the area. The area contains 814,065 acres of which 449,563 acres (55%) are federal oil and gas mineral estate. Of the 449,563 acres of federal minerals, 224,006 acres (50%) are non-BLM managed surface.
- The oil and gas industry has expressed an interest in leasing in the area in the past as indicated by 352,906 acres that are currently leased. Most of the area has moderate development potential (Figure E.3 and Map E.1). The area encompasses the Bowdoin Natural Gas Project Area, which is one of the top producing gas fields in Montana. The Bowdoin gas field is an old established field. Recent interest in the area has consisted of step-out wells, infill wells, and replacement wells. Because of this recent interest, a field development environmental assessment was completed in December of 2008 (BLM 2008a).
- The Bowdoin MLP area is within an established, producing natural gas field, and the majority of federal mineral interest has been leased. Resources and potential resource conflicts have been fully analyzed in the Bowdoin Natural Gas Development Project EA (BLM 2008a). Oil and gas lease stipulations and best management practices (BMPs) within the range of alternatives considered in the RMP address this area including those management actions for the Bowdoin Natural Gas Project Area. This planning process involves a great deal of information and analysis to illustrate the environmental consequences of oil and gas development. There is no identified need for additional analysis or information to address likely resource or cumulative impacts.

Creedman Coulee

The Creedman Coulee area is located in northwestern Blaine County (Figure E.4). This area was considered by the BLM since it was identified as having high development potential for oil and gas.

The BLM reviewed this proposal and determined that the Bears Paw South did not meet all four of the criteria as required by WO IM No. 2010-117 and the proposal does not warrant preparation of an MLP.

- The area contains 5,446 acres of federal oil and gas mineral estate of which 1,163 acres (21%) are currently unleased. Therefore, this area does not meet the criteria that a substantial portion is not currently leased.
- There is not a majority federal oil and gas mineral estate in the area. The area contains 68,040 acres of which 5,466 acres (8%) are federal oil and gas mineral estate. Of the 5,446 acres of federal minerals, 5,325 acres (98%) are non-BLM managed surface.

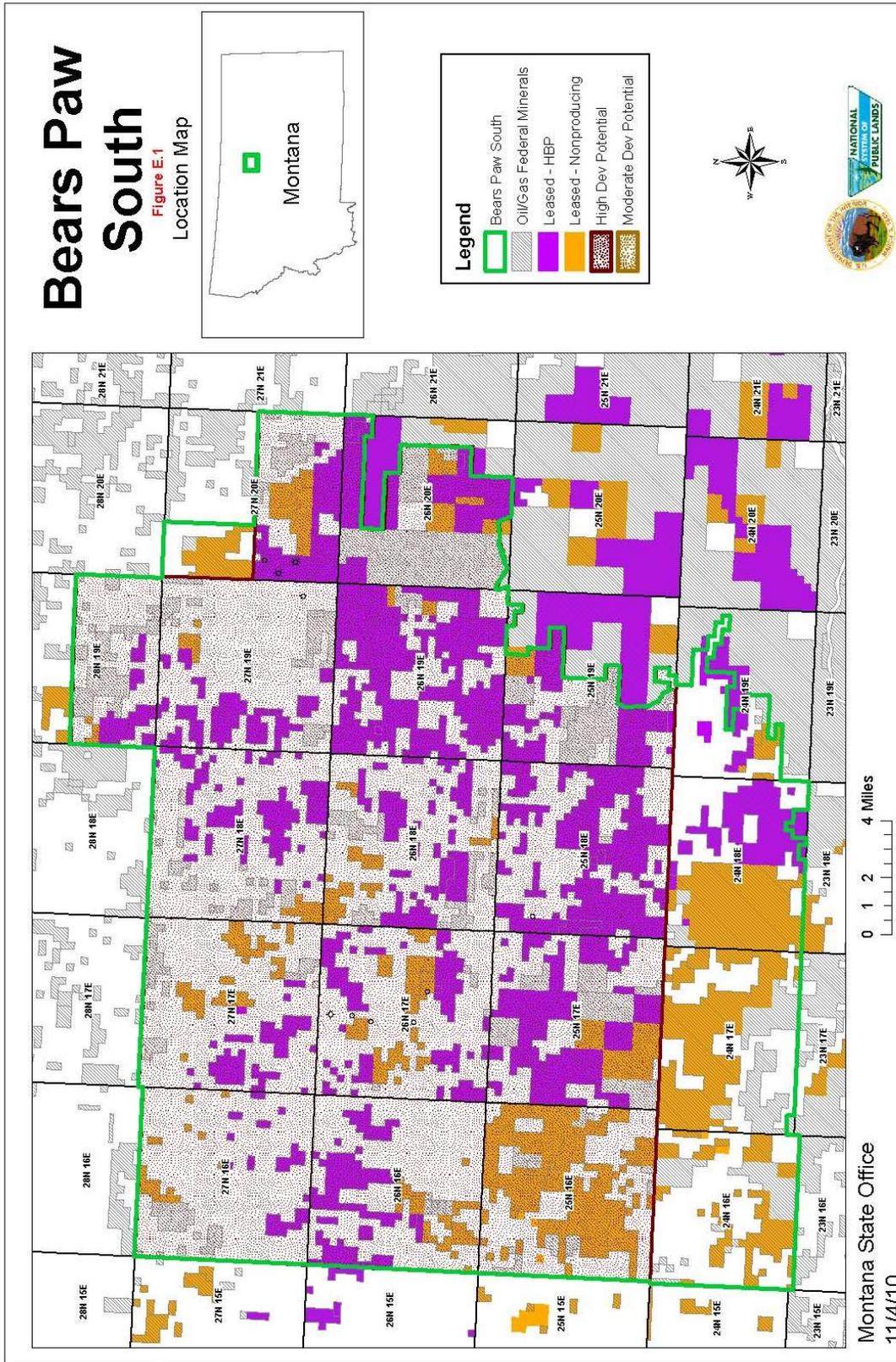
- The oil and gas industry has expressed very little interest in leasing the unleased lands in the area. The majority of the leased lands are held by production. All of the area is identified as having high development potential. (Figure E.4). There is substantial gas production throughout the area and there will continue to be some new wells drilled on existing leases.
- The Creedman Coulee MLP area is 98% fee surface. A small wildlife refuge is located within the boundary of the MLP area. The Creedman Coulee National Wildlife Refuge is comprised of 80 acres of federal surface and 2,648 acres of fee surface under a conservation easement. Resource conflicts due to increased oil and gas development would be minimal due to NSO stipulations, and additional analysis or information is not required.

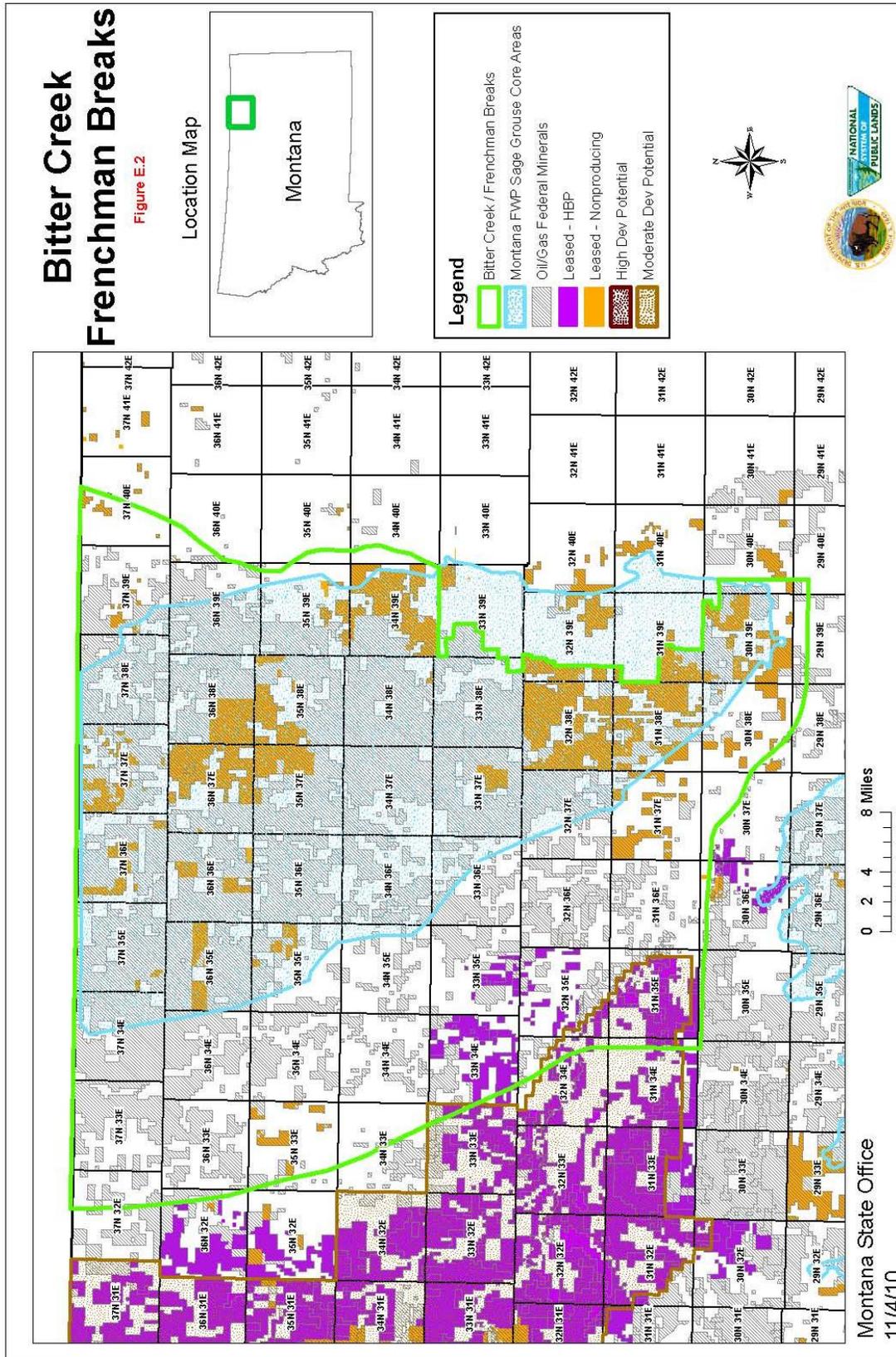
North Blaine

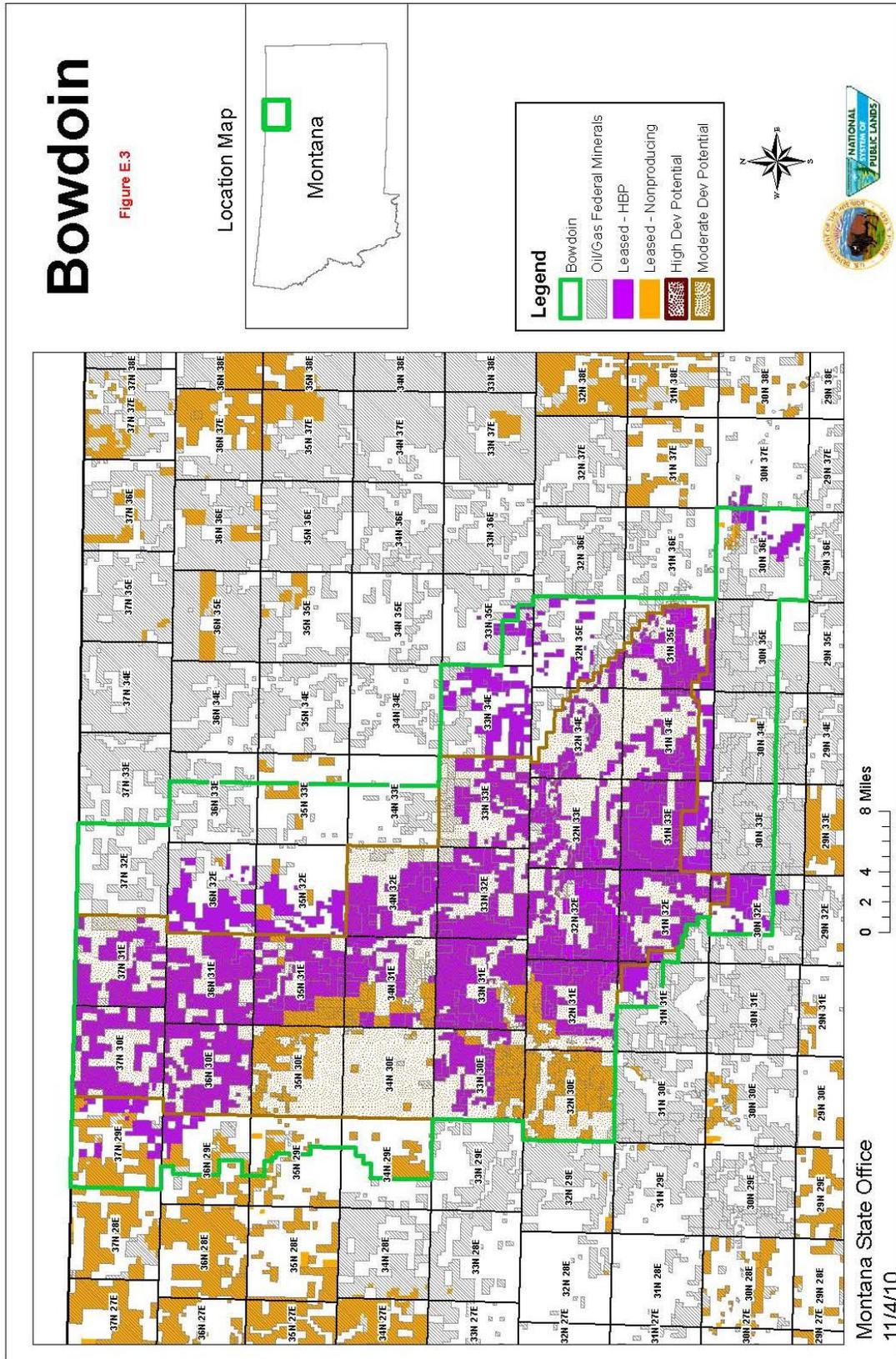
The North Blaine area is located in northern Blaine County (Figure E.5 and Map E.1, which is located at the end of the Oil and Gas Operations section). This area was considered by the BLM because there have been proposals in the past for an expansion of the existing natural gas production.

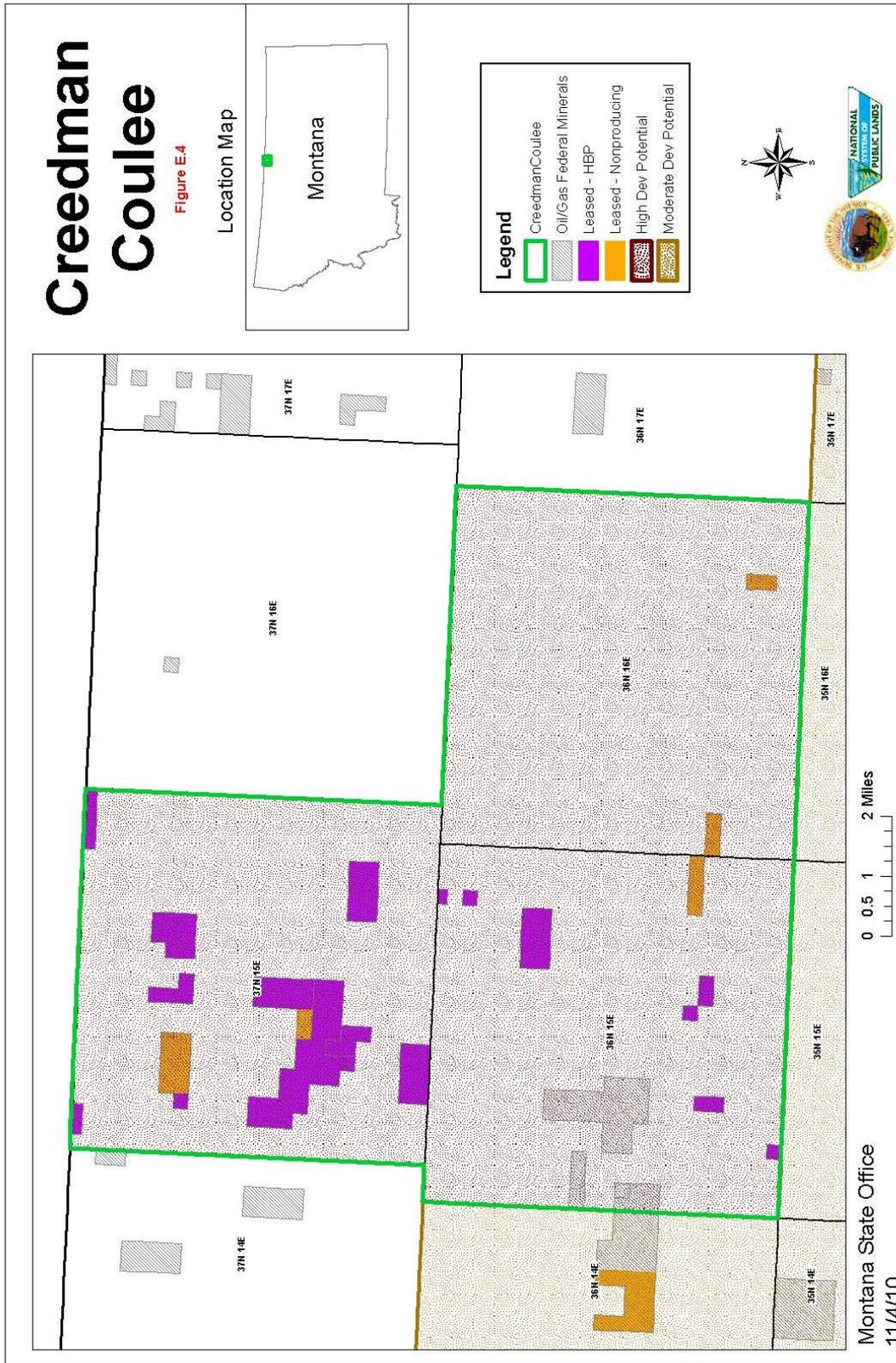
The BLM reviewed this proposal and determined that North Blaine did not meet all four of the criteria as required by WO IM No. 2010-117 and the proposal does not warrant preparation of an MLP.

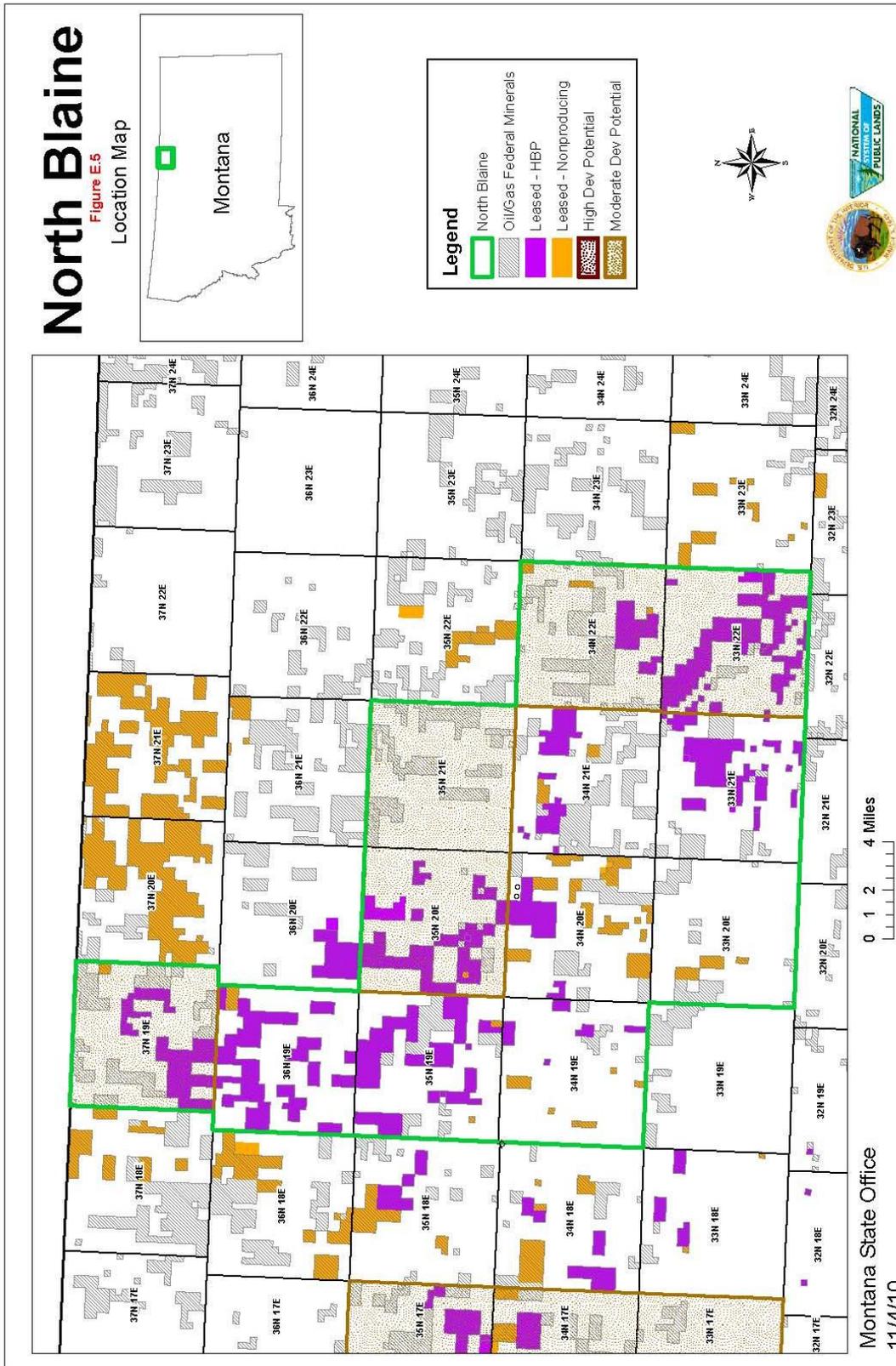
- The area contains 82,822 acres of federal oil and gas mineral estate of which 32,169 acres (39%) are currently unleased. Therefore, this area does not meet the criteria that a substantial portion is not currently leased.
- There is not a majority federal oil and gas mineral estate in the area. The area contains 276,364 acres of which 82,822 acres (30%) are federal oil and gas mineral estate. Of the 82,822 acres of federal minerals, 8,027 acres (10%) are non-BLM managed surface.
- The oil and gas industry has expressed very little interest in leasing the unleased lands in the area. The majority of the leased lands are held by production. A portion of the area has moderate development potential (Figure E.5 and Map E.1). There is substantial gas production throughout the area and there will continue to be some new wells drilled on existing leases. There is some oil production within the area as well.
- Resources within the North Blaine MLP area include active sage-grouse leks, sage-grouse winter range and nesting habitat, pronghorn winter range, mule deer winter range, and numerous raptor nests. The North Blaine MLP area does contain a developed natural gas field. Oil and gas lease stipulations and best management practices (BMPs) within the range of alternatives considered in the RMP address this area including those management actions for Greater Sage-Grouse, big game winter range, and raptors. This planning process involves a great deal of information and analysis to illustrate the environmental consequences of oil and gas development. There is no identified need for additional analysis or information to address likely resource or cumulative impacts.











Lease Stipulations

Certain resources in the planning area require protection from impacts associated with oil and gas activities. The specific resource and the method of protection are contained in lease stipulations. Lease stipulations are usually No Surface Occupancy, Controlled Surface Use, or Timing Limitation (Seasonal Restriction). A notice may also be included with a lease to provide guidance regarding resources or land uses. While the actual wording of the stipulations may be adjusted at the time of leasing, the protection standards described will be maintained.

No Surface Occupancy

Use or occupancy of the surface land for fluid mineral extraction or development is prohibited in order to protect identified resource values. The no surface occupancy stipulation includes stipulations which may have been worded as “No Surface Use and Occupancy,” “No Surface Disturbance,” “Conditional No Surface Occupancy” and “Surface Disturbance or Occupancy Restriction (by location).”

Controlled Surface Use

Use or occupancy is allowed (unless restricted by another stipulation), but identified resource values require special operational constraints that may modify the lease rights. A Controlled Surface Use stipulation is used for operating guidance, not as a substitute for the No Surface Occupancy or Timing stipulations.

Timing Limitation (Seasonal Restriction)

Surface use is prohibited during specified times to protect identified resource values. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

Plan Maintenance

New information may lead to changes in existing resource inventories. New use areas and resource locations may be identified or use areas and resource locations that are no longer valid may be identified. These resources usually cover small areas requiring the same protection or mitigation as identified in this plan. Identification of new areas or removal of old areas that no longer have those resource values will result in the use of the same lease stipulation identified in this plan. These areas will be added to the existing data inventory without a plan amendment. In cases where the changes constitute a change in resource allocation outside the scope of this plan, a plan amendment would be required.

Drilling Permit Process

A federal lessee or the operator of record is governed by procedures set forth in Onshore Oil and Gas Order No. 1 (updated in May 2007), “Approval of Operations on Onshore Federal and Indian Oil and Gas Leases,” issued under 43 CFR 3164. These procedures cover the full scope of operations on federal minerals, from initial permitting of the well, to subsequent operations, to final abandonment. Before beginning construction or drilling a well, the lessee must have an approved APD, including requirements for surface and subsurface operations. Many other lease operations, including surface and subsurface, must be approved by a Sundry Notice. When a well is no longer useful, the well is plugged and the surface reclaimed. The well plugging and reclamation operations are typically approved via a Sundry Notice; however, verbal approval for plugging may be given for a well that was drilled but not completed for production (dry hole). The period of bond liability is terminated after all wells covered by the bond are properly plugged and the surface reclaimed.

All APDs processed in the planning area are filed with the Great Falls Oil and Gas Field Office. A copy of the APD is posted in the Great Falls Oil and Gas Field Office and in the Havre Field Office, Glasgow Field Office, or Malta Field Office depending upon the office having jurisdiction over the lands described in the application. If applicable, a copy of the APD is also posted with the Surface Management Agency. The APD must be posted for a minimum of 30 days to

allow for review by the public. After 30 days, the APD can be approved in accordance with (a) lease stipulations, (b) Onshore Oil and Gas Orders, and (c) Onshore Oil and Gas regulations (43 CFR Part 3160) if it is administratively and technically complete.

Evidence of bond coverage for lease operations must be submitted with the application. Bond amount must not be less than a \$10,000 lease bond, a \$25,000 statewide bond, or a \$150,000 nationwide bond.

Occasionally, the BLM may require that a lessee drill a well on a lease if it is determined that federally owned minerals are being drained by an adjacent well on private or state-owned lands. This may cause conflicts in areas of sensitive surface resources. If the economics are not sufficient to drill a directional well from a location on the federal lease, drainage protection may require compromising the sensitive surface resource after a thorough environmental review.

Permitting

In the initial permitting process, the operator selects the location of a proposed drill site based upon Montana Board of Oil and Gas (MBOG) spacing requirements, subsurface geology, topography, and avoidance of known sensitive surface resource values. At that point, the operator is able to survey and stake the well, access road and pipeline without notice to the BLM. Cultural inventories can also be obtained without notice.

After the operator makes the decision to drill a well, it must decide whether to submit a Notice of Staking (NOS) or APD. The NOS and APD are described as follows:

- **Notice of Staking (NOS)** – The NOS is an abbreviated notice that consists of an NOS form, staked location map, and sketched site plan. This notice is posted for a 30-day public review and begins the processing timeframe for approval of the APD. The NOS triggers the onsite inspection of the well, which determines whether any conflicts with critical resource values are evident and provides the preliminary data to assess what additional items are necessary to complete the APD.
- **Application for Permit to Drill (APD)** – The operator can submit a completed APD in lieu of an NOS but, in either case, no surface-disturbing activity can be conducted in conjunction with the drilling operations until the APD is approved by the authorized officer.

If the APD option is used, an APD is submitted to the Great Falls Oil and Gas Field Office and a field inspection is held with the operator and any other interested party. The purpose of the onsite field inspection is to evaluate the operator's plan, assess the situation for possible impacts (surface and subsurface), and formulate resource protection stipulations. To lessen environmental impacts, a site can be moved, reoriented, or resized, within certain limits, at the onsite inspection. The proposed access road or pipeline can also be rerouted. If necessary, site-specific mitigations are added to the APD as Conditions of Approval (COAs) for protection of surface and/or subsurface resource values in the vicinity of the proposed activity.

The authorized officer is responsible for preparing environmental documentation necessary to satisfy the NEPA requirements and provide any mitigation measures needed to protect the affected surface resource values. Consideration is also given to the protection of subsurface water resources. When processing an APD, the BLM geologist is required to identify the maximum depth of usable water as defined in Onshore Oil and Gas Order No. 2. Usable water is defined as that water containing 10,000 parts per million or less of total dissolved solids. Water of this quality is to be protected, usually by surface casing and cement. Determining the depth to fresh water requires specific water quality data in the proposed well vicinity or geophysical log determination of water quality, depending on existing well proximity and log availability. If water quality data or logs from nearby wells are not available, the area within a 2-mile radius of the proposed well is checked for water wells. If wells exist, surface casing is required to be set below the deepest fresh water zone found in these wells or to be placed below a depth reasonably estimated for future water wells.

For operations proposed on privately-owned surface, if the operator after a good-faith effort is unable to reach an agreement with the private surface owner, the operator must post a bond to cover loss of crops and damages to tangible improvements prior to the approval of the APD.

The Great Falls Oil and Gas Field Office will act on the application in one of two ways:

- approve the application (a) as submitted or (b) with appropriate modifications or COAs; or
- return the application and advise the lessee or operator of the reasons for denial or why final action has been delayed and the date such final action is expected.

When final approval is given by the BLM, the operator can commence construction and drilling operations. Approval of an APD is valid for 2 years. If drilling does not begin within 2 years, the stipulations can be revised prior to extending the APD for another year.

For drilling operations proposed on lands with state or private mineral ownership, the lessee must meet the requirements of the mineral owner and the state regulatory agency. The BLM does not have jurisdiction over non-federal minerals; however, the BLM has surface management responsibility in situations of BLM surface located over non-federal mineral ownership.

Conditions of Approval

Conditions of approval are mitigation measures that implement restrictions in light of site-specific conditions. General guidance for COAs is found in the BLM and U.S. Forest Service brochure entitled “Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development” (BLM 2007e) and BLM Manual 9113 entitled “Roads.”

The following mitigation measures may be applied to approved permits as COAs. The listing is not all-inclusive, but presents some standard COAs that are currently being used in the planning area. The wording of the COAs may be modified or additional COAs may be developed to address specific conditions.

1. Informational Notice:

- a. Approval of this APD does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
- b. The lessee shall comply with applicable laws and regulation; lease terms, Onshore Oil and Gas Orders; Notices to Lessee; and other orders and instructions of the authorized officer.
- c. A complete copy of the approved APD must be on the well site and available for reference during the construction and drilling phase.
- d. Any deviation from the terms of this APD requires prior approval.
- e. This drilling permit is valid for either 2 years from the approval date or until lease expiration, whichever occurs first.
- f. Each drilling, producing or abandoned well shall be identified with the Operator’s name, the lease serial number, the well number, and the surveyed description of the well (either footages or the quarter section, the section, township and range). All markings must be legible and in a conspicuous place.
- g. Pursuant to Onshore Oil and Gas Order No. 1, Section IV, General Operating Requirements, Operator Responsibilities, paragraph (e), Completion Reports, the operator is encouraged to submit all well logs in an electronic format, such as “.LAS” format, in lieu of providing the BLM with two (2) paper copies of all well logs, as currently required.
- h. The operator must provide the Surface Use Plan of Operations to the private surface owner of the well site location.

2. Notification Requirements:

The Bureau of Land Management, Great Falls Oil and Gas Field Office, 1101 15th Street North, Great Falls, Montana, shall be notified in advance of actual work so that a representative may have an opportunity to witness the operation. BLM office hours are 8:00 a.m. to 4:30 p.m. Monday through Friday. The BLM's office telephone number is (406) 791-7700. Following are the notification requirements:

- a. Notify this office at least 48 hours before beginning dirt work.
- b. Notify this office verbally at least 6 hours before the well is spudded.
- c. Notify this office verbally at least 6 hours prior to running/cementing casing.
- d. Notify this office verbally at least 6 hours prior to conducting blowout preventer (BOP) tests.
- e. Notify this office at least 6 hours prior to plugging for verbal plugging orders.

3. Downhole Stipulations:

- a. Surface casing will have centralizers on each of the bottom three joints and will be cemented back to surface.
- b. The BOP system will be consistent with Onshore Oil and Gas Order No. 2.
- c. Fresh water will be required for cementing. If the fresh water source is from a reservoir, a water quality analysis will need to be performed and submitted to the BLM to ensure that the quality of the water will not degrade the cement.
- d. The operator will have sufficient weighting materials and lost circulation materials on location in the event of a pressure kick or lost circulation.

4. Plugging Requirements:

- a. Prior approval for abandonment must be obtained. Initial approval for abandonment during drilling operations may be verbal, but must be followed by written notification on Sundry Notice Form 3160-5, in triplicate.
- b. Upon completion of the approved plugging, the Operator will cut the well off four (4) feet below reclaimed ground level and a 1/4" x 12" x 12" plate (with a 1/8" weep hole) shall be welded onto a fitting to be screwed into a collar either welded or screwed to the production casing. **The standard above-ground dry hole marker in accordance with 43 CFR 3162.6(d) has been waived by the Great Falls Oil and Gas Field Office.** Pits must be fenced until dry or pumped and then filled in and recontoured unless otherwise approved by the authorized officer.
- c. The following minimum information shall be permanently placed on the plate: "Fed" or "Ind" as applicable; "Lease Number, Operator, Well Number, and Location by quarter/quarter, Section, Township, and Range."

5. Reports and Notifications:

- a. All submitted information not marked "CONFIDENTIAL INFORMATION" will be available for public inspection upon request. The exception is Indian lease information, which is always considered confidential.
- b. Production Startup Notification is required not later than the fifth business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site, or resumes production in the case of a well which has been off production for more than 90 days. The operator will notify the authorized officer by letter, Sundry Notice Form 3160-5, or orally to be followed by a letter or Sundry Notice of the date on which such production has begun or resumed.

6. Hazardous Materials:

- a. Operators and their contractors are to ensure all production, use, storage, transport, and disposal of hazardous materials resulting from the proposed project is in accordance with all applicable federal, state and local laws,

regulations and guidelines, existing or hereafter enacted or promulgated that affect the management of hazardous material, as defined in this paragraph. Hazardous material means any substance, pollutant, or contaminant listed as a hazardous substance under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended, 42 USC 9601 et seq., and its regulations (found at 40 CFR 302). The definition of hazardous substances under CERCLA includes “hazardous waste” defined in the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, 42 USC 6901 et seq., and its regulations. The term also includes any extremely hazardous substances defined by 40 CFR 355, and any nuclear or byproduct material defined by the Atomic Energy Act of 1954, as amended, 42 USC 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof not otherwise listed or designated as a hazardous substance under CERCLA section 101 (14), 42 USC 9601 (14), or natural gas.

- b. Only drilling muds, drilling fluids, cuttings, native soils, cementing materials and/or approved pit solidifying materials will be placed in the reserve or working pits.
- c. Nonexempt wastes will not be mixed with exempt wastes.
- d. No hazardous materials will be used in the drilling and construction of well sites and access roads. Commercial preparations, which may contain hazardous materials, may be used in production operations and will be transported within the project area. These materials will be handled in an appropriate manner to minimize potential for leaks or spills to the environment. Other waste disposal methods and locations should be described on the APD or Sundry Notice and approved by the BLM prior to disposal.

7. Environmental Obligations and Disposal of Produced Water:

- a. The operator is required to take all necessary steps to prevent any death of a migratory bird in pits or open vessels associated with the drilling, testing, completion, or production of this well. The death of any migratory bird found in such a pit or open vessel is a violation of the Migratory Bird Treaty Act and is considered a criminal act. Any deaths of migratory birds attributable to pits or open vessels associated with drilling, testing, completion, or production operations must be reported to this office and the United States Fish and Wildlife Service within 24 hours.
- b. The BLM may require that the pit be designed or the open vessel be covered to deter the entry of birds in any facility associated with drilling, testing, completion, or production of this well. Fencing, screening, and netting of pits may be required as a means to deter bird entry. These conditions would most likely be imposed to prevent the entry of migratory birds if oil is left in pits or open vessels after the cessation of drilling or completion operations, if water disposal pits consistently receive oil, or if pits or open vessels are used repeatedly for emergency situations which result in the accumulation of oil.
- c. Voluntary pit fencing, screening, and netting or sealing vessels is encouraged, thus avoiding potential instances that may result in the death of a migratory bird.
- d. With BLM approval, water produced from newly completed wells may be temporarily disposed of in unlined pits for up to 90 days. During this initial period, application for the permanent disposal method must be made in accordance with Onshore Order No. 7.

8. Surface Conditions of Approval:

- a. Access road maintenance will need prior BLM approval.
- b. The operator will be responsible for weed control on the access road, well location, and pipeline for the life of the well plus three (3) years. The operator will be responsible for control of noxious weeds occurring as a result of operations.
- c. The operator will clean the undercarriage of all rigs prior to entering onto the leasehold to reduce the chances for noxious weed infestations.

- d. The operator will identify soil type(s) and depth of topsoil/surface layer (usually 4-6 inches) for removal and clearly separate and stockpile topsoil from excess spoil material. Topsoil will be stored and protected from erosion for use in reclamation on all areas of surface disturbance. Topsoil that is not respread within 30 days will be covered with a tackifier, mulch, or other approved cover.
- e. If safety, disrepair, erosion and/or excessive rutting problems are discovered along the access roads, the holder will be responsible to repair, improve and/or maintain the roads to assure safety and stability, and to limit soil erosion/rutting.
- f. Construction, drilling, completion, interim or final reclamation activities will not be performed during periods when the soil is too wet to adequately support equipment/vehicles. If equipment/vehicles create ruts in excess of 3 inches deep, operations must cease as the soil will be deemed too wet to adequately support equipment/vehicles.
- g. Site reclamation will initiate with the ripping of any compacted areas and grading to blend with the adjacent site characteristics and topography. In no instances will grading material and/or subsoil be placed over topsoil. The order of soil replacement will be the reverse of removal (e.g., first off, last on).
- h. To prevent improper settling of soil material, interim or final reclamation activities will not be conducted using frozen or saturated soil material.
- i. The holder will prepare a seedbed by: (a) scarifying the disturbed area; and (b) disking the topsoil as directed by the authorized officer.
- j. Rehabilitation of upland sites following disturbance would use the plant species listed below for seeding. The species used for rehabilitation would vary depending on the adjacent habitat conditions, site potential, soils and precipitation. Species not in the following list could be added if site conditions warrant, species availability changes, or if large acreages are involved.
- k. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of the first growing season following seeding. Broadcast seeding will no longer be allowed. All seed must be drill seeded for optimum success in minimal time.
- l. The holder will mulch disturbed areas designated by the authorized officer. The type of mulch will meet one of the following requirements:
 - i. Straw used for mulching will be from oats, wheat, rye, or other approved grain crops, and free from noxious weeds or other objectionable material as determined by the authorized officer. Straw mulch will be suitable for placing with mulch blower equipment.
 - ii. Hay will be of approved herbaceous mowings, free from noxious weeds or objectionable material as determined by the Authorized Office. Hay will be suitable for placing with mulch blower equipment.
 - iii. Wood cellulose fiber will be natural or cooked wood cellulose fiber, will disperse readily in water, and will be nontoxic. The homogeneous slurry or moisture will be capable of application with power spray equipment. A colored dye that is noninjurious to plant growth may be used when specified. Wood cellulose fiber will be packaged in new, labeled containers.
- m. All permanent structures will be painted the neutral color of Desert Brown as displayed in the Supplemental Environmental Color chart (available at the BLM office) except where another color is required for safety.

9. Paleontological/Cultural Stipulations:

Paleontological and archaeological field checks by BLM personnel or other authorized personnel will occur prior to disturbance as deemed appropriate by the BLM. A BLM-approved archaeologist or paleontologist will conduct

monitoring during surface-disturbing activities. Paleontological or cultural resource sites will be avoided or mitigated as necessary prior to disturbance. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values.

Surface Disturbance Associated With Exploratory Drilling

After the APD is approved, the operator moves construction equipment, usually dozers (track-mounted and rubber-tired), scrapers, and motor graders, over existing roads to the point where the access road will begin. Moving equipment to the construction site requires several loads (some overweight and over width) on public and private roads. Existing roads and vehicle routes are improved in places and, occasionally, culverts and cattle guards are installed as specified in the approved APD.

The length of the access road varies. The shortest feasible route is usually selected to reduce the haul distance and construction costs. Environmental factors or the landowner's wishes may dictate a longer route. Because of the gentle topography and shallow depth of wells (1,500 to 3,000 feet) that are prevalent across the majority of the planning area, the wells can all typically be drilled using a truck-mounted rig, which often means that very little or no access road work is needed. In rough terrain, the type of construction is sidecasting (using the material taken from the cut portion of the road to construct the fill portion); slightly less than one-half of the roadbed is on a cut area and the rest is on a fill area. Roads are usually constructed with a 14-foot (single lane) or 24-foot (double lane) running surface (in relatively level terrain). Soil texture, steepness of the topography, and moisture conditions may dictate surfacing the access road. The total acreage disturbed for each mile of access road constructed varies significantly with the steepness of the slope.

Well locations are constructed by one of three different general types of construction but, in every case, all soil material suitable for plant growth is first removed and stockpiled in a designated area. Sites on flat terrain usually require little more than removing the topsoil material and vegetation. Drilling sites on ridge tops and hillsides are constructed by cutting and filling portions of the location. The majority of the excess cut material is stockpiled in an area that will allow it to be easily recovered for rehabilitation. It is important to confine extra cut material in a stockpile rather than cast it down hillsides and drainages where it cannot be recovered for rehabilitation.

The amount of level surface required for safely assembling and operating a drilling rig varies with the type of rig, and the depth and type of the well. The amount of level surface required averages 200 by 250 feet and should be constructed so that the drill rig can be placed on the cut surface instead of fill material to prevent the derrick from leaning or toppling as a result of the settling of uncompacted soil.

In addition to the drilling rig footprint, a reserve pit is constructed, usually square or oblong, but sometimes in another shape to accommodate topography. Generally, the reserve pit is 6 to 12 feet deep by 15 to 20 feet wide by 40 to 50 feet in length, but may be deeper to compensate for smaller length and width or deeper drilling depths. For air drilling, smaller reserve pits are used, usually less than 10 feet by 10 feet and approximately 6 to 10 feet in depth. Depending upon the soil permeability, pits can be lined with an impermeable material to contain the drilling fluids. If water is encountered while digging the reserve pit, a closed mud system consisting of steel tanks may be required. For oil-base mud, closed systems are mandatory, and the mud and cuttings must be recycled or disposed of in an approved manner.

Depending on how the drill site is located relative to a natural drainage, it may be necessary to construct water bars or diversions to control surface runoff and erosion. The area disturbed for construction and the potential for successful revegetation depends largely on topography, soil type, climate and the degree of disturbance.

Typical equipment used for drilling wells in the planning area includes the following:

Drill Pad Construction

- Cat-type dozer and backhoe. Two semi-loaded trailers used to transport these pieces of equipment.
- Two 3/4-ton pickup trucks can also be used as support vehicles.

Drilling Operations

- Drill rig (including a 55-86 foot freestanding mast) either truck-mounted or trailer-mounted and elevated anywhere from 5 to 9 feet above ground level, powered by a diesel engine with a power rating from 280 to 420 horsepower.
- Mud pump, powered by a diesel engine with a power rating from 350 to 600 horsepower.
- Diesel electric generator for lights and other electrical equipment with a power rating from 150 to 400 horsepower.
- Other support equipment such as a mud and chemical trailer, dog house, drill pipe racks, water tanks, mud tanks, fuel tanks, two to three camp trailers, and a portable latrine.

Drilling activities usually begin within a week or two after the location and access road have been constructed. The conventional drilling rig and associated equipment are moved to the location and erected. Moving a drill rig may require transporting 8 to 15 truckloads of equipment over public highways and private roads. The derrick, when erected, is approximately 100 feet high. Water for drilling is hauled to rig storage tanks or transported by surface pipeline. Water sources are usually wells or commercial water sources. Occasionally, water supply wells are drilled on or close to the site. The operator must obtain a permit from the Montana State Engineer for the use of surface or subsurface water for drilling and any applicable BLM surface use permits. When drilling commences, and as long as it progresses, water is continually transported to the rig location. Approximately 300 barrels or 12,600 gallons of water are required to drill an oil or gas well to the depth of 2,500 feet. More water is required if circulation is lost or permeable zones are encountered that cannot withstand the pressure of the drilling fluid.

During casing and cementing operations, a semi-type cement bulk truck, cement pump truck and a 3/4-ton truck could potentially come on to location twice during the operation: once for running and cementing the surface casing, and again for running and cementing the production casing if a successful well is drilled.

Some drilling operations may require that the well safety equipment (blowout prevention equipment, or BOPE) be tested by a third party rather than utilize the equipment of the drill rig. This would require the need for a 1-ton type truck at the location for a minimum of four hours.

A 4-ton truck is required to perform a petrophysical survey (formation logging) of the wellbore. This is normally conducted after the well is drilled to total depth.

Once the well is cased with pipe and cemented back to the surface, the drill rig and support equipment rig down and move out to the next location, usually within a half day after the decision to move. If the well is determined to be a dry hole, it will typically be plugged while the drill rig is still on location.

Drilling Operations

Rotary Drilling

The actual commencement of the drilling is referred to as spudding in. Initially, drilling proceeds rapidly because of the unconsolidated nature of shallow formations. Drilling is accomplished by rotating the drill string and putting variable weights on the bit located at the bottom of the string. The weight on the bits is controlled to maintain as vertical a hole as possible or deviate from vertical when desired, and to prevent premature wearing of the bit. While drilling, the derrick and associated hoisting equipment bear a majority of the drill string's weight. The combination of rotary motion and weight on the bit causes rock to be gouged away at the bottom of the hole. The rotary motion is created by a square or hexagonal rod, called a kelly, which fits through a square or hexagonal hole in a large turntable, called a rotary table. The rotary table sits on the drilling rig floor and, as the bit advances, the kelly slides down through it. When the kelly has gone as deep as it can, it is raised and a new piece of drill pipe about 30 feet in length is attached in its place. The

drill pipe is then lowered, the kelly is reattached, and drilling recommences. When the bit becomes dull, it is necessary to “trip” the drill string and replace the bit. This is a time-consuming process of withdrawing 90-foot sections of the drill pipe until the bit is out of the hole. Once the bit is replaced the drill string is reassembled, lowered into the hole, and drilling recommences. This process requires a large part of the total drilling time and may cause other hole problems. New bits constructed with modern metals and manufactured polycrystalline diamonds, along with down hole mud motors, have revolutionized drilling operations so that thousands of feet of hole can be drilled with one bit run.

Drilling mud is circulated through the drill pipe to the bottom of the hole, through the bit, up the annulus of the well, across a screen that separates the rock chips, and into holding tanks from which finer sediments settle from the mud before it is pumped back into the well. The mud is maintained at a required weight and viscosity to cool the bit, reduce the drag of the drill pipe on the sides of the hole, seal off any porous zones, contain formation fluids to prevent a blowout, and bring the rock chips to the surface for disposal. Various additives are used in maintaining the mud at the appropriate viscosity and weight. Most of the mud consists of bentonite, a naturally occurring mineral that is mined in Montana. Drilling muds are not allowed to contain any hazardous or toxic substances.

High pressure air is sometimes used in place of mud. The use of mud or air is largely dependent upon the target formation, drilling depth and type of completion desired. When drilling with air, the cuttings are blown into another pit called the blooie pit, where compressed air and cuttings leave the drill system. By regulation, the blooie pit must be located no closer than 100 feet from the well bore.

Drilling operations are continuous, 24 hours a day, 7 days a week. The crews usually work three 8-hour shifts or two 12-hour shifts a day. Pickup trucks or cars are used for workers’ transportation to and from the site. A typical well drilled in the planning area take three to four days to reach total depth. BLM personnel, usually petroleum engineering technicians, will conduct inspections of the drilling rig and operations to ensure compliance with the approved plans in the APD and regulations.

Completion Operations

Upon completion of the drilling, a determination is made regarding the productive potential of the well. If oil or gas is not discovered in commercial quantities, the well is considered dry. The operator is then required to follow BLM procedures to properly plug the dry hole. The drill site and access road are then rehabilitated in accordance with the stipulations attached to the APD and the plugging approval. If the well is a producer, drilling rig operations continue until the production casing is cemented into the well prior to removing the drilling equipment from the location.

Completion operations can begin as early as one week after the drill rig moves off location, but they normally occur within two to three weeks.

The typical equipment used for completing a well in the planning area includes the following:

- Wire line truck and mast trailer (~30 tons combined) used to determine the depth of the zone of interest and perforate the well (to expose the formation with natural gas in it to the well bore)
- 3/4-ton support truck
- Workover unit (semi-mounted mast) used to hoist tubing in and out of the well
- Stand-alone air compressor unit
- Supply trailer
- Tubing trailer
- Two 3/4-ton trucks

Or, in place of the workover unit, a semi-mounted coiled tubing unit which includes the following:

- Air compressor
- Coil tubing
- Reel and injector head
- Catch tank trailer to catch any formation water or make up water that is blown off the well
- Two 3/4-ton support trucks

Logging

Geophysical logs are obtained by running various instruments into the hole on a wire cable. Logs are usually run at a depth point where casing will be installed. A log is not usually run before surface casing is set but, in most instances, a log recording natural gamma radiation is run through the surface casing to determine the geology of that section. The logs can determine water resistivity, hydrocarbon saturations, natural gamma radiations, porosity of the rock by density, nuclear receptivity and sonic measurements, permeability, pressure, temperature, hole geometry, and subsurface track. Logs are used to evaluate whether the well is dry or has the potential for a satisfactory completion. Logs also delineate the various geologic horizons; hydrocarbon zones; fresh, usable, and unusable water; and sands, shales, limestones, coals, and other minerals. The hydrocarbon intervals are usually randomly situated in each well, and logs are required to specify these intervals so that they can be perforated and stimulated during the completion program. Normally in the planning area, logs recording resistivity and a combined porosity log of density and nuclear receptivity are run in the well. The dual porosity logs are a direct indicator of gas because the measured values can be compared to provide contrasting porosities.

Casing

Various types of casing are placed in the drilled hole to enhance completion operations and safety. Casing is a string of steel pipe composed of approximately 40-foot lengths of pipe that are threaded together. Casing is cemented into the well to protect against migration of fluids within the hole and to isolate the productive zones so they can be completed and produced without interference from other zones containing hydrocarbons or water. Hole deviation, depth, bore hole environment, placement of centralizers (if any), and a myriad of other factors affect the integrity of the casing and cement job and must be considered in the original design.

Surface casing that is properly set and cemented also protects surface aquifers from contamination by drilling and production operations. Surface casing should be set to a depth greater than the deepest fresh water aquifer that could be reasonably developed. Usable water may exist at greater depths but these aquifers are not normally considered to be important water sources. Surface casing is designed to be large enough to allow subsequent strings of smaller casing to be set as the well is drilled deeper. Cement is placed in the annulus of the surface casing from casing shoe to ground level. The surface casing is the first string on which blowout prevention (BOP) equipment is installed. The BOP allows the well to be shut in at any time that conditions warrant, protecting against unanticipated formation pressures and allowing safe control of the well. Blowout prevention equipment is tested and inspected regularly by both the rig personnel and the inspection and enforcement branch of BLM. Minimum standards and enforcement provisions are part of Onshore Order No. 2. Well-trained rig personnel are a necessity for proper blowout prevention.

Generally, the production casing in the planning area is required to be cemented from the production casing shoe all the way to the surface. This requirement ensures adequate protection from interzonal migration of unsuitable water and hydrocarbons. The production casing is designed to provide isolation of oil and gas formations and also to provide a high-pressure conduit to the hydrocarbon zones that allows stimulation of these intervals to improve the productivity.

During completion operations, the production casing is perforated into zones containing the oil or gas. In much of the planning area, the low permeability character of the productive formations requires these zones to be “fracked,” or stimulated by treated fresh water and large quantities of sand, which improves the productivity to an economic rate. In those instances in which the wells would require a frack, the following pieces of equipment would be required:

- Blender truck (a semi-type truck)
- Chemical van (lab and chemicals, semi-type truck)
- Data van (computer monitoring equipment, similar sized truck to a wire line truck)
- Liquid pump truck
- One to two nitrogen pump trucks (semi-type trucks)
- Iron truck (semi-type truck carrying surface pipe supplies)
- Sand storage unit (semi-type truck)
- One 400 barrel water holding tank on location (transported via semi-type truck)
- One 250 barrel flowback tank (semi-type truck)
- Up to four 3/4-ton trucks for support

In the planning area, the frack operation usually takes less than half a day and on average the frack operation/post operation (flowback and well cleanup) lasts up to four days.

After completion, operations are finished and wellhead equipment consisting of various valves and pressure regulators is installed to control the oil or gas flow to the production facilities and allow safely shutting in the well under any conditions.

Production Operations

Gas, oil, and water are currently being produced in the planning area by means of natural flow (velocity strings) and artificial lift (gas and electric pumping units and submersible pumps).

Gas Production

The installation of gas production facilities generally requires little additional surface disturbance beyond that necessary for drilling and completion; however, additional disturbance could result from pipeline and gathering line installations if they are installed across undisturbed areas. If pipelines follow existing access roads, no appreciable additional surface disturbance is necessary to hook the well up to production. The typical equipment used for installing production equipment to a well includes the following:

- Pipe trailer transported via semi-type truck or poly pipe that is spooled off a coiled tubing reel trailer pulled by a 3/4-ton truck
- Excavator or a trenching piece of equipment brought into the site via a semi-type tractor trailer or a large goose neck trailer pulled by a 3/4-ton truck

Equipment that would stay with the well during its life includes the following:

- Well head and a gas meter house – usually a 10 feet by 10 feet by 8 feet skid-mounted steel shed that houses the well head and gas flow meter
- Pumpjack – used when water is produced with the gas, and the gas reservoir pressure declines to a point that is not adequate to overcome the hydrostatic pressure created by a column of water in the well. Pumpjacks are usually 8 to 10 feet in height, require a slightly larger surface area than a gas meter house, and may or may not be skid-mounted. They are powered by either electric motors or natural gas/propane internal combustion engines.

If the gas well is producing some oil or condensate, oil tanks are used to store the oil or condensate until it is sold via truck or pipeline. Pipeline quality gas at the wellhead requires a minimum of processing equipment. As the quality of gas decreases with the increased presence of water, solids, or liquid hydrocarbons, the amount of processing equipment increases. Water or liquid hydrocarbons in the gas are removed before the gas is sold, usually in the separation equipment near the wellhead. If liquid hydrocarbons are present, storage facilities (tank batteries) are required to store the liquids until they accumulate in sufficient quantities to be hauled out by large trucks. Gas wells which produce water require a disposal pit for evaporation or to catch the water to be hauled away later by truck. Each water pit is sized to fit the operation but can be expected to range from 30 feet by 20 feet by 8 feet, to 40 feet by 40 feet by 10 feet. Operators in the planning area have constructed larger pits that handle water from multiple wells, with the biggest pits located in the Battle Creek field area in north Blaine County. Gas dehydration equipment may also be present to remove water entrained in the gas to a water content defined by pipeline specifications.

Typical wells in the planning area are identified as “sweet gas” wells, that is, they contain no hydrogen sulfide gas (H₂S); therefore, H₂S facilities are generally not required to be used in order to produce the gas. As the wells produce in an area, pressures eventually become depleted to the point that they require an artificial lift method to lower the pressure of the gathering system to allow for production to continue. Once this occurs, the operator will design and install a compressor station that further enables the production of natural gas from the wells.

Gas that occurs with oil is separated by venting it at the tank battery; it may also be collected into feeder lines leading to compressors that boost the pressure to the transportation system. If enough casinghead gas is separated to make it economical for marketing, a plant can be constructed to process the gas, or a pipeline can be constructed to carry the product to an existing plant. If the volume of casinghead gas is insufficient to warrant treatment in a gas plant, it is usually used as fuel for pump engines in the field or as heating fuel for the heater-treaters. Gas is flared or vented into the atmosphere if it exceeds the fuel requirements on the lease but is not in commercial quantities. Montana law prohibits the flaring or venting of natural gas. Exceptions allowed by the MBOG are (1) during testing of a new well, or (2) when the amount of gas produced with the oil is so small that pipeline construction is not practical. Otherwise, if a well produces both oil and gas, provisions for conserving the gas must be made before oil production can continue. BLM Notice to Lessee 4A (NTL4A) requires that all gas not used on the lease, vented, or flared without prior authorization either by the BLM or the MBOG/BLM, or avoidably lost, is subject to royalty obligations. The small amount of casinghead gas that is produced in the planning area occurs in the mature oil fields located in the western portion of the planning area.

In 2006, the planning area produced 56.3 billion cubic feet of natural gas. Natural gas production was 61% of Montana's total natural gas production. The planning area is clearly an important natural gas production area for Montana. Production for 2006 was about 41% greater than the production recorded for 1990. For the 17-year time period, 2001 recorded the highest production at almost 56.8 million cubic feet of natural gas.

Oil Production

In the planning area, oil is generally produced using artificial lift methods (pump units). The oil production equipment (heater-treater, tank battery, and holding facility for production water) is either placed on a portion of the location (on cut rather than fill) and located a safe distance from the wellhead, or placed as a centralized facility that services a number of wells with a pipeline connection. The heater-treater and tanks are surrounded by earthen dikes to contain accidental spills. Either all of the facilities or only the produced water pit (if present) will be fenced. Production facility colors are required to be from the standard color chart and are specified in the APD COAs.

Production from several wells on one lease can be carried by pipeline to a central tank battery. Use of a central tank battery can depend on whether the oil is from the same formation, the same lease ownership, or multiple lease ownerships and formations if a commingling agreement is approved. Generally, because of the nature of the oil, adequate separation of oil and water is only obtained through applications of heat. The fluid stream arrives at a separator point where the flash gas is taken off and, in most cases; this flash gas is used for lease operations. The remainder of the flash gas is either compressed and sold or flared. Flash gas is defined as solution gas liberated from the oil through a reduction in pressure. Water and oil are also separated at this point by gravity segregation. The oil is sent to storage tanks, and the water is sent to a disposal or injection facility. Once the oil is in the storage tanks, it can then be measured and sold. The primary method of oil measurement in the planning area is tank gauging. Measurement is required by 43 CFR 3162.7-2 and Onshore Order No. 4 to ensure proper and full payment of federal royalty.

Oil wells can be completed as flowing (those wells with sufficient underground pressure to raise the oil to the surface) or, if the pressure is inadequate, they are completed with the installation of subsurface pumps. The subsurface pumps are usually mechanically powered by a pumping unit. Pumping units come in a variety of sizes; however, most pumping units in the planning area are 15 feet or less in height. The units are powered by internal combustion engines or electric motors. Fuel for the engines may be casinghead gas or propane. In cases where large volumes of water are produced with the oil, electric submersible pumps may be installed. These pumps may produce up to 6,000 barrels of fluid per day at an oil cut of 1/2 of 1% oil.

Oil producing fields in the planning area presently make a smaller contribution to the state's oil production. In 2006, oil production in the planning area was only about 4% of Montana's total oil production (Montana Oil and Gas Conservation Commission, 2006a and 2007). In 2005, the planning area produced 1.225 million barrels of oil (Montana Oil and Gas Conservation Division, 2006a). That year's production was about 50% less than the production recorded for 1991. The reported 1991 production was the highest of the 16-year time period and production has declined each year since then. It is unlikely that oil production in the planning area will increase in the future, and will most likely continue to decline.

Coalbed Natural Gas Production

Coalbed natural gas (CBNG) exploration has been negligible within the planning area. With that said, the planning area lies within the Northern Great Plains Coal Province. The Blackfeet-Valier, North Central, and Fort Union coal regions lie within this province. The two westernmost coal regions contain Cretaceous aged bituminous and sub bituminous coals and the easternmost region contains Tertiary aged lignite coals. Wood and Bour (1988) reported some information about these coal regions. They found:

- The Blackfeet-Valier Coal Region contains five known coal beds greater than 30 inches thick and at depths less than 2,000 feet in most of the area and less than 3,000 in some small areas;
- The North Central Coal Region contains three known coal beds greater than 30 inches thick and at depths less than 2,000 feet; and
- The Fort Union Coal Region contains up to 20 coal beds greater than 30 inches thick and at depths less than 2,000 feet. The planning area probably contains far fewer than 20 coal beds.

The Potential Gas Committee (2003) estimated 1.2 trillion cubic feet of potential recoverable coalbed gas resources in North Central Montana, which includes the Blackfeet-Valier and North Central coal regions and large areas to the south of the planning area. The Reasonable Foreseeable Development Scenario is projecting that 150 total CBNG wells will be drilled in the time period of 1997-2026.

Typical CBNG production combines high water production rates of some oil fields with low-pressure operations of some gas fields. Because of the reservoir characteristics of coal, high water production rates are initially required to dewater the reservoir and allow gas to be liberated from cleat surfaces within the coal. In a coal reservoir, gas is primarily trapped on the face of the coal within the cleat system via molecular attraction. Pressure must be reduced to liberate the gas molecules from the coal face. The production history of typical CBNG wells shows that water production rates begin high, with little or no gas. The water rate then drops at a constant rate, with increasing gas rates until a maximum gas rate is achieved relative to the original gas saturation and reservoir pressures. The gas rate then declines to the economic limit. This process is the exact opposite of that associated with most oil and gas production, which starts at high hydrocarbon rates and low water rates and advances to low hydrocarbon rates and high water rates. The depth limit of a CBNG well is dictated by the coal permeability, which is highly sensitive to overburden weight. A CBNG operation usually consists of a high-capacity submersible or progressive cavity pump, with water produced out of the tubing and low-pressure gas produced out of the casing. Centralized facilities collect the gas for compression to pipeline pressures and the water for disposal. Electric power is usually used to power the well pumps and is connected to the well via a subsurface cable (or overhead power) laid with the water and gas lines. The producing well pad is very small, with only the well head and an insulating house to cover the well head. The centralized production facilities typically contain well header buildings where the individual well gas is measured and that house collection tanks, injection wells, pumps for disposal of the water, and multistage compressors to bring the very low pressure gas to sales line pressure.

Water Production

Associated water produced with the oil, gas, or CBNG is disposed of by trucking the water to an authorized disposal pit, placing the water in lined or unlined pits, discharging the water into surface drainages, or through subsurface injection. The disposal of produced water in an injection or disposal well requires permit(s) from the primacy state or Environmental Protection Agency (EPA). Primacy means that a state or agency has the ultimate responsibility for permitting and monitoring the Underground Injection Control (UIC) program for Class 2 wells (saltwater disposal and secondary recovery wells). Montana is currently a primacy state candidate; operators in Montana must seek EPA approval until primacy is granted. In some instances, an additional surface management agency authorization may be necessary. The quality of the water often dictates the appropriate disposal method, and the Montana Department of Environmental Quality has primacy through the EPA to approve surface disposal of this water. An environmental assessment is prepared for all requests concerning disposal of produced water from federal wells.

In the planning area, approximately 193.6 million barrels of associated water were produced in the ten-year period from 2003-2012 (PI/Dwights Production Data, December 2012). This water production occurred as a byproduct of natural gas

production. Of the total 193.6 million barrels of produced water, 156.4 million barrels, or roughly 81%, were produced in Glacier (61.2 million barrels) and Toole (95.2 million barrels) Counties, primarily from mature oil fields that employ water flooding operations. The remaining 37.2 million barrels of water were produced from the remaining counties (1997-2006) as follows:

Blaine	18,316,470 barrels	Liberty	7,618,436 barrels
Chouteau	79,828 barrels	Phillips	7,999,896 barrels
Hill	2,955,812 barrels	Valley	165,875 barrels

During the production phase the BLM monitors and approves field activities needed for well and field operations. Many operations, such as plugging completion in a different zone, deepening, etc., require prior approval. Other actions, such as acidizing and fracturing, do not require prior approval but a subsequent report of operations describing the operation in detail must be filed.

Secondary and Enhanced Oil Recovery

Gas reservoirs typically have no secondary recovery associated with the recovery of gas. This is because natural gas is produced by expansion resulting from the reduction of reservoir pressure. Typically a high reservoir recovery factor can be expected from this expansion process unless the reservoir is of such low permeability that economics becomes a factor in the recovery efficiency. Economics is a determining factor because of the expense of operating compression facilities to reduce the reservoir pressure to the minimum. In the planning area, most of the reservoirs are overpressured but have very low permeability. The overpressure allows more gas to be stored but the low permeability limits the recovery to a smaller portion of the area around each well.

In rare cases where the gas is very rich and contains a large quantity of entrained liquids, secondary recovery uses inert gases like nitrogen or dry natural gas to keep the reservoir pressure above the condensation point in order to produce the maximum amount of liquids. This secondary recovery process requires sweeping the reservoir with undersaturated gas to entrain and sweep out the rich gas. After this secondary process is accomplished, especially in dry natural gas secondary recovery operations, the reservoir is depressurized to recover the maximum amount of the remaining gas reserves.

Secondary recovery in coal reservoirs has been tested in the San Juan Basin and found to be technically feasible. It involves the molecular replacement of natural gas by carbon dioxide or nitrogen. This process has also been touted as a method of sequestering CO₂ to remove the greenhouse gas from the atmosphere.

An oil reservoir typically contains oil, gas, and water trapped within the rock matrix under pressure. Because of the pressure, much or all of the gas is dissolved in the oil. "Primary drive" is accomplished by the expansion of gas in solution, which forces oil out of the reservoir into the well and up to the surface. Oil flowing out of the reservoir drains energy from the formation and the primary drive diminishes. To keep oil flowing in the reservoir, pressure drawdown is required, and subsurface pumps may be used to lift oil to the surface. As reservoir pressures continue to drop, solution gas in the oil escapes, forming bubbles in the pore space. These bubbles further retard the flow of oil and increase the gas saturation and the flow of solution gas. This process accelerates as the pressure declines and, at some point, production rates become uneconomical, with as much as 80% of the original oil remaining in the reservoir. In the United States, primary oil recovery accounts for less than half of the current oil production. The remaining oil is produced via secondary and enhanced recovery techniques.

Two basic secondary recovery methods are in use: (1) water flooding, and (2) displacement by gas. The preferred secondary recovery method is water flooding. This process involves injecting water into oil reservoirs to maintain or increase pressure. The process is usually most efficient when the pressure has not fallen to the point where the reservoir is highly saturated with gas. Reservoir heterogeneity in the form of fractures, directional permeability, and thin zones may limit the success of this process.

The process of injecting gas is a less popular secondary recovery technique. Historically, produced gas was considered a waste product and was flared (burned) at the point of production. Later, it was recognized that the energy could be conserved and the recovery of oil increased if the produced gas was reinjected into the reservoir. Increased production

was achieved by (1) maintaining reservoir pressure by injecting the gas into the existing gas cap; and (2) injecting the gas directly into the oil-saturated zone, creating an immiscible gas drive that displaced the oil. To achieve miscibility, the reservoir must have reasonably high pressures and temperatures and contain high-gravity oil. Many gas injection projects use the water and gas (WAG) process (i.e., inject water and gas alternately to achieve better contact with the oil within the reservoir). Currently, the high price and demand for natural gas has precluded this type of secondary recovery.

The term “enhanced recovery” is used to describe recovery processes other than the more traditional secondary recovery procedures. These enhanced recovery methods include thermal, chemical, and miscible (mixable) drives. No enhanced recovery techniques are currently being implemented within the planning area, but it is unknown whether these techniques could be applicable in the future based on economics and new discoveries.

Some reservoirs contain large quantities of heavy oil that cannot be produced using normal or secondary methods. These may be stimulated by thermal drive processes in which heat is introduced from the surface or developed in place in the subsurface reservoir. In the surface introduction process, hot water or steam is injected. Raising the temperature of heavy oil reduces the viscosity and makes the oil more mobile. Thermal recovery techniques are not likely to be tried in the planning area because the oils present are not heavy oils. In the in-situ process, both heavy and light oils can be processed. Spontaneous or induced ignition within the reservoir is induced by injected air to develop a fire front that burns the hydrocarbons. Evaporation of the lighter ends immediately ahead of the fire front and later condensation is the primary recovery mechanism. The remaining hydrocarbons are consumed by the fire and are generally not considered of any value. These techniques are very expensive and must have large reserves and thick pay zones to be economical. It is unlikely they will be used within the planning area in the immediate future unless new discoveries are made.

Several chemical drive techniques are currently in use, including (1) polymer flooding, (2) caustic flooding, and (3) surfactant-polymer injection. These methods attempt to change reservoir conditions to allow recovery of additional oil. Caustic and surfactant-polymer flooding have not been economical in the past, and unless a breakthrough in technology is achieved, they will probably not be considered during the planning period. Polymer flooding is an economically viable process but is used mainly in viscous reservoirs with high permeability. No such reservoirs currently exist in the planning area, but future discoveries could be made.

Carbon dioxide appears to have the best potential for enhanced and tertiary recovery methods. CO₂ is miscible with oil at relatively low pressures and temperatures, and can be used with oil with a wide range of characteristics. CO₂ miscibility reduces the oil viscosity and allows much more efficient displacement by water. Usually CO₂ is injected via the WAG process in alternating slugs of CO₂ and water. Not only does CO₂ create miscible flow but it also can displace oil by gravity segregation between the CO₂, gas, and oil. This process may allow sequestration of large volumes of the CO₂ greenhouse gas in the many applicable reservoirs in the western portion of the planning area and recover the last possible oil reserves. Sequestration of CO₂ is advocated as a method to remove the gas from the earth’s atmosphere by storing the gas for geologic time.

Gas Storage

Pipeline-quality gas can be stored in good quality reservoirs with excellent sealing parameters. This gas is pumped into the reservoir during nonpeak, usually lower priced time periods, and then pumped out into the transmission lines at times of peak demand and good prices. The differential in price pays the governmental storage fees for the use of the reservoir and the injection/compression costs required to store and retrieve the gas. It also serves as a buffer for cold periods when demand is high and levels out the summer slack period of production. Currently, 63 active gas storage wells are located in three different gas storage fields within the planning area.

Plugging and Abandonment Operations

The purpose of plugging and abandoning a well is to prevent fluid migration between zones, protect minerals from damage, and restore the surface area. Each well must be handled individually due to a combination of factors, including geology, subsurface well design, and specific rehabilitation concerns. Therefore, only minimum requirements can be established, and these must be modified for individual wells.

The first step in the plugging process is the filing of the Notice of Intent to Abandon. This notice will be reviewed by both the surface management agency and the BLM petroleum engineer. The notice must be filed and approved prior to plugging a past producing well. Verbal plugging instructions can be given for plugging current drilling operations, but a notice must be filed after the work is completed. If usable fresh water was encountered while the well was being drilled, the surface management agency may be allowed, if interested, to assume future responsibility for the well, and the operator will be reimbursed for the attendant costs. This assumption of responsibility becomes effective after the deeper zones are plugged back to the usable water zone. Usually the operator is more than satisfied to remove the surface reclamation liability and will not charge for the remaining well equipment.

The operator's plan for securing the well bore is reviewed. The minimum requirements as stated in Onshore Order No. 2, are as follows: In open hole situations, cement plugs must extend at least 50 feet above and below zones that have fluid with the potential to migrate, zones of lost circulation (this type of zone may require an alternate method to isolate it), and zones of potentially valuable minerals. Thick zones may be isolated using cement plugs across the top and bottom of the zone. In the absence of productive zones and minerals, long sections of open hole may be plugged with cement plugs placed every 3,000 feet. In cased holes, cement plugs must be placed opposite perforations and extend 50 feet above and below, except where limited by plug back depth. The length of the plug is 100 feet plus 10% per 1,000 feet (e.g., at 10,000 feet, the plug will be 200 feet long).

Cement plugs could be replaced with a cement retainer, if the retainer is set 50 feet above the open perforations and the perforations are squeezed with cement. A bridge plug may also be used to isolate a producing zone and must be capped, if placed through tubing, with a minimum of 50 feet of cement. If the cap is placed using a dump bailer, a minimum of 35 feet of cement is required. A dump bailer is an apparatus run on wire line to convey the cement to the bottom of the hole. In the event that the casing has been cut and recovered, a plug is placed 50 feet within the casing stub, and the 100 feet plus 10% per 1,000 feet rule is used for the space above the cutoff point. In all cases, a plug is set at the bottom of the surface casing that has a volume of cement using the 100 feet plus 10% per 1,000 feet rule. This may require perforating the casing and circulating or squeezing cement behind the production casing if that casing is not removed. Annular space at the surface will be plugged with 50 feet of cement using small-diameter tubing or by perforating and circulating cement.

If the integrity of a plug is questionable or the position is extremely vital, it can be tested with pressure or by tagging the plug with the tubing or drill string. Tagging the plug involves running pipe into the hole until the plug is encountered and placing a specified amount of weight on the plug to verify its placement and competency. The surface plug within the casing must be a minimum of 50 feet. The interval between plugs must be filled with mud that will balance the subsurface pressures, and if this balance point is unknown, a minimum of 9 pounds per gallon is specified. After the casing has been cut off below the ground level, any void at the top of the casing must be filled with cement. A metal plate is welded over the top of the casing with a weep hole in the plate and the well identity and location permanently inscribed.

Typical equipment associated with plugging operations includes:

- Well workover/pulling unit
- Cement bulk truck, cement pump truck, and water hauling truck (all semi-type trucks)
- Two to three, 1/2 to 3/4-ton pickup trucks

Depending on the depth of the well, the plugging operation can last from one to three days.

Disturbance from plugging operations is usually contained within the existing disturbed area used to drill or produce the well, whichever the case may be. If the well to be plugged is a depleted producer, it is customary that the operator will dig a small catch pit (10 feet long by 10 feet wide by 8 feet deep) to contain any fluids pumped in and out of the well. Typical fluids that may come out of the well and travel into the catch pit are formation water, drilling mud and cement. These fluid materials are removed from the pit within 48 hours of the well being plugged. Within a week of plugging the well, initial reclamation (dirt work) begins depending on the time of the year that the well is plugged.

The surface management agency is responsible for establishing and approving methods for surface rehabilitation and determining when this rehabilitation has been satisfactorily accomplished. With satisfactory rehabilitation, a Subsequent Report of Abandonment is approved, and the well bond released.

Regulations, Laws, and Special Procedures

Units and Communitization Agreements

Units and Communitization Agreements can be formed in the interest of conservation and to allow for the orderly development of oil and gas reserves.

In areas of federal and mixed mineral ownership, an exploratory unit can be formed before a wildcat exploratory well is drilled. The boundary of the unit is based on geologic data and attempts to consolidate the interests in an entire structure or geologic play. The developers of the unit enter into an agreement to develop and operate as a single entity, without regard to separate lease ownerships. Costs and benefits are allocated according to agreed-upon terms. Development in a unitized field can proceed more efficiently than in a field composed of individual leases because competition between lease operators and drainage considerations is not a primary concern. Unitization also can reduce surface use requirements because all wells are operated as though under a single lease, and operations can be planned for more efficiency. Duplication of field processing facilities is eliminated, and consolidation of facilities into more efficient systems is probable. Unitization can also involve wider spacing than usual or spacing based on a reservoir factor rather than a set rule. This could result in fewer wells and higher recovery efficiency. Through planning, access roads are usually shorter and better organized, facilities are usually consolidated, and well efficiency is maximized to a degree not seen in individual lease operations.

A secondary unit is formed after the field has been defined and enhanced recovery techniques are being utilized. The different types of secondary recovery have already been described previously in this document in the section titled *Secondary and Enhanced Oil Recovery*. Injection is utilized to maintain the reservoir pressure which, in turn, maintains steady oil production. The secondary unit agreement provides for the allocation of production among all interest owners.

A communitization agreement combines two or more leases (federal, state, or fee) that otherwise could not be independently developed in conformity with established well spacing patterns. The leases within the spacing unit share in the costs and benefits of the well drilled in the spacing unit. Therefore, unit and communitization agreements can lessen the amount of damage to the environment by eliminating unnecessary wells, roads, pipelines, and other lease equipment.

Drainage Provisions

All federal oil and gas leases include a clause that the lessee must protect the leased area from drainage by off-lease wells. The regulations at 43 CFR 3162-2-9(b) state that the lessee/operating rights owner has an obligation to notify the BLM if drainage is occurring. If the lessee/operating rights owner has an interest in draining the well, he must notify the BLM within 60 days after completion of a drill stems, production, pressure analysis, or flow tests of the well. However, if the lessee/operating rights owner has no interest in the well, he must notify the BLM within 60 days after well completion or first production reports for the draining well are filed with either the BLM, State Oil and Gas Commissions, or regulatory agencies and are publicly available. The lessee/operating rights owner must inform the BLM of his plan to either protect the lease from drainage, or demonstrate that a protective well would not be economic. The lessee has the option of drilling a protective well on lease or paying compensatory royalty for the lost oil or gas. The lessee also has the options of submitting data showing that drainage is not occurring or relinquish the portion of the lease subject to drainage after payment of compensatory royalty for drainage that did occur. The objective of the drainage program is to prevent the loss of federal oil and gas due to drainage by requiring the drilling of protective wells and, where appropriate, to assess a compensatory royalty for such losses.

Drilling Access with No Surface Occupancy Stipulations on Oil and Gas Leases

No surface occupancy stipulations can restrict the development potential of a federal oil and gas lease by limiting the amount of surface acreage available for occupancy. No surface occupancy restrictions often do not affect access to oil and gas resources unless blocks of contiguous land have a no surface occupancy stipulation or the drilling depth is presumed to be shallow. The drilling access area is that area under a no surface occupancy lease or lease parcel that can be accessed by the well bore from a surface location outside of the area.

Lands near the outer boundary of a lease affected by a no surface occupancy stipulation can theoretically be developed by directional drilling. The BLM cannot assume that a prudent operator would use new technology such as horizontal drilling to access an entire lease area. Although the technology might allow exploration, the expense might make the venture uneconomical. However, the BLM can assume that an operator might be willing to directionally drill wells using equipment and drilling techniques that make the venture economical. For a directionally drilled well, a maximum deviation of approximately five degrees is a commonly used rule of thumb for how much a vertical hole can be economically deviated using a standard drilling rig.

A “directional drilling accessibility” concept has been developed for leases affected by no surface occupancy stipulations. Shallow wells in Montana, less than 6,000 feet deep, can be deviated up to 1/8 mile and have the angle of deviation remain reasonably close to five degrees. This will place the bottom hole location in the center of a 40-acre tract.

Because these wells are commonly spaced on a 40-acre basis, all spacing units within 1/4 mile of the outer boundary of the lease can be tested. Wells between 6,000 and 11,000 feet deep can also be deviated up to 1/4 mile. This will place the bottom hole location of the well the maximum allowable distance from the lease line for a well of this depth. Because these wells are spaced on a 160-acre basis, all spacing units within 1/2 mile of the exterior boundary of the lease can be tested.

Wells in Montana with a total depth greater than 11,000 feet are normally spaced on a 320-acre basis. These wells can be deviated up to 1/4 mile using the above criteria. Using this distance, all spacing units within 1/2 mile of the outer boundaries of an affected lease can be tested.

Split Estate

Part of the planning area contains lands known as split estate lands. These are lands where the surface ownership is different from the mineral ownership. Management of federal oil and gas resources on these lands is somewhat different from management on lands where both surface and mineral ownership is federal. On split estate lands where the surface ownership is private, the BLM places necessary restrictions and requirements on its leases and permit approvals and works in cooperation with the surface owner. The BLM has established policies for the management of federal oil and gas resources in accordance with federal laws and regulations.

The BLM does not have the legal authority to regulate how private surface is managed, but does have the statutory authority to require measures by lessees to avoid or minimize adverse impacts that may result from federally authorized mineral lease activities. These measures, in the form of lease stipulations or permit conditions of approval, are intended to protect or preserve the privately owned resources and prevent adverse impacts to adjoining lands, not to dictate management to the surface owner.

The term split estate can also refer to lands where the surface ownership is federal and the mineral ownership is private. In this situation, the BLM is the surface owner and works in cooperation with the proponent and the state regulatory agency that approves private mineral applications. The BLM has responsibilities under the previously mentioned statutes; however, it does not have the authority to approve or disapprove the mineral owner’s actions. The mineral estate owner usually has the right to enter the land and use the surface that is necessary and reasonable for mineral development through either a reserved or an outstanding right contained in the deed.

Field Development

New field development is analyzed in an environmental assessment or environmental impact statement after the sufficient confirmation wells are drilled. The operator generally can estimate the extent of drilling and disturbance required to extract and produce the oil and gas at that time. Many fields go through several development stages. A field can be considered fully developed and produce for many years when it is determined that a well can be drilled to a deeper pay zone or a new interval is discovered to be economically attractive. In this situation, there is generally little new disturbance because the old well bores or the old well pads are used for the new completions. A new stage of field development, such as infill drilling, can lead to increases in roads and facilities. All new construction, reconstruction, or alterations of existing facilities, including roads, flow lines, pipelines, tank batteries, or other production facilities, must

be approved by the BLM and may require a new environmental analysis. Throughout field development, partial restoration and rehabilitation is required to reduce the surface impacts to the minimum required to produce the resource.

Well Spacing Requirements

The most important factor in further development of an oil or gas field is the economics of production. When an oil or gas discovery is made, a well spacing pattern must be established before development drilling begins. This is dependent upon the current statewide or areawide spacing. Well spacing is regulated by MBOG, and factors considered in the establishment of a spacing pattern include data from the discovery well that translate into recovery efficiency. These data include porosity, permeability, pressure, composition of reservoir and fluids, depth of formations, well production rates, and the economic effect of the proposed spacing on recovery. These data are relatively sparse in the initial phase of development, and extended production permits refinement of these values. The State of Montana establishes well spacing requirements for both exploratory and development wells which the BLM generally adopts. The state specifies the minimum distance from lease lines or government survey lines for bottom hole location of the well bore depending upon the depth of the well. The spacing regulations determine the acres assigned to each well. Spacing unit size is established to provide for the most efficient and economic recovery of oil or gas from a reservoir. Well spacing ranges from 40 acres to 640 acres. Wells deeper than 11,000 feet can be no closer than 1,650 feet to other producing wells below 11,000 feet. Only one producing well per formation is allowed in each 40, 80, 160, 320, and 640-acre unit. Spacing requirements can pose problems in selecting an environmentally sound location or in the cumulative overall impacts. Reservoir characteristics determine the most efficient spacing to achieve maximum recovery. If an operator determines that a different spacing is necessary to achieve maximum recovery, the state (with input from the BLM) may grant exceptions to the spacing requirements.

Reasonably Foreseeable Development Scenarios for Resource Management Plan Alternatives

The Final Environmental Impact Statement for the HiLine Resource Management Plan contains five management alternatives. Each alternative contains management imposed restrictions that may negatively affect oil and gas development. These restrictions can effectively decrease the baseline estimated number of well locations in areas of federal oil and gas ownership. For each alternative, we have analyzed the restrictions and estimated the number of resulting well locations that could be reduced from the baseline total.

Procedures Used to Determine Well Location Reductions

Well location reductions from the baseline reasonable foreseeable development scenario for each alternative, are due to proposed management restrictions. Restrictions applied to each alternative can affect oil and gas development activities by not allowing leasing, not allowing surface occupancy, controlling surface use, or placing restrictive stipulations on conditions of approval of federal applications to drill. Reduced oil and gas activities result in increased exploration and development costs, fewer drilled wells, and reduced production. For reasonable foreseeable development scenario analysis purposes, the restrictions for the five alternatives analyzed were separated into four categories designated A, B, C, and D. Restrictions on drilling are progressively more limiting from restriction category A to restriction category D and are:

- **Restriction Category A** - areas open to leasing. Restrictions are relatively minor and result in standard lease terms and conditions that are applied to every federal oil and gas lease sold in the planning area. These restrictions are considered to have little to no effect on the number of future well locations or production for any alternative.
- **Restriction Category B** – areas open to leasing subject to relatively minor constraints. These restrictions can have a moderate effect such as multiple, consecutive timing restrictions for protection of wildlife values (e.g., crucial winter range, raptor nesting habitat, or sage-grouse strutting grounds). We also considered restrictions such as avoidance of areas within wetlands, riparian areas, or perennial waters could have a moderate effect on the potential locations of future wells and cumulative production.

- **Restriction Category C** – areas open to leasing subject to major constraints. These restrictions can have a moderate to severe effect on the location of wells; such as no surface occupancy stipulations on an area more than 40 acres in size or requirements that viewsheds be protected, thus requiring that well locations and production facilities not be visible from areas such as historic trails. Overlapping minor constraints may also severely limit the future development of oil and gas resources.
- **Restriction Category D** – areas closed to leasing. These are areas where a determination is made that other land uses or resource values cannot be adequately protected with even the most restrictive lease stipulations. Because areas are closed to leasing, this category has the most severe restrictions on future oil and gas activity and production.

Estimates of future reductions in well locations from the baseline reasonable foreseeable development projection were determined as described below:

- An estimate of the number of well locations/township (average well density) that could be drilled in each development potential category over the 20-year life of the Resource Management Plan was made for conventional oil and gas development activity (within the Bowdoin Natural Gas Project Area (BNGPA) and within the rest of the planning area) and for CBNG development activity. The average well density per township was projected to be 110 wells for high development potential; 60 wells for moderate development potential; 10 wells for low development potential; and 0.5 wells for very low development potential.
- The acres of federal oil and gas ownership for each area of non-CBNG development potential were determined using GIS software. Acres of non-federal oil and gas minerals were not included because proposed Resource Management Plan decisions will only apply to federal oil and gas minerals. It was assumed that development on non-federal minerals will occur as estimated in the baseline foreseeable development projection.
- The acres of federal oil and gas ownership for each area of CBNG development potential were determined using GIS software. Acres of non-federal oil and gas minerals were not included because proposed Resource Management Plan decisions will only apply to federal oil and gas minerals. It was assumed that development on non-federal minerals will occur as estimated in the baseline foreseeable development projection.
- Next, the areas covered by each restriction category (B, C, or D) within the high, moderate, low, or very low development potential areas for non-CBNG (within the BNGPA area and within the rest of the planning area) and CBNG potential were calculated using GIS software. The area within category A was not calculated, because it was previously determined that this type of restriction would have no significant effect on the number of well locations for any alternative. As an example, the Alternative B acreage calculations for each potential area are presented in Table E.1.3.

Table E.1.3			
Development Potential in the HiLine Planning Area by Restriction Category Under Alternative B			
<i>Development Potential</i>	<i>Restriction Category B (Federal Acres)</i>	<i>Restriction Category C (Federal Acres)</i>	<i>Restriction Category D (Federal Acres)</i>
Non-CBNG Oil and Gas – Excluding BNGPA			
High	0	6,889	138,489
Moderate	0	14,119	50,383
Low	0	65,915	258,858
Very Low	0	133,968	2,427,013
Non-CBNG Oil and Gas – BNGPA			
High	0	0	0
Moderate	0	31,128	232,964
Low	0	6,497	65,870
Very Low	0	0	0
CBNG			
Very Low	8,245	103,740	548,175

- After the acres of federal oil and gas were calculated for each alternative in each restriction category, the percent reduction in well locations for each alternative in each category of restriction was estimated. This estimate is a percent of the well locations that would not be drilled in each area due to the specific category of restriction. As an example, the results of calculations for Alternative B, Category C restrictions are shown in Table E.1.4 below. Category C restrictions for Alternative B indicate there would be a reduction of about 40 non-CBNG well locations in the area excluding the BNGPA area, about 34 non-CBNG well locations in the BNGPA, and about 1.4 CBNG well locations on federal lands. The number of townships was calculated by dividing the federal acres by 23,040 acres per township.

Table E.1.4					
Analysis Results Showing the Calculated Reduction in Federal Wells of Each Type for Alternative B Due to Category C Restrictions					
<i>Development Potential</i>	<i>Well Locations per Township</i>	<i>Federal Oil and Gas Mineral Acres</i>	<i>Federal Oil and Gas Mineral Townships</i>	<i>Percent Reduction in Federal Well Locations</i>	<i>Reduction in Federal Well Locations</i>
Non-Coalbed Oil and Gas – Excluding BNGPA					
High	110	6,889	0.299	30%	9.866
Moderate	60	14,119	0.613	40%	14.707
Low	10	65,915	2.861	50%	14.305
Very Low	0.5	133,968	5.815	55%	1.599
Non-Coalbed Oil and Gas – BNGPA					
High	110	0	0.000	30%	0.000
Moderate	60	31,128	1.351	40%	32.425
Low	10	6,497	0.282	50%	1.410
Very Low	0	0	0.000	0	0.000
CBNG					
Very Low	0.5	103,740	4.50	60%	1.35

- The percent reduction in well location for each alternative, each category of restriction, and each development potential combination was determined. The estimates of reduction in well locations were then summed for non-CBNG wells in all areas excluding BNGPA, the BNGPA, and for CBNG wells for each alternative. The results of these calculations are shown in Table E.1.5.
- Because reductions in well locations were calculated only for federal wells, the percent of federal wells projected to be drilled for each alternative is different. The percentage of federal wells projected to be drilled for each alternative is modified from the baseline analysis and is presented in Table E.1.5.

Table E.1.5				
Total Wells Projected to be Drilled within the Planning Area for the Baseline and Each Alternative for the Period 2011-2030				
	<i>CBNG Wells (% Federal Wells)</i>	<i>Non-CBNG Wells Excluding BNGPA (% Federal Wells)</i>	<i>Non-CBNG Well BNGPA (% Federal Wells)</i>	<i>Total Wells</i>
Baseline	150 (16.00%)	4,861 (26.97%)	1,091 (57.47%)	6,102
Alternative A	149 (15.44%)	4,802 (26.01%)	1,066 (56.47%)	6,017
Alternative B	137 (8.03%)	4,102 (13.58%)	546 (14.47%)	4,785
Alternative C	146 (13.70%)	4,686 (24.07%)	933 (50.27%)	5,765
Alternative D	149 (15.44%)	4,817 (26.30%)	1,068 (56.55%)	6,034
Alternative E	144 (12.50%)	4,740 (25.11%)	11,024 (54.69%)	5,908

Estimated Future Oil and Gas Production

Table E.1.6 (Tables E.1.6 through E.1.17 are located at the end of Appendix E.1) presents yearly baseline estimates of future numbers of newly completed producing oil and gas wells within the planning area. These well counts were derived from the projection of total new gas and oil wells (Table E.1.5). The average number of producing gas wells completed from 2001 through 2006 was 219 while the average number of producing oil wells completed was 8. We estimated that in 2011, producing gas well completions would decrease to 208 and producing oil well completions would increase to 13. The yearly numbers of producing gas well completions varied from a low of 113 to a high of 334 through 2030. Yearly producing oil well completions were held constant for the entire 20-year period at 13 each year.

Table E.1.6 well counts and analysis of their likely production rates, along with production data from existing wells, was used to project yearly oil and gas production for the 20-year period from 2011 to 2030, which is also presented in Table E.1.6. The actual yearly gas production from 2001 through 2006 averaged 55.886 million cubic feet with little fluctuation from year to year. Yearly gas production was assumed to fluctuate for the 20-year period from 2011 to 2030 between 36,759 and 92,783 million cubic feet. The number of gas well completions described above corresponds to this rate.

The actual yearly oil production from 2001 through 2006 averaged 1.275 million barrels with some fluctuation from year to year. Some increase in oil production occurred in 2006. Most of this increase occurred in Toole County, which appears to have been due to the large number of workovers of existing wells. These wells appear to have been worked over due to the incentive of higher oil prices received in 2006 as compared to previous years. We estimated that yearly oil production for the 20-year period would fluctuate yearly, with estimated production of 220,783 barrels in 2011, a high of 1,210,240 barrels in 2020, and the lowest production of 38,143 barrels occurring in 2030. This annual fluctuation is due to the large number of existing oil wells in the planning area that are approaching the end of their productive life and the small number of new wells that would be completed. Drilling only 13 new oil wells per year would not add significantly to yearly oil production; consequently, future workovers of existing wells are assumed to be the main reason for the relatively low decline rate that is being predicted in the estimated yearly oil production.

Table E.1.6 also presents our estimates of the number of new oil and gas wells on federal lands, oil and gas production rates on federal lands, and abandonments of producing federal wells. The projections of numbers of new federal wells were derived from the projected total numbers of new wells by using calculated percentages of federal versus other types of producing wells, such as wells producing on private and state lands.

Since there is no history of CBNG production near the planning area, no attempt was made to try to project rates of gas production for this type of development. CBNG wells produce relatively low volumes of gas at other productive locations in the Rocky Mountains, so we do not project that there would be a significant increase in gas production from any CBNG wells found to be productive.

The above types of projections were also made for each alternative (Alternative A – Table E.1.7; Alternative B – Table E.1.8; Alternative C – Table E.1.9; Alternative D – Table E.1.10; and Alternative E – Table E.1.11) and reflect the adjusted well count projections presented for each alternative from Table E.1.5.

Potential Surface Disturbance

Table E.1.12 presents our estimates of short-term and long-term disturbance associated with the baseline projection of wells that could be drilled for the period of 2011 through 2030 that is presented in Table E.1.6. The upper portion of Table E.1.12 shows our projection of 6,102 new exploratory and development wells ((150+1,091+4,861) with 1,962 (24+627+1,311) of those wells managed by the Bureau) that could be drilled. An additional 9,214 existing unplugged wells (1,594 unplugged wells on Bureau-managed lands) lie within the planning area. This portion of Table E.1.12 also calculates associated acres of total surface disturbance (short-term disturbance) directly associated with those wells. Approximately 28,814 acres (428+3,109+25,277) of new short-term surface disturbance (8,674 acres (68+1,786+6,820) of Bureau-managed surface disturbance) could occur if all projected wells are drilled. Including existing wells, short-term surface disturbance is projected to be about 36,970 acres (9,960 acres of Bureau-managed surface disturbance).

In addition, the lower portion of Table E.1.12 calculates the estimated numbers of wells remaining after dry holes are abandoned and reclaimed and producing wells cease to be productive and are also abandoned and reclaimed (4,924 wells (135+1,058+3,731) with 1,637 of those wells (22+608+1,007) managed by the Bureau). An additional 7,858 (1,579+6,279) existing unplugged and unreclaimed wells (1,345 (887+458) unplugged and unreclaimed wells on Bureau-managed lands) are projected to remain within the planning area in the long-term. This portion of Table E.1.12 also calculates unreclaimed associated acres of total surface disturbance (long-term disturbance) directly associated with those wells. Approximately 4,327 acres (101+794+3,432) of new unreclaimed surface disturbance (1,398 acres (16+456+926) of Bureau-managed unreclaimed surface disturbance) could remain in the long-term. Including existing wells, long-term unreclaimed surface disturbance is projected to be about 11,288 acres (2,484 acres of Bureau-managed unreclaimed surface disturbance).

In the BNGPA, approximately 55% of all wells drilled are expected to be wells managed by the Bureau. In the rest of the planning area approximately 27% of all new wells are expected to be wells managed by the Bureau. We assumed that since Bureau-managed minerals occupy about 16% of the planning area, any future drilling on Bureau-managed minerals would likely mirror that percentage.

As additional wells are being drilled, some existing wells are being plugged and abandoned. The great majority of these are wells which are either unproductive (dry holes), or have become depleted and are not economic to produce. We have projected that total abandonments will be at a rate of:

- 10% for CBNG wells
- 3% for new exploratory and development wells in the BNGPA
- 23.25% for new exploratory and development wells in the rest of the planning area
- 7.8% for existing wells in the BNGPA
- 22.9% for existing wells in the rest of the planning area

Assumptions used in Table E.1.12 to calculate short-term and long-term surface disturbance from access roads/flow lines and well pads associated with oil/gas exploration and development drilling activities are based on existing and planned oil and gas development across the planning area.

For each alternative, the same above-described methods of calculating surface disturbance (short-term and long-term) were used. Projections of future wells for each alternative were brought forward from Table E.1.5 and used in these calculations. The resulting short-term and long-term surface disturbance figures for each alternative are presented in Tables E.1.12 through E.1.17.

Summary

For our baseline projection we analyzed the oil and gas resource within the planning area, discussed types of future development that may occur, estimated the development potential for each type of resource, and projected baseline activity levels for the period 2011 through 2030. For our analysis of the baseline projection, we assumed that the only land use restrictions on future oil and gas resource development would be those that have been legislatively imposed. Projections of future well numbers, oil and gas production, and surface disturbance were prepared (Tables E.1.6 and E.1.12). Projections of future well numbers (Table E.1.5), oil and gas production (Tables E.1.7 through E.1.11), and surface disturbance (Tables E.1.13 through E.1.17) were also prepared for each alternative.

Table E.1.6
Projected New Producing Well Numbers, and
Oil and Gas Production for All Producing Wells and All Federal Producing Wells
Baseline – 2011-2030

<i>Year</i>	<i>Gas Produced (MMcf¹)</i>	<i>Oil Produced (barrels)</i>	<i>New Oil Wells</i>	<i>New Gas Wells</i>	<i>Total New Producing Wells</i>	<i>New Federal Oil Wells</i>	<i>New Federal Gas Wells</i>	<i>Total New Producing Federal Wells</i>	<i>Federal Oil Produced (barrels)</i>	<i>Federal Gas Produced (MMcf¹)</i>	<i>Federal Wells Abandoned</i>
2011	57,867	220,783	13	208	221	1.54	73.07	74.61	105,453	19,513	12.45
2012	40,174	184,796	13	161	175	1.54	57.34	58.87	101,225	13,547	12.45
2013	55,514	277,350	13	199	212	1.54	69.82	71.35	112,100	18,719	12.45
2014	47,587	128,719	13	158	171	1.54	56.25	57.79	94,635	16,046	12.45
2015	65,035	235,060	13	230	243	1.54	80.40	81.94	107,131	21,930	12.45
2016	71,481	705,834	13	293	307	1.54	101.83	103.37	162,446	24,103	12.45
2017	85,803	888,018	13	262	275	1.54	91.25	92.79	183,853	28,933	12.45
2018	52,815	750,251	13	212	225	1.54	74.43	75.97	167,665	17,809	12.45
2019	74,181	1,051,983	13	261	274	1.54	90.98	92.52	203,119	25,014	12.45
2020	90,401	1,210,240	13	334	348	1.54	115.67	117.21	221,714	30,483	12.45
2021	74,950	807,801	13	212	225	1.54	74.43	75.97	174,428	25,273	12.45
2022	58,561	704,847	13	208	221	1.54	73.07	74.61	162,331	19,747	12.45
2023	72,033	670,475	13	275	288	1.54	95.59	97.13	158,292	24,289	12.45
2024	79,680	652,209	13	240	253	1.54	83.92	85.46	156,146	26,868	12.45
2025	92,783	729,452	13	297	310	1.54	102.92	104.45	165,222	31,286	12.45
2026	51,637	369,962	13	182	196	1.54	64.39	65.93	122,982	17,412	12.45
2027	84,153	246,420	13	235	248	1.54	82.02	83.56	108,465	28,377	12.45
2028	71,814	499,269	13	227	240	1.54	79.31	80.85	138,175	24,216	12.45
2029	36,759	87,134	13	113	126	1.54	41.06	42.60	89,749	12,395	12.45
2030	65,199	38,143	13	218	231	1.54	76.33	77.87	83,993	21,985	12.45
Totals	1,328,427	10,458,746	262	4,527	4,789	31	1,584	1,615	2,819,123	447,946	249

¹ MMcf = million cubic feet

**Table E.1.7
Projected New Producing Well Numbers, and
Oil and Gas Production for All Producing Wells and All Federal Producing Wells
Alternative A (Current Management) – 2011-2030**

<i>Year</i>	<i>Gas Produced (MMcf¹)</i>	<i>Oil Produced (barrels)</i>	<i>New Oil Wells</i>	<i>New Gas Wells</i>	<i>Total New Producing Wells</i>	<i>New Federal Oil Wells</i>	<i>New Federal Gas Wells</i>	<i>Total New Producing Federal Wells</i>	<i>Federal Oil Produced (barrels)</i>	<i>Federal Gas Produced (MMcf¹)</i>	<i>Federal Wells Abandoned</i>
2011	57,021	217,556	13	205	218	1.52	69.78	71.30	105,074	18,652	12.45
2012	39,587	182,095	13	159	172	1.52	54.78	56.30	100,907	12,949	12.45
2013	54,703	273,296	13	196	209	1.52	66.89	68.40	111,623	17,893	12.45
2014	46,891	126,837	13	156	169	1.52	53.73	55.25	94,414	15,338	12.45
2015	64,084	231,625	13	227	240	1.52	76.88	78.40	106,727	20,962	12.45
2016	70,436	695,517	13	290	302	1.52	97.40	98.92	161,234	23,040	12.45
2017	84,549	875,038	13	258	271	1.52	87.14	88.66	182,328	27,656	12.45
2018	52,043	739,285	13	209	222	1.52	71.10	72.61	166,377	17,023	12.45
2019	73,097	1,036,606	13	257	270	1.52	86.88	88.40	201,312	23,910	12.45
2020	89,080	1,192,550	13	327	340	1.52	109.77	111.29	219,636	29,138	12.45
2021	73,854	795,994	13	209	222	1.52	71.10	72.61	173,040	24,158	12.45
2022	57,705	694,545	13	205	218	1.52	69.78	71.30	161,120	18,875	12.45
2023	70,980	660,674	13	271	284	1.52	91.35	92.87	157,140	23,218	12.45
2024	78,515	642,676	13	236	249	1.52	80.04	81.56	155,025	25,682	12.45
2025	91,427	718,789	13	292	305	1.52	98.19	99.71	163,969	29,906	12.45
2026	50,882	364,555	13	180	193	1.52	61.62	63.14	122,346	16,643	12.45
2027	82,923	242,818	13	231	244	1.52	78.20	79.72	108,042	27,124	12.45
2028	70,764	491,971	13	224	236	1.52	75.83	77.35	137,318	23,147	12.45
2029	36,222	85,861	13	112	125	1.52	39.26	40.78	89,600	11,848	12.45
2030	64,246	37,585	13	215	228	1.52	72.94	74.45	83,927	21,015	12.45
Totals	1,309,010	10,305,873	258	4,459	4,717	30	1,513	1,543	2,801,160	428,177	249

¹ MMcf = million cubic feet

Table E.1.8
Projected New Producing Well Numbers, and
Oil and Gas Production for All Producing Wells and All Federal Producing Wells
Alternative B – 2011-2030

<i>Year</i>	<i>Gas Produced (MMcf¹)</i>	<i>Oil Produced (barrels)</i>	<i>New Oil Wells</i>	<i>New Gas Wells</i>	<i>Total New Producing Wells</i>	<i>New Federal Oil Wells</i>	<i>New Federal Gas Wells</i>	<i>Total New Producing Federal Wells</i>	<i>Federal Oil Produced (barrels)</i>	<i>Federal Gas Produced (MMcf¹)</i>	<i>Federal Wells Abandoned</i>
2011	45,209	172,487	10	160	170	1.20	22.09	23.29	99,778	6,189	12.45
2012	31,386	144,372	10	124	135	1.20	17.22	18.42	96,475	4,297	12.45
2013	43,371	216,680	10	153	163	1.20	21.12	22.32	104,971	5,937	12.45
2014	37,177	100,561	10	121	131	1.20	16.78	17.98	91,327	5,090	12.45
2015	50,808	183,641	10	177	187	1.20	24.37	25.57	101,089	6,956	12.45
2016	55,844	551,433	10	226	236	1.20	31.08	32.29	144,304	7,645	12.45
2017	67,034	693,764	10	202	212	1.20	27.83	29.04	161,028	9,177	12.45
2018	41,262	586,134	10	163	173	1.20	22.52	23.73	148,382	5,649	12.45
2019	57,954	821,862	10	200	211	1.20	27.62	28.82	176,080	7,934	12.45
2020	70,626	945,500	10	255	265	1.20	35.09	36.29	190,607	9,669	12.45
2021	58,555	631,095	10	163	173	1.20	22.52	23.73	153,665	8,016	12.45
2022	45,751	550,662	10	160	170	1.20	22.09	23.29	144,214	6,263	12.45
2023	56,276	523,808	10	211	222	1.20	29.13	30.34	141,058	7,704	12.45
2024	62,250	509,538	10	184	195	1.20	25.45	26.65	139,382	8,522	12.45
2025	72,487	569,884	10	228	238	1.20	31.41	32.61	146,472	9,923	12.45
2026	40,341	289,033	10	140	150	1.20	19.38	20.59	113,472	5,523	12.45
2027	65,745	192,516	10	180	190	1.20	24.80	26.00	102,132	9,000	12.45
2028	56,105	390,054	10	174	184	1.20	24.04	25.24	125,342	7,681	12.45
2029	28,718	68,074	10	87	97	1.20	12.12	13.33	87,510	3,932	12.45
2030	50,937	29,799	10	167	177	1.20	23.07	24.27	83,012	6,973	12.45
Totals	1,037,834	8,170,897	205	3,475	3,680	24	480	504	2,550,300	142,079	249

¹ MMcf = million cubic feet

Table E.1.9
Projected New Producing Well Numbers, and
Oil and Gas Production for All Producing Wells and All Federal Producing Wells
Alternative C – 2011-2030

<i>Year</i>	<i>Gas Produced (MMcf¹)</i>	<i>Oil Produced (barrels)</i>	<i>New Oil Wells</i>	<i>New Gas Wells</i>	<i>Total New Producing Wells</i>	<i>New Federal Oil Wells</i>	<i>New Federal Gas Wells</i>	<i>Total New Producing Federal Wells</i>	<i>Federal Oil Produced (barrels)</i>	<i>Federal Gas Produced (MMcf¹)</i>	<i>Federal Wells Abandoned</i>
2011	54,182	206,725	12	195	207	1.45	59.53	60.98	103,801	15,924	12.45
2012	37,616	173,029	12	153	166	1.45	47.29	48.74	99,842	11,055	12.45
2013	51,979	259,689	12	187	199	1.45	57.17	58.63	110,024	15,277	12.45
2014	44,556	120,522	12	150	163	1.45	46.34	47.79	93,672	13,095	12.45
2015	60,894	220,093	12	216	228	1.45	65.65	67.10	105,372	17,897	12.45
2016	66,929	660,889	12	274	286	1.45	82.60	84.05	157,165	19,670	12.45
2017	80,340	831,472	12	246	258	1.45	74.36	75.81	177,209	23,612	12.45
2018	49,452	702,478	12	199	211	1.45	60.71	62.16	162,052	14,534	12.45
2019	69,458	984,997	12	244	256	1.45	73.89	75.34	195,248	20,414	12.45
2020	84,645	1,133,176	12	311	324	1.45	93.67	95.12	212,659	24,877	12.45
2021	70,178	756,364	12	200	212	1.45	60.94	62.39	168,384	20,625	12.45
2022	54,832	659,966	12	195	207	1.45	59.53	60.98	157,057	16,115	12.45
2023	67,446	627,781	12	256	268	1.45	77.42	78.87	153,275	19,822	12.45
2024	74,606	610,679	12	226	238	1.45	68.48	69.93	151,266	21,927	12.45
2025	86,875	683,003	12	276	288	1.45	83.31	84.76	159,764	25,533	12.45
2026	48,349	346,405	12	174	186	1.45	53.17	54.62	120,214	14,210	12.45
2027	78,795	230,729	12	220	232	1.45	66.83	68.28	106,622	23,158	12.45
2028	67,241	467,478	12	213	225	1.45	64.71	66.16	134,440	19,762	12.45
2029	34,419	81,586	12	109	121	1.45	34.10	35.55	89,097	10,116	12.45
2030	61,047	35,714	12	205	217	1.45	62.35	63.81	83,707	17,942	12.45
Totals	1,243,838	9,792,775	247	4,248	4,495	29	1,292	1,321	2,740,871	365,564	249

¹ MMcf = million cubic feet

Table E.1.10
Projected New Producing Well Numbers, and
Oil and Gas Production for All Producing Wells and All Federal Producing Wells
Alternative D – 2011-2030

<i>Year</i>	<i>Gas Produced (MMcf¹)</i>	<i>Oil Produced (barrels)</i>	<i>New Oil Wells</i>	<i>New Gas Wells</i>	<i>Total New Producing Wells</i>	<i>New Federal Oil Wells</i>	<i>New Federal Gas Wells</i>	<i>Total New Producing Federal Wells</i>	<i>Federal Oil Produced (barrels)</i>	<i>Federal Gas Produced (MMcf¹)</i>	<i>Federal Wells Abandoned</i>
2011	57,216	218,298	13	205	218	1.52	70.29	71.81	105,161	18,853	12.45
2012	39,722	182,716	13	160	173	1.52	55.45	56.97	100,980	13,088	12.45
2013	54,889	274,228	13	196	209	1.52	67.37	68.90	111,733	18,086	12.45
2014	47,051	127,270	13	156	169	1.52	54.12	55.65	94,465	15,503	12.45
2015	64,303	232,414	13	228	240	1.52	77.71	79.23	106,820	21,188	12.45
2016	70,676	697,888	13	290	303	1.52	98.38	99.90	161,513	23,288	12.45
2017	84,837	878,022	13	260	273	1.52	88.31	89.83	182,679	27,954	12.45
2018	52,220	741,806	13	210	223	1.52	71.88	73.40	166,673	17,207	12.45
2019	73,346	1,040,141	13	258	271	1.52	87.78	89.30	201,728	24,168	12.45
2020	89,387	1,196,616	13	330	343	1.52	111.63	113.15	220,113	29,452	12.45
2021	74,106	798,708	13	210	223	1.52	71.88	73.40	173,359	24,418	12.45
2022	57,902	696,913	13	206	219	1.52	70.55	72.08	161,398	19,079	12.45
2023	71,222	662,927	13	272	285	1.52	92.28	93.80	157,405	23,468	12.45
2024	78,783	644,867	13	237	250	1.52	80.89	82.41	155,283	25,959	12.45
2025	91,738	721,240	13	293	306	1.52	99.17	100.69	164,257	30,228	12.45
2026	51,055	365,798	13	180	193	1.52	62.07	63.60	122,492	16,823	12.45
2027	83,206	243,646	13	232	244	1.52	79.03	80.56	108,139	27,416	12.45
2028	71,006	493,649	13	224	237	1.52	76.65	78.17	137,515	23,396	12.45
2029	36,346	86,153	13	113	125	1.52	39.82	41.34	89,634	11,976	12.45
2030	64,465	37,713	13	215	228	1.52	73.73	75.26	83,942	21,241	12.45
Totals	1,313,474	10,341,013	259	4,474	4,733	30	1,529	1,559	2,805,289	432,790	249

¹ MMcf = million cubic feet

Table E.1.11
Projected New Producing Well Numbers, and
Oil and Gas Production for All Producing Wells and All Federal Producing Wells
Alternative E (Preferred Alternative) – 2011-2030

<i>Year</i>	<i>Gas Produced (MMcf¹)</i>	<i>Oil Produced (barrels)</i>	<i>New Oil Wells</i>	<i>New Gas Wells</i>	<i>Total New Producing Wells</i>	<i>New Federal Oil Wells</i>	<i>New Federal Gas Wells</i>	<i>Total New Producing Federal Wells</i>	<i>Federal Oil Produced (barrels)</i>	<i>Federal Gas Produced (MMcf¹)</i>	<i>Federal Wells Abandoned</i>
2011	56,044	213,365	13	200	213	1.49	65.17	66.66	104,581	17,547	12.45
2012	38,908	178,586	13	156	169	1.49	51.34	52.82	100,495	12,182	12.45
2013	53,765	268,030	13	192	205	1.49	62.66	64.14	111,005	16,834	12.45
2014	46,087	124,393	13	152	165	1.49	50.08	51.57	94,127	14,430	12.45
2015	62,985	227,162	13	222	235	1.49	71.96	73.45	106,203	19,721	12.45
2016	69,228	682,116	13	283	296	1.49	91.08	92.57	159,660	21,675	12.45
2017	83,100	858,179	13	253	266	1.49	81.77	83.26	180,347	26,018	12.45
2018	51,151	725,041	13	205	218	1.49	66.68	68.17	164,703	16,015	12.45
2019	71,844	1,016,634	13	252	265	1.49	81.52	83.01	198,965	22,494	12.45
2020	87,553	1,169,573	13	322	335	1.49	103.41	104.89	216,936	27,413	12.45
2021	72,588	780,657	13	206	219	1.49	66.99	68.48	171,238	22,727	12.45
2022	56,716	681,163	13	202	215	1.49	65.74	67.22	159,548	17,758	12.45
2023	69,763	647,945	13	266	279	1.49	85.86	87.35	155,645	21,843	12.45
2024	77,169	630,293	13	233	245	1.49	76.30	77.78	153,570	24,162	12.45
2025	89,859	704,940	13	287	300	1.49	93.40	94.89	162,341	28,135	12.45
2026	50,009	357,531	13	177	190	1.49	58.94	60.43	121,521	15,658	12.45
2027	81,502	238,140	13	227	240	1.49	74.53	76.02	107,492	25,518	12.45
2028	69,551	482,493	13	220	232	1.49	72.27	73.76	136,204	21,776	12.45
2029	35,601	84,206	13	110	123	1.49	38.06	39.55	89,405	11,147	12.45
2030	63,144	36,861	13	211	224	1.49	69.50	70.99	83,842	19,771	12.45
Totals	1,286,567	10,107,308	253	4,378	4,631	30	1,427	1,457	2,777,829	402,824	249

¹ MMcf = million cubic feet

Table E.1.12 Surface Disturbance Associated with All New Drilled Wells and Existing Active Wells Baseline Development Scenario – 2011-2030						
Short-Term Surface Disturbance						
Wells			Acres of Surface Disturbance			
Type	Total	BLM- Managed	Access Roads/ Flow Lines	Well Pads	Total	BLM- Managed
New Exploratory and Development Wells						
Coalbed Gas	150	24	1.85	1	428	68
Bowdoin Dome Area	1,091	627	1.85	1	3,109	1,786
Rest of Planning Area	4,861	1,311	3.1	2.1	25,277	6,820
Existing Wells						
Bowdoin Dome Area	1,887	1,060	0.25	0.5	1,415	795
Rest of Planning Area	7,327	534	0.78	0.14	6,741	491
Total Wells/Disturbance	15,316	3,556			36,970	9,960
Long-Term Surface Disturbance						
Wells			Acres of Surface Disturbance			
Type	Total	BLM- Managed	Access Roads/ Flow Lines	Well Pads	Total	BLM- Managed
New Exploratory and Development Wells						
Coalbed Gas	135	22	0.25	0.5	101	16
Bowdoin Dome Area	1,058	608	0.25	0.5	794	456
Rest of Planning Area	3,731	1,007	0.78	0.14	3,432	926
Existing Wells						
Bowdoin Dome Area	1,579	887	0.25	0.5	1,184	665
Rest of Planning Area	6,279	458	0.78	0.14	5,777	421
Total Wells/Disturbance	12,782	2,981			11,288	2,484

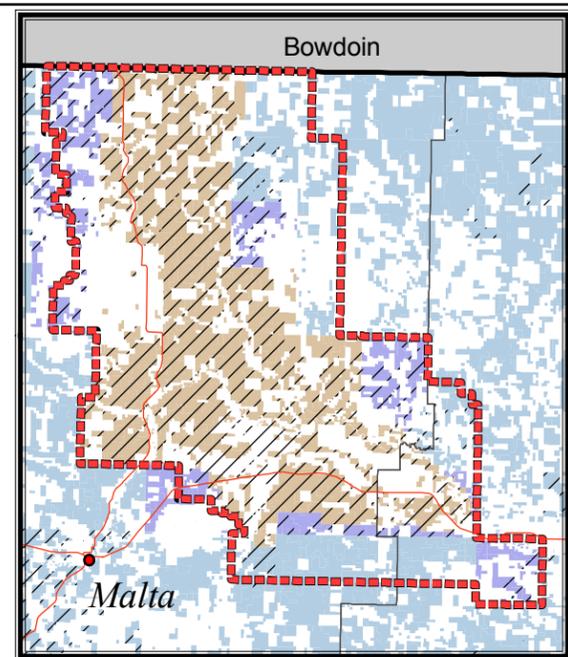
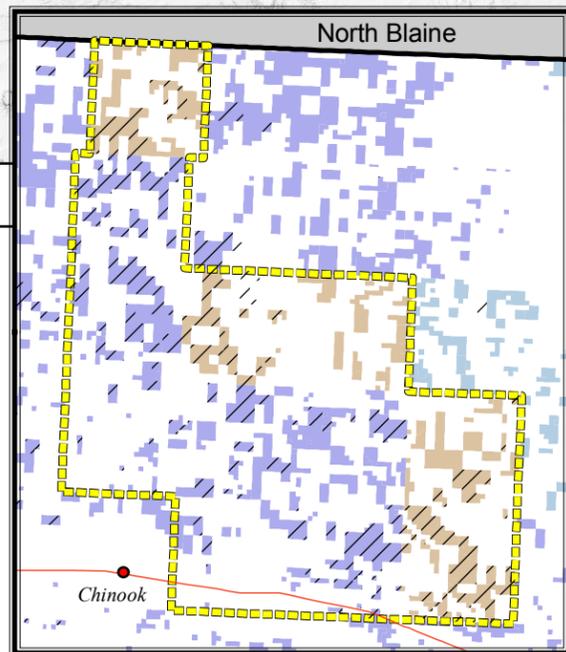
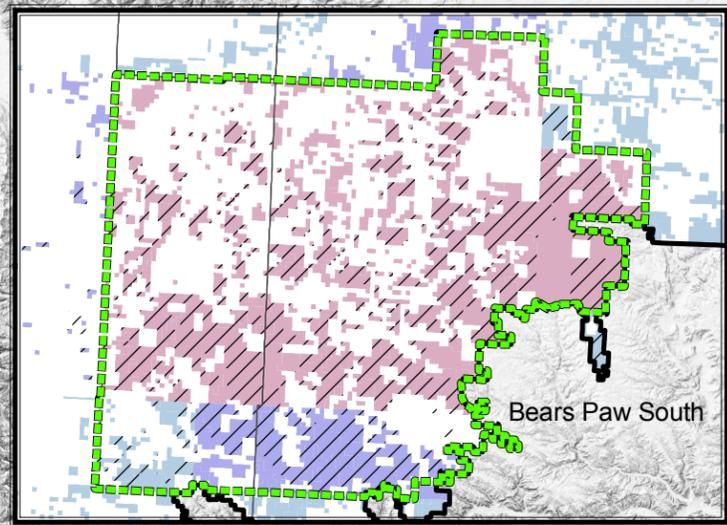
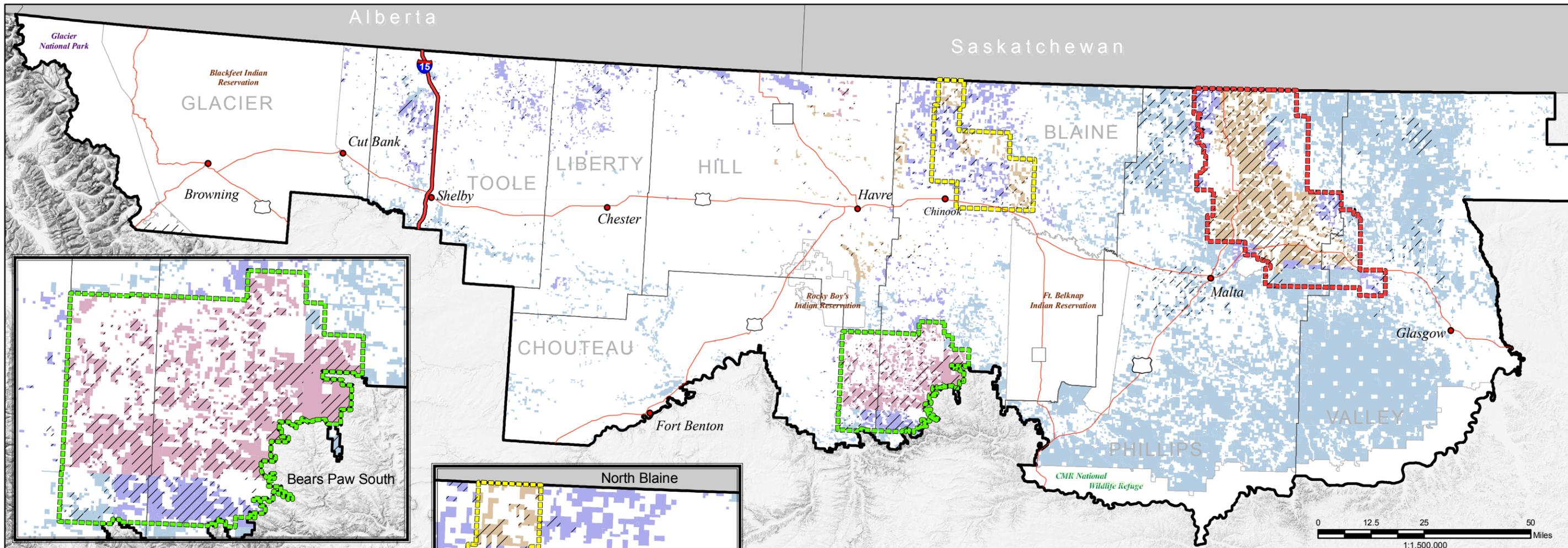
Table E.1.13 Surface Disturbance Associated with All New Drilled Wells and Existing Active Wells Alternative A Development Scenario – 2011-2030						
<i>Short-Term Surface Disturbance</i>						
<i>Wells</i>			<i>Acres of Surface Disturbance</i>			
<i>Type</i>	<i>Total</i>	<i>BLM-Managed</i>	<i>Access Roads/ Flow Lines</i>	<i>Well Pads</i>	<i>Total</i>	<i>BLM-Managed</i>
New Exploratory and Development Wells						
Coalbed Gas	149	23	1.85	1	425	66
Bowdoin Dome Area	1,066	602	1.85	1	3,038	1,715
Rest of Planning Area	4,802	1,249	3.1	2.1	24,970	6,497
Existing Wells						
Bowdoin Dome Area	1,887	1,060	0.25	0.5	1,415	795
Rest of Planning Area	7,327	534	0.78	0.14	6,741	491
Total Wells/Disturbance	15,231	3,468			36,589	9,564
<i>Long-Term Surface Disturbance</i>						
<i>Wells</i>			<i>Acres of Surface Disturbance</i>			
<i>Type</i>	<i>Total</i>	<i>BLM-Managed</i>	<i>Access Roads/ Flow Lines</i>	<i>Well Pads</i>	<i>Total</i>	<i>BLM-Managed</i>
New Exploratory and Development Wells						
Coalbed Gas	134	21	0.25	0.5	101	16
Bowdoin Dome Area	1,034	584	0.25	0.5	776	438
Rest of Planning Area	3,686	959	0.78	0.14	3,391	882
Existing Wells						
Bowdoin Dome Area	1,579	887	0.25	0.5	1,184	665
Rest of Planning Area	6,279	458	0.78	0.14	5,777	421
Total Wells/Disturbance	12,712	2,908			11,228	2,422

Table E.1.14 Surface Disturbance Associated with All New Drilled Wells and Existing Active Wells Alternative B Development Scenario – 2011-2030						
<i>Short-Term Surface Disturbance</i>						
<i>Wells</i>			<i>Acres of Surface Disturbance</i>			
<i>Type</i>	<i>Total</i>	<i>BLM- Managed</i>	<i>Access Roads/ Flow Lines</i>	<i>Well Pads</i>	<i>Total</i>	<i>BLM- Managed</i>
New Exploratory and Development Wells						
Coalbed Gas	137	11	1.85	1	390	31
Bowdoin Dome Area	546	79	1.85	1	1,556	224
Rest of Planning Area	4,102	557	3.1	2.1	21,330	2,899
Existing Wells						
Bowdoin Dome Area	1,887	1,060	0.25	0.5	1,415	795
Rest of Planning Area	7,327	534	0.78	0.14	6,741	491
Total Wells/Disturbance	13,999	2,241			31,433	4,441
<i>Long-Term Surface Disturbance</i>						
<i>Wells</i>			<i>Acres of Surface Disturbance</i>			
<i>Type</i>	<i>Total</i>	<i>BLM- Managed</i>	<i>Access Roads/ Flow Lines</i>	<i>Well Pads</i>	<i>Total</i>	<i>BLM- Managed</i>
New Exploratory and Development Wells						
Coalbed Gas	123	10	0.25	0.5	92	7
Bowdoin Dome Area	530	76	0.25	0.5	397	57
Rest of Planning Area	3,148	428	0.78	0.14	2,896	394
Existing Wells						
Bowdoin Dome Area	1,579	887	0.25	0.5	1,184	665
Rest of Planning Area	6,279	458	0.78	0.14	5,777	421
Total Wells/Disturbance	11,659	1,859			10,347	1,545

Table E.1.15 Surface Disturbance Associated with All New Drilled Wells and Existing Active Wells Alternative C Development Scenario – 2011-2030						
<i>Short-Term Surface Disturbance</i>						
<i>Wells</i>			<i>Acres of Surface Disturbance</i>			
<i>Type</i>	<i>Total</i>	<i>BLM-Managed</i>	<i>Access Roads/ Flow Lines</i>	<i>Well Pads</i>	<i>Total</i>	<i>BLM-Managed</i>
New Exploratory and Development Wells						
Coalbed Gas	146	20	1.85	1	416	57
Bowdoin Dome Area	933	469	1.85	1	2,659	1,336
Rest of Planning Area	4,686	1,128	3.1	2.1	24,367	5,868
Existing Wells						
Bowdoin Dome Area	1,887	1,060	0.25	0.5	1,415	795
Rest of Planning Area	7,327	534	0.78	0.14	6,741	491
Total Wells/Disturbance	14,979	3,211			35,598	8,547
<i>Long-Term Surface Disturbance</i>						
<i>Wells</i>			<i>Acres of Surface Disturbance</i>			
<i>Type</i>	<i>Total</i>	<i>BLM-Managed</i>	<i>Access Roads/ Flow Lines</i>	<i>Well Pads</i>	<i>Total</i>	<i>BLM-Managed</i>
New Exploratory and Development Wells						
Coalbed Gas	131	18	0.25	0.5	99	14
Bowdoin Dome Area	905	455	0.25	0.5	679	341
Rest of Planning Area	3,597	866	0.78	0.14	3,309	797
Existing Wells						
Bowdoin Dome Area	1,579	887	0.25	0.5	1,184	665
Rest of Planning Area	6,279	458	0.78	0.14	5,777	421
Total Wells/Disturbance	12,491	2,683			11,047	2,238

Table E.1.16						
Surface Disturbance						
Associated with All New Drilled Wells and Existing Active Wells						
Alternative D Development Scenario – 2011-2030						
<i>Short-Term Surface Disturbance</i>						
<i>Wells</i>			<i>Acres of Surface Disturbance</i>			
<i>Type</i>	<i>Total</i>	<i>BLM-Managed</i>	<i>Access Roads/ Flow Lines</i>	<i>Well Pads</i>	<i>Total</i>	<i>BLM-Managed</i>
New Exploratory and Development Wells						
Coalbed Gas	149	23	1.85	1	425	66
Bowdoin Dome Area	1,068	604	1.85	1	3,044	1,720
Rest of Planning Area	4,817	1,267	3.1	2.1	25,059	6,591
Existing Wells						
Bowdoin Dome Area	1,887	1,060	0.25	0.5	1,415	795
Rest of Planning Area	7,327	534	0.78	0.14	6,741	491
Total Wells/Disturbance	15,250	3,488			36,683	9,663
<i>Long-Term Surface Disturbance</i>						
<i>Wells</i>			<i>Acres of Surface Disturbance</i>			
<i>Type</i>	<i>Total</i>	<i>BLM-Managed</i>	<i>Access Roads/ Flow Lines</i>	<i>Well Pads</i>	<i>Total</i>	<i>BLM-Managed</i>
New Exploratory and Development Wells						
Coalbed Gas	134	21	0.25	0.5	101	16
Bowdoin Dome Area	1,036	586	0.25	0.5	777	439
Rest of Planning Area	3,699	973	0.78	0.14	3,403	895
Existing Wells						
Bowdoin Dome Area	1,579	887	0.25	0.5	1,184	665
Rest of Planning Area	6,279	458	0.78	0.14	5,777	421
Total Wells/Disturbance	12,727	2,924			11,241	2,436

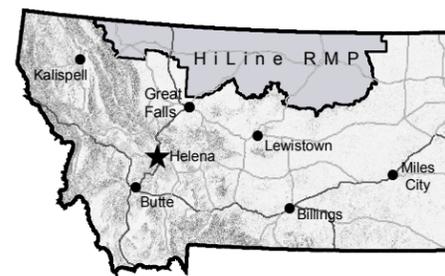
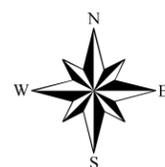
Table E.1.17 Surface Disturbance Associated with All New Drilled Wells and Existing Active Wells Alternative E Development Scenario – 2011-2030						
<i>Short-Term Surface Disturbance</i>						
<i>Wells</i>			<i>Acres of Surface Disturbance</i>			
<i>Type</i>	<i>Total</i>	<i>BLM-Managed</i>	<i>Access Roads/ Flow Lines</i>	<i>Well Pads</i>	<i>Total</i>	<i>BLM-Managed</i>
New Exploratory and Development Wells						
Coalbed Gas	144	18	1.85	1	410	51
Bowdoin Dome Area	1,024	560	1.85	1	2,918	1,597
Rest of Planning Area	4,740	1,190	3.1	2.1	24,648	6,188
Existing Wells						
Bowdoin Dome Area	1,887	1,060	0.25	0.5	1,415	795
Rest of Planning Area	7,327	534	0.78	0.14	6,741	491
Total Wells/Disturbance	15,122	3,362			36,133	9,123
<i>Long-Term Surface Disturbance</i>						
<i>Wells</i>			<i>Acres of Surface Disturbance</i>			
<i>Type</i>	<i>Total</i>	<i>BLM-Managed</i>	<i>Access Roads/ Flow Lines</i>	<i>Well Pads</i>	<i>Total</i>	<i>BLM-Managed</i>
New Exploratory and Development Wells						
Coalbed Gas	130	16	0.25	0.5	97	12
Bowdoin Dome Area	993	544	0.25	0.5	745	408
Rest of Planning Area	3,638	913	0.78	0.14	3,347	840
Existing Wells						
Bowdoin Dome Area	1,579	887	0.25	0.5	1,184	665
Rest of Planning Area	6,279	458	0.78	0.14	5,777	421
Total Wells/Disturbance	12,619	2,818			11,150	2,346



Albers Equal Area, NAD83, Meters
Created by the Malta Field Office in December 2012

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- Development Potential**
- High
 - Moderate
 - Low
 - Very Low
 - Authorized Leases
 - High Interest Areas
 - RMP boundary
 - County Line
 - Interstate
 - Highway or State Route
 - Towns



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Map E.1
Fluid Mineral Leasing Potential



Map shows the Development Potential and Existing Leases for Oil and Gas on BLM administered subsurface.

Appendix E Fluid Minerals

E.2 Oil and Gas Best Management Practices (General Conditions of Approval)

General or typical conditions of approval (COAs) are mitigation measures that may be considered when processing Applications for Permits to Drill (APDs), Sundry Notice Drilling Plans, and Surface Use Plans when they are: 1) not specifically addressed in those plans or existing lease stipulations; and 2) needed to mitigate impacts to resource values identified at the onsite inspection or during review of the plans.

The COAs also allow the BLM to prescribe resource protection measures for lands that were previously leased with varying sets of lease stipulations. However, for lands that are already leased BLM restrictions on development, not required to comply with existing laws, must be reasonable and consistent with existing lease rights. The COAs must not constrain or restrict development beyond the measures anticipated or authorized by the lease terms or regulations and/or interfere with the lessee's opportunity to economically recover the oil and gas resources, considering the lease as a whole.

The following list is not all-inclusive, but presents some general or typical conditions of approval that may be considered in the planning area to address potential impacts at the time of site-specific lease operations. The wording of the conditions of approval may be modified or additional conditions of approval may be developed to address site-specific conditions. An exception, waiver, and modification may be added to a COA during the permitting process, if the permit condition serves a purpose similar to a traditional lease stipulation, such as a timing limitation or a permit condition that restricts development in a particular area. It is important to note that these conditions do not apply to routine operation and maintenance of production facilities.

Historic Properties and/or Cultural Resources

The affected area 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 surface-disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.

Occupancy and use would be avoided if possible within, and for a distance of 300 feet from the boundaries of cultural properties and archaeological/historic districts determined to be eligible or potentially eligible to the National Register of Historic Places. This includes cultural properties designated for conservation use, scientific use, traditional use, public use, and experimental use. Defined archaeological districts include but are not limited to: Sweet Grass Hills ACEC, Big Bend of the Milk River ACEC, Kevin Rim ACEC, and the Medicine Rock, Fantasy and Laundry Springs sites.

Surface-disturbing and disruptive activities would be avoided if possible within 1/2 mile of the boundaries of cultural properties determined to be of particular importance to Native American groups, determined to be Traditional Cultural Properties, and/or designated for traditional use. Such properties include (but are not limited to) burial locations, pictograph/petroglyph sites, vision quest locations, plant gathering locations, and areas considered sacred or used for religious purposes.

An inventory of those portions of the affected area subject to proposed disturbance may be required prior to any surface disturbance to determine if cultural resources are present and to identify needed mitigation measures. Prior to undertaking any surface-disturbing activities on the lands covered by a lease, the lessee or operator shall:

1. Engage the services of a cultural resource consultant acceptable to the Surface Management Agency (SMA) to conduct a cultural resource inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the standard ten-acre minimum to cover possible site relocation which may result from environmental or other considerations. An acceptable inventory report is to be submitted to the SMA for review and approval no later than that time when an otherwise complete application for approval of drilling or subsequent surface-disturbing operation is submitted.
2. Implement mitigation measures required by the SMA. Mitigation may include the relocation of proposed lease-related activities or other protective measures such as data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the SMA, surface occupancy on that area must be prohibited. The lessee or operator shall immediately bring to the attention of the SMA any cultural resources discovered as a result of approved operations under this lease, and shall not disturb such discoveries until directed to proceed by the SMA.

The operator is responsible for informing all persons in the area who are associated with this project that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during construction, the operator is to immediately stop work that might further disturb such materials, and contact the authorized officer. Within five working days the authorized officer will inform the operator as to:

- whether the materials appear eligible for the National Register of Historic Places;
- the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary); and
- a timeframe for the authorized officer to complete and expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Officer, that the findings of the authorized officer are correct and that mitigation is appropriate.

If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with the process, the authorized officer will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation costs. The authorized officer will provide technical and procedural guidelines for the conduct of the mitigation. Upon verification from the authorized officer that the required mitigation has been completed, the operator will then be allowed to resume construction.

National Historic Trails

Surface-disturbing and disruptive activities would be avoided if possible within 1/4 mile of designated National Historic Trails (Lewis and Clark Trail and Nez Perce Trail).

Noise

Install remote monitoring systems (e.g., Supervisory Control and Data Acquisition (SCADA) or Computer Assisted Operations (CAOs)), where feasible, to mitigate the noise and disruptions associated with increased field truck traffic. Limitations to the feasibility of implementing this recommendation may exist due to the age of the field, the lack of appropriate infrastructure, and the remote nature of the area.

Muffle and maintain all motorized equipment according to manufacturers' specifications in an effort to achieve the recommended standard of 55 dBA (with an average day/night noise level of 49 dBA) for noise impacts to sensitive receptors at 1/4 mile from the source. When background noise exceeds 55 dBA, noise levels will be no greater than 5 dBA above background at 1/4 mile.

Paleontological Resources

Surface-disturbing activities would be avoided if possible within designated paleontological sites/locales.

In areas known to have high potential (Class IV and V) for containing significant paleontological resources and in the Malta Geological ACEC, the Lessee would be required to conduct a paleontological inventory prior to any surface disturbance. The Lessee must engage the services of a qualified paleontologist, acceptable to the surface management agency, to conduct the inventory. An acceptable inventory report is to be submitted to the BLM for review and approval at the time a surface-disturbing plan of operations is submitted.

Inadvertent Discovery – Upon discovery of significant paleontological materials during operations, work in the immediate area of the find shall be diverted and the find will be reported to the authorized officer immediately. Stabilization of the find to prevent further physical damage or erosion should be undertaken as feasible and protective measures to prevent looting should be initiated. An evaluation of the paleontological discovery will be made by a BLM-permitted paleontologist within an appropriate timeframe to determine the appropriate action(s) to minimize the loss of any significant paleontological values. The operator will bear the cost of any required paleontological appraisals, collection of fossils, or salvage of any fossils of significant scientific interest discovered during the operation.

Collection Restrictions – The operator shall provide a background briefing for all project personnel describing procedures and notifications required in the event of discoveries by project personnel. Supervisory personnel shall advise project personnel of restrictions for collection of significant fossils. Supervisory personnel are also required to enforce collection restrictions.

Recreation Sites

Surface-disturbing and disruptive activities would be avoided if possible within and 500 feet from recreation sites.

Residential Structures

Surface-disturbing and disruptive activities would be avoided if possible within and 500 feet from incorporated city limits or occupied residential structures.

Install signage notifying the public of the area of increased activity.

Remotely monitor well production where practical and technically feasible.

Water, Riparian Areas/Wetlands, Floodplains

Surface-disturbing activities would be avoided if possible within perennial or intermittent streams (as indicated by obligate wetland species or hydric soils); lakes, ponds, and reservoirs; floodplains; wetlands; and riparian areas.

Surface-disturbing activities may be controlled within and 300 feet from riparian/wetland areas. Surface-disturbing activities would require a plan with design features that demonstrate how all actions would maintain and/or improve the functionality of riparian/wetland areas. The plan will address: (1) potential impacts to riparian and wetland resources, (2) mitigation to reduce impacts to acceptable levels (including timing restrictions), (3) post project restoration, and (4) a detailed monitoring plan that would show the controlled use is compatible with wetland and riparian objectives (including habitat and water quality).

Limit construction of drainage crossings to no-flow periods or low-flow periods.

Minimize the area of disturbance within ephemeral and intermittent drainage channel environments.

Prohibit construction of well sites, access roads, and pipelines within 300 feet of surface water and/or riparian areas. Exceptions would be granted by the BLM based on an environmental analysis and site-specific mitigation plans.

Implement minor routing variations during access road layout to avoid steep slopes adjacent to ephemeral or intermittent drainage channels. Maintain a 100-foot-wide buffer strip of natural vegetation where possible (not including wetland vegetation) between all construction activities and ephemeral and intermittent drainage channels.

Do not install culverts on ephemeral drainages. The use of culverts on intermittent drainage crossings would be analyzed on a case-by-case basis. Design all drainage-crossing structures to carry 25- to 50-year discharge events or as otherwise directed by the BLM.

Design channel crossings to minimize changes in channel geometry and subsequent changes in flow hydraulics.

Maintain vegetation barriers occurring between construction activities and ephemeral and intermittent channels.

Minimize construction activities in areas of steep slopes and install special slope-stabilizing structures if construction cannot be avoided in these areas.

Install runoff and erosion control measures such as water bars, berms, and interceptor ditches as needed.

Include adequate drainage control devices and measures in the road design (e.g., road berms and drainage ditches, diversion ditches, cross drains, culverts, outsloping, and energy dissipaters) at sufficient intervals and intensities to adequately control and direct surface runoff above, below, and within the road environment in order to avoid erosion-concentrated flows. Use erosion control devices in conjunction with the surface runoff and drainage control devices and measures such as temporary barriers, ditch blocks, erosion stops, mattes, mulches, and vegetative covers. Implement a revegetation program as soon as possible to re-establish the soil protection afforded by a vegetal cover.

Design and construct interception ditches, sediment traps, water bars, and revegetation and soil stabilization measures if needed.

Construct channel crossings for buried pipelines such that the pipe is buried a minimum of four feet below the channel bottom.

Regrade disturbed channel beds to the original geometric configuration with the same or very similar bed material.

Upon completion of construction activities, restore topography to near pre-existing contours at well sites, other facility sites, and along access roads and pipelines. Replace up to 12 inches of topsoil or suitable plant-growth material over all disturbed surfaces. Apply fertilizer, seed (specified in a reclamation plan), and mulch as required.

Ensure that the project complies with EO 11990 (floodplains protection) and RMP management directives that relate to protection of water resources. These regulations require avoidance of stream channels to the maximum practicable extent. Where total avoidance is not practicable, implement measures to minimize impacts to streams and associated floodplains/floodways. Where streams and floodplains cannot be avoided, the operators would be required to show the BLM authorized officer why such resources cannot be totally avoided and how impacts would be minimized during the APD process.

Case wells during drilling, and case and cement all wells in accordance with Onshore Order No. 2 to protect accessible high-quality aquifers. High-quality aquifers are those with known water quality of 10,000 ppm TDS or less. The protection of high-quality aquifers involves well casing and welding of sufficient integrity to contain all fluids under high pressure during drilling and well completion. Further, ensure that wells adhere to the appropriate BLM cementing policy.

Construct reserve pits so that a minimum of one-half of the total depth is below the original ground surface on the lowest point within the pit. To prevent seepage of fluids, utilize drilling mud gel or poly liners to line reserve pits in areas where subsurface material would not contain fluids. Liners would be of sufficient strength and thickness to withstand

normal installation and use. The liner would be impermeable (i.e., having a permeability of less than 10^{-7} cm/sec) and chemically compatible with all substances which may be put in the pit.

Maintain two feet of freeboard on all reserve pits to ensure the reserve pits are not in danger of overflowing. Shut down drilling operations until the problem is corrected if leakage is found outside the pit.

Extract hydrostatic test water used in conjunction with pipeline testing and all water used during construction activities from sources with sufficient quantities and through appropriation permits approved by the State of Montana.

Discharge all concentrated water flows within access road rights-of-way onto or through an energy dissipater structure (e.g., rip-rapped aprons and discharge points) and discharge into undisturbed vegetation.

Develop and implement a stormwater pollution plan for stormwater runoff at drill sites as required per Montana Department of Environmental Quality stormwater MPDES permit requirements.

Coordinate with the U.S. Army Corps of Engineers to determine the specific Clean Water Act (CWA) Section 404 permit requirements and conditions (including the potential requirement of compensatory mitigation) for each facility that occurs in waters of the U.S. to prevent the occurrence of significant impact to such waters.

Ensure that the project must comply with all applicable requirements of the CWA, including the requirement to obtain an MPDES permit.

Evaluate all project facility sites for occurrence and distribution of waters of the U.S., special aquatic sites, and jurisdictional wetlands. Locate all project facilities out of these sensitive areas. If complete avoidance is not possible, minimize impacts through modification and minor relocations. Coordinate activities that involve dredge or fill into wetlands with the Corps of Engineers.

Soils

Prior to any surface disturbance on sensitive soils a reclamation plan must be approved by the authorized officer. The plan must demonstrate that no other practicable alternatives exist for relocating the activity. The plan must include a detailed description of how the activity would: (1) control wind and water erosion; (2) control surface runoff; (3) minimize sediment production; (4) maintain site productivity; and (5) complete reclamation. The plan will consider avoidance, size limitations, timing restrictions (e.g. limiting wet condition road usage), physical mitigation, and off-site mitigation. Sensitive soils are defined as those with severe erosion ratings (wind and water).

Surface-disturbing activities would be avoided if possible on badlands, rock outcrop, or slopes susceptible to mass failure. The authorized officer may grant an exception to this requirement for pipelines if the operator submits a reclamation plan that clearly demonstrates effects from the proposed actions can be adequately mitigated. An exception may also be granted if an activity would occur on a previously disturbed area if the operator submits a reclamation plan that clearly demonstrates effects from the proposed actions can be adequately mitigated.

Stabilization efforts shall be completed within 30 days of the initiation of construction activities.

Reduce the area of disturbance to the absolute minimum necessary for construction and production operations while providing for the safety of personnel. Where possible, disturbance should be limited to the topping of shrubs and grasses. The operator should avoid off-road vehicle activity.

Where feasible, locate buried pipelines immediately adjacent to roads to avoid creating separate areas of disturbance and in order to reduce the total area of disturbance.

Reclamation shall not be conducted using frozen or saturated soil material.

Where possible, minimize disturbance to vegetated cut-and-fill areas on existing improved roads.

Construction, drilling, completion, pipeline installation, interim or final reclamation activities shall not be performed during periods when the soil is too wet to adequately support equipment/vehicles. If such equipment/vehicles create ruts in excess of 3 inches deep, operations must cease as the soil will be deemed too wet to adequately support equipment/vehicles. If safety, disrepair, erosion and/or excessive rutting problems are discovered, the operator will be responsible to repair, improve and/or maintain the roads to assure safety, stability and to limit soil erosion/rutting.

Additional measures can be found in Appendix J, Reclamation.

Visual Resources

Minimizing potential visual impacts from pumpjack units should include consideration of whether a well can be relocated to take advantage of distance, vegetation, or topography to reduce its visibility or contrast with the characteristic landscape from the point of view of recreational use of BLM land. When it can be used, site selection can be critical (as is color choice) in reducing the contrast of a pumpjack unit.

Since the visual impact potential of a pumpjack unit depends on location, Visual Resource Management (VRM) land classification, and visibility from BLM land in and near recreation sites, a determination of impact would require analysis of the specific circumstances surrounding a well. This would occur when the operator submits an APD.

Wastes, Hazardous and Solid

Recycle drilling mud to the extent feasible.

Drilling mud could be provided to private landowners for use as stock pond sealant.

Use closed-loop systems with above-ground steel tankage for exotic drilling mud operations.

Recycle completion fluids to the extent feasible.

Provide receptacles for trash and construction debris generated during construction and operations prior to transport in closed containers to a county sanitarian-approved landfill for disposal.

Recycle used oil and methanol to the extent feasible.

Investigate the feasibility of using produced water in well drilling and completion processes.

Use lined produced-water evaporation pits at high-volume central facilities.

To minimize undue exposure to hazardous situations, require measures that would preclude the public from entering hazardous areas and place warning signs alerting the public to truck traffic.

Institute a Hazard Communication Program for all operator employees and require subcontractor programs in accordance with OSHA 29 CFR 1910.1200. These programs are designed to educate and protect the employees and subcontractors with respect to any chemicals or hazardous substances that may be present in the workplace. As every chemical or hazardous material is brought on location, require that a Material Safety Data Sheet accompany that material and become part of the file kept at the field office as required by 29 CFR 1910.1200. Ensure that all employees receive the proper training in storage, handling, and disposal of hazardous substances.

Inventory and report chemical and hazardous materials in accordance with the Superfund Amendments and Reauthorization Act (SARA) Title III 40 CFR Part 335, if quantities exceeding 10,000 pounds or the threshold planning quantity (TPQ) are to be produced or stored in association with the proposed action. Submit the appropriate Section 311 and 312 forms at the required times to the state and county emergency management coordinators and the local fire departments.

Transport and/or dispose of any hazardous wastes, as defined by the Resource Conservation and Recovery Act (RCRA), in accordance with all applicable federal, state, and local regulations.

Design operations to severely limit or eliminate the need for extremely hazardous substances, and avoid the creation of hazardous wastes as defined by RCRA wherever possible.

Write and implement Spill Prevention Control and Countermeasure (SPCC) Plans as appropriate in accordance with 40 CFR Part 112 to prevent discharge of oil into navigable waters of the United States.

Manage gas transmission system equipment maintenance fluids such as used oil and antifreeze through third-party or in-house recyclers.

Implement the system-wide SPCC, expanded when necessary to cover new facilities, as required by the Clean Water Act (40 CFR 112.7).

Recycle methanol to minimize the need for disposal.

Provide portable toilets for field operations.

Wildlife

Bald Eagle

Surface-disturbing and disruptive activities would be avoided if possible within 1/2 mile of bald eagle nest sites that were active within the preceding 5 breeding seasons.

Bighorn Sheep Lambing

Surface-disturbing and disruptive activities would be avoided if possible within bighorn sheep lambing areas.

Bighorn Sheep Range

Prior to surface-disturbing or disruptive activities a plan to maintain bighorn sheep habitat will be prepared by the proponent and implemented upon approval by the authorized officer. This plan shall address how short-term and long-term direct and indirect effects to bighorn sheep range will be mitigated based on current science and research.

Black-footed Ferret

Surface-disturbing and disruptive activities would be avoided if possible within 1/4 mile of black-footed ferret habitat.

Black-tailed Prairie Dog

Surface-disturbing and disruptive activities would be avoided if possible within 1/4 mile of black-tailed prairie dog habitat.

Colonial Waterbirds

Surface-disturbing and disruptive activities would be avoided if possible within 1/4 mile of a waterbird nesting colony. Additionally, surface-disturbing and disruptive activities would be avoided from April 1 through July 15 within 1/2 mile of a waterbird nesting colony.

Minimize or avoid disturbance near important nesting and foraging areas such as Nelson Reservoir, Whitewater Lake, Pea Lake, Hewitt Lake, and other areas identified by the BLM based on the most current information available.

Crucial Winter Range

Prior to surface-disturbing or disruptive activities a plan to maintain functionality of crucial winter range for big game and/or Greater Sage-Grouse will be prepared by the proponent and implemented upon approval by the authorized officer. Within crucial winter range surface-disturbing or disruptive activities would be avoided if possible within 6/10 of a mile from any existing surface-disturbing or disruptive activity. The plan shall address how short-term and long-term direct and indirect effects to crucial winter range will be mitigated based on current science and research.

Endangered Species Act Section 7 Consultation

This 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 a BLM-approved activity that will contribute to a need to list such species or their habitat. The BLM may require modifications to or disapprove a 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 surface-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. §1531 et seq., including completion of any required procedure for conference or consultation.

Grassland Bird/Greater Sage-Grouse Priority Habitat Management Areas

Surface-disturbing and disruptive activities would be avoided if possible within the boundaries of all Greater Sage-Grouse Priority Habitat Management Areas. Additional conservation measures and BMPs applicable in PHMA can be found in Appendix M, Greater Sage-Grouse.

Greater Sage-Grouse General Habitat Management Areas

Surface-disturbing and disruptive activities would be avoided if possible within 0.6 mile of Greater Sage-Grouse leks. Additional conservation measures and BMPs applicable in GHMA can be found in Appendix M, Greater Sage-Grouse.

Within Greater Sage-Grouse general habitat surface-disturbing and disruptive activities would be avoided if possible within 2 miles of sage-grouse leks to protect nesting and brood rearing habitat March 1 – June 15. Prior to surface-disturbing or disruptive activities a plan to maintain functionality of Greater Sage-Grouse habitat will be prepared by the proponent and implemented upon approval by the authorized officer. This plan shall address how short-term and long-term direct and indirect effects to nesting and brood-rearing areas will be mitigated based on current science and research.

Require a one-day notice prior to any planned activity so that the pad site and any undeveloped access route or pipeline can be nest-dragged to determine the presence or absence of active nests. Require a second nest-drag survey if drilling activity begins more than two days after completion of pad construction.

Prioritize pad development based on suitability of habitat; construct pads that are in less suitable habitat (i.e., along existing roadways or within degraded habitats) during the breeding season, and construct pads located in more suitable habitat prior to or after the critical breeding season.

Avoid sagebrush, but if disturbance is necessary, interim reclamation should include sage plantings/seedings and/or the use of minimum disturbance practices to protect sage on well pads and pipelines.

Manage produced water to reduce the spread of West Nile virus within sage-grouse habitat areas. Implement the following impoundment construction techniques and measures to eliminate water sources that support breeding mosquitoes:

- Overbuild the size of ponds to accommodate a greater volume of water than is discharged. This will result in non-vegetated and muddy shorelines that breeding mosquitoes avoid.

- Build steep shorelines to reduce shallow water and aquatic vegetation around the perimeter of impoundments. Construction of steep shorelines also will increase wave action that deters mosquito production.
- Maintain the water level below rooted vegetation for a muddy shoreline that is unfavorable habitat for mosquito larvae. Rooted vegetation includes both aquatic and upland vegetative types. Always avoid flooding terrestrial vegetation in flat terrain or low-lying areas.
- Use a horizontal pipe to discharge inflow directly into existing open water, thus precluding shallow surface inflow and accumulation of sediment that promotes aquatic vegetation.
- Fence pond sites to restrict access by livestock and other wild ungulates that trample and disturb shorelines, enrich sediments with manure, and create hoof print pockets of water that are attractive to breeding mosquitoes.
- Use adulticides to target adult mosquito populations and larvicides to control the hatching of mosquito larvae, using approved pesticides and utilizing licensed applicators with a Pesticide Use Plan.

Greater Sage-Grouse Winter Range

Surface-disturbing and disruptive activities would be avoided if possible from December 1 through March 31 in Greater Sage-Grouse winter range.

Interior Least Tern

Surface-disturbing and disruptive activities would be avoided if possible within 1/4 mile of interior least tern occupied habitat.

Mountain Plover

Surface-disturbing and disruptive activities would be avoided if possible within mountain plover habitat. Additionally, surface-disturbing and disruptive activities would be avoided if possible from April 1 through July 15 within 1/4 mile of mountain plover habitat.

Pallid Sturgeon

Prior to surface-disturbing or disruptive activities occurring in or within 1/2 mile of river or stream shorelines identified as pallid sturgeon habitat, a plan to maintain pallid sturgeon habitat would be prepared by the proponent and implemented upon approval by the authorized officer. Any proposed development would require consultation with the USFWS which could result in a revised buffer distance.

Peregrine Falcon

Surface disturbing and disruptive activities would be avoided if possible within 1 mile of peregrine falcon nest sites active within the preceding 7 breeding seasons.

Piping Plover

Surface-disturbing and disruptive activities would be avoided if possible within 1/4 mile of piping plover habitat.

Potential piping plover nesting habitat near drilling and construction sites at Nelson Reservoir and Whitewater Lake will be identified and appropriate surveys will be conducted for this species prior to oil and gas activities. A timing stipulation during the nesting season would protect nesting piping plovers, but would not protect the function and utility of the site for subsequent nesting activity or occupancy. Therefore, no surface occupancy would apply to all new developments as well as to modifications of existing developments within 1/4 mile of piping plover nest sites, piping plover nesting habitat, and designated critical habitat (critical habitat is on the Bowdoin NWR). This condition of

approval will minimize threats and disturbances to piping plovers, and prevent fragmentation and degradation of piping plover nesting habitat and critical habitat. Waivers, exceptions, and modifications may apply if it is determined that the factors leading to its inclusion have changed sufficiently to make the protection provided by the condition of approval no longer justified, so long as the proposed operations would have “No Effect” on piping plovers and would not “Adversely Modify” piping plover critical habitat.

Raptors

Surface-disturbing and disruptive activities would be avoided if possible within 1/4 mile of raptor nest sites that were active within the past 7 years. Additionally, surface-disturbing and disruptive activities would be avoided from March 1 through July 31 within 1/2 mile of active raptor nest sites.

Install and maintain power line facilities to reduce raptor collisions and electrocutions, and discourage perching and nest-building on infrastructure.

Conduct nesting raptor surveys in suitable nesting habitats within 1/2 mile of proposed disturbance. Surveys could be conducted throughout the year; however, any potential nest sites located must be resurveyed during the breeding season to determine activity. Construction activities would be avoided within one mile of an active nest of listed or sensitive raptor species, and 1/2 to 3/4 mile (depending upon species or line of sight) of an active nest of other raptor species from March 1 through August 31, or until fledging and dispersal of the young. The nature of the restrictions and the protection radius would vary according to the raptor species involved and would be determined by the BLM.

Sharp-tailed Grouse Leks

Surface-disturbing and disruptive activities would be avoided within 1/4 mile of sharp-tailed grouse leks.

Sharp-tailed Grouse Nesting Habitat

Surface-disturbing and disruptive activities would be avoided if possible from March 15 through June 30 within 1/2 mile of sharp-tailed grouse nesting habitat.

Sprague’s Pipit

Surface-disturbing and disruptive activities would be avoided if possible from April 15 through July 15 in Sprague’s pipit habitat.

Winter Range

Surface-disturbing and disruptive activities would be avoided if possible from December 1 through May 15 within identified big game winter range. Within winter ranges, locate disturbances so that specific important vegetation types, as identified by the BLM, would be avoided where possible.

Appendix E

Fluid Minerals

E.3: Bureau of Reclamation Lease Stipulations

Form 3109-1
(December 1972)
(formerly 3103-1)

LEASE STIPULATIONS BUREAU OF RECLAMATION

The lessee agrees to maintain, if required by the lessor during the period of this lease, including any extension thereof, an additional bond with qualified sureties in such sum as the lessor, if it considers that the bond required under Section 2(a) is insufficient, may at any time require:

(a) to pay for damages sustained by any reclamation homestead entryman to his crops or improvements caused by drilling or other operations of the lessee, such damages to include the reimbursement of the entryman by the lessee, when he uses or occupies the land of any homestead entryman, for all construction and operation and maintenance charges becoming due during such use or occupation upon any portion of the land so used and occupied;

(b) to pay any damage caused to any reclamation project or water supply thereof by the lessee's failure to comply fully with the requirements of this lease; and

(c) to recompense any nonmineral applicant, entryman, purchaser under the Act of May 16, 1930 (46 Stat. 367), or patentee for all damages to crops or to tangible improvements caused by drilling or other prospecting operation, where any of the lands covered by this lease are embraced in any nonmineral application, entry, or patent under rights initiated prior to the date of this lease, with a reservation of the oil deposits, to the United States pursuant to the Act of July 17, 1914 (38 Stat. 509).

As to any lands covered by this lease within the area of any Government reclamation project, or in proximity thereto, the lessee shall take such precautions as required by the irrigation under such project or to the water supply thereof; *provided* that drilling is prohibited on any constructed works or right-of-way of the Bureau of Reclamation, and *provided, further*, that there is reserved to the lessor, its successors and assigns, the superior and prior right at all times to construct, operate, and maintain dams, dikes, reservoirs, canals, wasteways, laterals, ditches, telephone and telegraph lines, electric transmission lines, roadways, appurtenant irrigation structures, and reclamation works, in which construction, operation, and maintenance, the lessor, its successors and assigns, shall have the right to use any or all of the lands herein described without making compensation therefor, and shall not be responsible for any damage from the presence of water thereon or on account of ordinary, extraordinary, unexpected, or unprecedented floods. That nothing shall be done under this lease to increase the cost of, or interfere in any manner with, the construction, operation, and maintenance of such works. It is agreed by the lessee that, if the construction of any or all of said dams, dikes, reservoirs, canals, wasteways, laterals, ditches, telephone or telegraph lines, electric transmission lines, roadways, appurtenant irrigation structures or reclamation works across, over, or upon said lands should be made more expensive by reason of the existence of the improvements and workings of the lessee thereon, said additional expense is to be estimated by the Secretary of the Interior, whose estimate is to be final and binding upon the parties hereto, and that within thirty (30) days after demand

is made upon the lessee for payment of any such sums, the lessee will make payment thereof to the United States, or its successors, constructing such dams, dikes, reservoirs, canals, wasteways, laterals, ditches, telephone and telegraph lines, electric transmission lines, roadways, appurtenant irrigation structures, or reclamation works, across, over, or upon said lands; *provided, however*, that subject to advance written approval by the United States, the location and course of any improvements or works and appurtenances may be changed by the lessee; *provided, further*, that the reservations, agreements, and conditions contained in the within lease shall be and remain applicable notwithstanding any change in the location or course of said improvements or works of lessee. The lessee further agrees that the United States, its officers, agents, and employees, and its successors and assigns shall not be held liable for any damage to the improvements or workings of the lessee resulting from the construction, operation, and maintenance of any of the works hereinabove enumerated. Nothing in this paragraph shall be construed as in any manner limiting other reservations in favor of the United States contained in this lease.

THE LESSEE FURTHER AGREES That there is reserved to the lessor, its successors and assigns, the prior right to use any of the lands herein leased, to construct, operate, and maintain dams, dikes, reservoirs, canals, wasteways, laterals, ditches, telephone and telegraph lines, electric transmission lines, roadways, or appurtenant irrigation structures, and also the right to remove construction materials therefrom, without any payment made by the lessor or its successors for such right, with the agreement on the part of the lessee that if the construction of any or all of such dams, dikes, reservoirs, canals, wasteways, laterals, ditches, telephone and telegraph lines, electric transmission lines, roadways, or appurtenant irrigation structures across, over, or upon said lands or the removal of construction materials therefrom, should be made more expensive by reason of the existence of improvements or workings of the lessee thereon, such additional expense is to be estimated by the Secretary of the Interior, whose estimate is to be final and binding upon the parties hereto, and that within thirty (30) days after demand is made upon the lessee for payment of any such sums, the lessee will make payment thereof to the United States or its successors constructing such dams, dikes, reservoirs, canals, wasteways, laterals, ditches, telephone and telegraph lines, electric transmission lines, roadways, or appurtenant irrigation structures across, over, or upon said lands or removing construction materials therefrom. The lessee further agrees that the lessor, its officers, agents, and employees and its successors and assigns shall not be held liable for any damage to the improvements or workings of the lessee resulting from the construction, operation, and maintenance of any of the works herein above enumerated. Nothing contained in this paragraph shall be construed as in any manner limiting other reservations in favor of the lessor contained in this lease.

To insure against the contamination of the waters of the _____ Reservoir,
 _____ Project, State of _____, the lessee agrees that
 the following further conditions shall apply to all drilling and operations on lands covered by this lease,
 which lie within the flowage or drainage area of the _____ Reservoir, as such area
 is defined by the Bureau of Reclamation:

1. The drilling sites for any and all wells shall be approved by the Superintendent,
 Bureau of Reclamation, _____ Project, _____ before
 drilling begins. Sites for the construction of pipe-line rights-of-way or other authorized facilities shall also
 be approved by the Superintendent before construction begins.

2. All drilling or operation methods or equipment shall, before their employment,
 be inspected and approved by the Superintendent of the _____ Project,
 _____, and by the supervisor of the U.S. Geological Survey having jurisdiction over the area.

GPO 854-703

PARCEL NO. _____

BOR 17-1

SPECIAL STIPULATION – BUREAU OF RECLAMATION

To avoid interference with recreation development and/or impacts to fish and wildlife habitat and to assist in preventing damage to any Bureau of Reclamation dams, reservoirs, canals, ditches, laterals, tunnels, and related facilities, and contamination of the water supply therein, the lessee agrees that the following conditions shall apply to all exploration and developmental activities and other operation of the works thereafter on lands covered by this lease:

1. Prior to commencement of any surface-disturbing work including drilling, access road work, and well location construction, a surface use and operations plan will be filed with the appropriate officials. A copy of this plan will be furnished to the Regional Director, Great Plains Region, Bureau of Reclamation, P.O. Box 36900, Billings, MT 59107-6900, for review and consent prior to approval of the plan. Such approval will be conditioned on reasonable requirements needed to prevent soil erosion, water pollution, and unnecessary damages to the surface vegetation and other resources, including cultural resources, of the United States, its lessees, permittees, or licensees, and to provide for the restoration of the land surface and vegetation. The plan shall contain provisions as the Bureau of Reclamation may deem necessary to maintain proper management of the water, recreation, lands structures, and resources, including cultural resources, within the prospecting, drilling, or construction area.

Drilling sites for all wells and associated investigations such as seismograph work shall be included in the above-mentioned surface use and operation plan.

If later explorations require departure from or additions to the approved plan, these revisions or amendments, together with a justification statement for proposed revisions, will be submitted for approval to the Regional Director, Great Plains Region, Bureau of Reclamation, or his authorized representative.

Any operations conducted in advance of approval of an original, revised, or amended prospecting plan, or which are not in accordance with an approved plan constitute a violation of the terms of this lease. The Bureau of Reclamation reserves the right to close down operations until such corrective action, as is deemed necessary, is taken by the lessee.

2. No occupancy of the surface of the following excluded areas is authorized by this lease. It is understood and agreed that the use of these areas for Bureau of Reclamation purposes is superior to any other use. The following restrictions apply only to mineral tracts located within the boundary of a Bureau of Reclamation project where the United States owns 100 percent of the fee mineral interest.

- a. Within 500 feet on either side of the centerline of any and all roads or highways within the leased area.
- b. Within 200 feet on either side of the centerline of any and all trails within the leased area.
- c. Within 500 feet of the normal high-water line of any and all live streams in the leased area.
- d. Within 400 feet of any and all recreation developments within the leased area.
- e. Within 400 feet of any improvements either owned, permitted, leased, or otherwise authorized by the Bureau of Reclamation within the leased area.
- f. Within 200 feet of established crop fields, food plots, and tree/shrub plantings within the leased area.
- g. Within 200 feet of slopes steeper than a 2:1 gradient within the leased area.
- h. Within established rights-of-way of canals, laterals, and drainage ditches within the leased area.
- i. Within a minimum of 500 feet horizontal from the centerline of the facility or 50 feet from the outside toe of the canal, lateral, or drain embankment, whichever distance is greater, for irrigation facilities without clearly marked rights-of-way within the leased area.
- j. Providing that appropriate environmental compliance measures can be ensured, and providing further that Reclamation project works and other public interests can be protected, Reclamation may consider, on a case-by-case basis, waiving the requirement specified in Section 2 hereof. **HOWEVER, LESSEES ARE ADVISED THAT OBTAINING SUCH A WAIVER CAN BE A DIFFICULT, TIME CONSUMING, AND COSTLY PROCESS WITH NO GUARANTEE THAT RECLAMATION WILL GRANT THE REQUESTED WAIVER.**

3. No occupancy of the surface or surface drilling will be allowed in the following areas. In addition, no directional drilling will be allowed that would intersect the subsurface zones delineated by a vertical plane in these areas. The following restrictions apply only to mineral tracts located within the boundary of a Bureau of Reclamation project, where the United States owns 100 percent of the fee mineral interest in said tract, or tracts.

a. Within 1,000 feet of the maximum water surface, as defined in the Standard Operating Procedures (SOP), of any reservoirs and related facilities located within the leased area.

b. Within 2,000 feet of dam embankments and appurtenance structures such as spillway structures, outlet works, etc.

c. Within one-half (1/2) mile horizontal from the centerline of any tunnel within the leased area.

d. Providing that appropriate environmental compliance measures can be ensured, and providing further that Reclamation project works and other public interests can be protected. Reclamation may consider, on a case-by-case basis, waiving the requirements specified in Section 3 hereof. **HOWEVER, LESSEES ARE ADVISED THAT OBTAINING SUCH A WAIVER CAN BE A DIFFICULT, TIME CONSUMING, AND COSTLY PROCESS WITH NO GUARANTEE THAT RECLAMATION WILL GRANT THE REQUESTED WAIVER.**

4. The distances stated in items 2 and 3 above are intended to be general indicators only. The Bureau of Reclamation reserves the right to revise these distances as needed to protect Bureau of Reclamation facilities.

5. The use of explosives in any manner shall be so controlled that the works and facilities of the United States, its successors and assigns, will in no way be endangered or damaged. In this connection, an explosives use plan shall be submitted to and approved by the Regional Director, Great Plains Region, Bureau of Reclamation, or his/her authorized representative.

6. The lessee shall be liable for all damage to the property of the United States, its successors or assigns, resulting from the exploration, development, or operation of the works contemplated by this lease, and shall further hold the United States, its successors or assigns, and its officers, agents, and employees, harmless from all claims of third parties for injury or damage sustained or in any way resulting from the exercise of the rights and privileges conferred by the lease.

7. The lessee shall be liable for all damages to crops or improvements of any entryman, nonmineral applicant, or patentee, their successors or assigns, caused by or resulting from the drilling or other operations of the lessee, including reimbursement of any entryman or patentee, their successors or assigns, for all construction, operation, and maintenance charges becoming due on any portion of their said lands damaged as a result of the drilling or other operation of the lessee.

8. In addition to any other bond required under the provisions of this lease, the lessee shall provide such bond as the United States may at any time require for damages which may arise under the liability provisions of Section six (6) and seven (7) above.

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Appendix E Fluid Minerals

E.4: Oil and Gas Stipulations and Exception, Modification, and Waiver Criteria

“A stipulation included in an oil and gas lease shall be subject to modification or waiver only if the authorized officer determines that the factors leading to its inclusion in the lease have changed sufficiently to make the protection provided by the stipulation no longer justified or if proposed operations would not cause unacceptable impacts. If the authorized officer has determined, prior to lease issuance, that a stipulation involves an issue of major concern to the public, modification or waiver of the stipulation shall be subject to public review for at least a 30-day period. In such cases, the stipulation shall indicate that public review is required before modification or waiver. If subsequent to lease issuance the authorized officer determines that a modification or waiver of a lease term or stipulation is substantial, the modification or waiver shall be subject to public review for at least a 30-day period.” (43 CFR 3101.1-4)

The purpose of this appendix is to provide the stipulations that would be applied to future leases within the planning area under each alternative.

Exceptions, Modifications, and Waivers

Any requests for exceptions, modifications, and waivers from the stipulations would be processed by the appropriate BLM office. The requests for exceptions must be initiated in writing by the operator near the time that the work is proposed to be initiated. This requirement is in place due to the unpredictability of weather, animal movement and condition, etc. The analysis of a request will typically include the review of potential mitigation measures and alternatives (traffic restrictions, alternative scheduling, staged activity, etc.). The request is considered as a unique action and is analyzed and documented individually for RMP and NEPA compliance.

The definitions for exceptions, modifications, and waivers are as follows:

Exception – A one-time exemption for a particular site within the leasehold; exceptions are determined on a case-by-case basis; the stipulation continues to apply to all other sites within the leasehold. An exception is a limited type of waiver.

Modification – A change to the provisions of a lease stipulation, either temporarily or for the term of the lease. Depending on the specific modification, the stipulation may or may not apply to all sites within the leasehold to which the restrictive criteria are applied.

Waiver – A permanent exemption from a lease stipulation. The stipulation no longer applies anywhere within the leasehold.

Process for Reviewing and Approving an Exception to, Waiver of, or Modification to a Stipulation on a Lease That Has Been Issued (WO IM No. 2008-32)

The authorized officer generally requires the operator to submit a written request for an exception, waiver, or modification and information demonstrating that (1) the factors leading to the inclusion of the stipulation in the lease have changed sufficiently to make the protection provided by the lease stipulation no longer justified or (2) that the proposed operation would not cause unacceptable impacts. Requests from the operator should contain, at a minimum, a plan including related on-site or off-site mitigation efforts, to adequately protect affected resources; data collection and monitoring efforts; and timeframes for initiation and completion of construction, drilling, and completion operations. The operator’s request may be included in an APD, Notice of Staking, Sundry Notice, or letter. The BLM may also proactively initiate the process.

During the review process, BLM coordination with other state or federal agencies should be undertaken, as appropriate, and documented. For example, it may be appropriate to coordinate the review of wildlife exceptions, waivers, and modifications with the local office of the State wildlife agency. The BLM will also consult with the federal Surface Management Agency if other than the BLM.

The BLM staff's review and recommendations should be documented along with any necessary mitigation and provided to the authorized officer for approval or disapproval. The applicant is then provided with a written notification of the decision. Decisions on exceptions, waivers, and modifications are subject to administrative review by the State Director and thereafter may be appealed to the Interior Board of Land Appeals pursuant to 43 CFR Part 4. However, decisions on exceptions, waivers, and modifications submitted by the operator after drilling has commenced are final for the Department of the Interior and not subject to administrative review by the State Director or appeal pursuant to 43 CFR Part 4.

After drilling has commenced, the BLM may consider verbal requests for, and grant verbal approvals of, exceptions, waivers, or modifications. However, the operator must submit a written notice within 7 days after the verbal request. The BLM must also confirm verbal approvals in writing. This requirement is provided for in Onshore Oil and Gas Order No. 1. Operators should not be encouraged to submit requests unless the delay in completing the well was due to unforeseen circumstances beyond the reasonable control of the operator or a serious economic or a public health and safety problem could result from denial of the request.

Alternative A (Current Management)

Oil and Gas Lease Stipulations (Form MT-3109-1)

Esthetics – To maintain esthetic values, all surface-disturbing activities, semi-permanent and permanent facilities may require special design including location, painting and camouflage to blend with the natural surroundings and meet the intent of the visual quality objectives of the federal Surface Management Agency (SMA).

Erosion Control – Surface-disturbing activities may be prohibited during muddy and/or wet soil periods. This limitation does not apply to operation and maintenance of producing wells using authorized roads.

Controlled or Limited Surface Use Stipulation – This stipulation may be modified by special stipulations which are hereto attached or when specifically approved in writing by the Bureau of Land Management with concurrence of the SMA. Distances and/or time periods may be made less restrictive depending on the actual onground conditions. The prospective lessee should contact the SMA for more specific locations and information regarding the restrictive nature of this stipulation.

The lessee/operator is given notice that the lands within this lease may include special areas and that such areas may contain special values, may be needed for special purposes, or may require special attention to prevent damage to surface and/or other resources. Possible special areas are identified below. Any surface use or occupancy within such special areas will be strictly controlled, or if absolutely necessary, excluded. Use or occupancy will be restricted only when the Bureau of Land Management and/or the SMA demonstrates the restriction necessary for the protection of such special areas and existing or planned uses. Appropriate modifications to imposed restrictions will be made for the maintenance and operations of producing oil and gas wells.

After the SMA has been advised of specific proposed surface use or occupancy on the leased lands, and on request of the lessee/operator, the Agency will furnish further data on any special areas which may include:

100 feet from the edge of the rights-of-way from highways, designated county roads and appropriate federally-owned or controlled roads and recreation trails.

500 feet from, or when necessary, within the 25-year flood plain from reservoirs, lakes, and ponds and intermittent, ephemeral or small perennial streams; 1,000 feet from, or when necessary, within the 100-year flood plain from larger perennial streams, rivers, and domestic water supplies.

500 feet from grouse strutting grounds. Special care to avoid nesting areas associated with strutting grounds will be necessary during the period from March 1 to June 30; 1/4 mile from identified essential habitat of state and federal sensitive species; wildlife winter ranges during the period from December 1 to May 15; and in elk calving areas during the period from May 1 to June 30.

300 feet from occupied buildings, developed recreational areas, undeveloped recreational areas receiving concentrated public use, and sites eligible for or designated as National Register sites.

Seasonal road closures, roads for special uses, specified roads during heavy traffic periods, and on areas having restrictive off-road vehicle designations.

On slopes over 30%, or 20% on extremely erodible or slumping soils.

Notice for Cultural and Paleontological Resources – The federal SMA is responsible for assuring that the leased lands are examined to determine if cultural resources are present and to specify mitigation measures. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or operator, unless notified to the contrary by the SMA, shall:

1. Contact the appropriate SMA to determine if a site-specific cultural resource inventory is required. If an inventory is required, then;
2. Engage the services of a cultural resource specialist acceptable to the SMA to conduct a cultural resource inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the area of proposed disturbance to cover possible site relocation which may result from environmental or other considerations. An acceptable inventory report is to be submitted to the SMA for review and approval no later than that time when an otherwise complete application for approval of drilling or subsequent surface-disturbing operation is submitted.
3. Implement mitigation measures required by the SMA. Mitigation may include the relocation of proposed lease-related activities or other protective measures such as testing salvage and recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the SMA, surface occupancy on that area must be prohibited.

The lessee or operator shall immediately bring to the attention of the SMA any cultural or paleontological resources discovered as a result of approved operations under this lease, and not disturb such discoveries until directed to proceed by the SMA.

Notice for Endangered or Threatened Species – The SMA is responsible for assuring that the leased land is examined prior to undertaking any surface-disturbing activities to determine effects upon any plant or animal species, listed or proposed for listing as endangered or threatened, or their habitats. The findings of this examination may result in some restrictions to the operator's plans or even disallow use and occupancy that would be in violation of the Endangered Species Act of 1983 by detrimentally affecting endangered or threatened species or their habitats.

The lessee/operator may, unless notified by the authorized officer of the SMA that the examination is not necessary, conduct the examination on the leased lands at his discretion and cost. This examination must be done by or under the supervision of a qualified resources specialist approved by the SMA. An acceptable report must be provided to the SMA identifying the anticipated effects of a proposed action on endangered or threatened species or their habitats.

Alternative B

Oil and Gas Lease Stipulations

Resource: **National Register of Historic Places (NRHP) Eligible Properties/Districts – No Surface Occupancy**

Stipulation: Occupancy and use is prohibited within the boundaries of cultural properties and archaeological/historic districts determined to be eligible or potentially eligible to the National Register of Historic Places. This includes cultural properties designated for conservation use, scientific use, traditional use, public use, and experimental use.

Objective: To protect significant cultural properties and archaeological districts and their settings, and to avoid disturbance or inadvertent impacts to these resources.

Exception: None.

Modification: None.

Waiver: None.

Resource: **Cultural Resource Survey**

Stipulation: An inventory of those portions of the leased lands subject to proposed disturbance may be required prior to any surface disturbance to determine if cultural resources are present and to identify needed mitigation measures. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or operator shall:

1. Engage the services of a cultural resource consultant acceptable to the Surface Management Agency (SMA) to conduct a cultural resource inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the standard ten-acre minimum to cover possible site relocation which may result from environmental or other considerations. An acceptable inventory report is to be submitted to the SMA for review and approval no later than that time when an otherwise complete application for approval of drilling or subsequent surface-disturbing operation is submitted.
2. Implement mitigation measures required by the SMA. Mitigation may include the relocation of proposed lease-related activities or other protective measures such as data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the SMA, surface occupancy on that area must be prohibited. The lessee or operator shall immediately bring to the attention of the SMA any cultural resources discovered as a result of approved operations under this lease, and shall not disturb such discoveries until directed to proceed by the SMA.

Objective: Compliance with Section 106 of the National Historic Preservation Act is required for all actions which may affect cultural properties eligible to the National Register of Historic Places. Section 6 of the Oil and Gas Lease Terms (Form 3100-11) requires that operations be conducted in a manner that minimizes adverse impacts to cultural and other resources.

Exception: None.

Modification: None.

Waiver: None.

Resource: Cultural Resources and Tribal Consultation

Stipulation: 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 surface-disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.

Objective: To protect significant historic properties and resources.

Exception: None.

Modification: None.

Waiver: None.

Resource: Paleontological Resources – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within designated paleontological sites/locales.

Objective: To preserve and protect significant vertebrate fossils and paleontological locales.

Exception: The authorized officer may grant an exception if the lessee or operator submits a plan which demonstrates that the adverse impacts to significant paleontological resources can be mitigated through recovery and extensive recordation. Where impacts to paleontological resources cannot be mitigated to the satisfaction of the surface management agency (SMA), surface occupancy on that area must be prohibited.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the designated paleontological site/locale can be occupied without adversely affecting the resource values.

Waiver: None.

Resource: Paleontological Resource Inventory

Stipulation: Prior to any surface-disturbing activity in areas known to have a high potential (Class 4 and 5) for containing significant paleontological resources, the lessee shall be required to conduct a paleontological inventory. The lessee must engage the services of a qualified paleontologist, acceptable to the surface management agency (SMA), to conduct the inventory. An acceptable inventory report is to be submitted to the SMA for review and approval at the time a surface-disturbing plan of operations is submitted.

Objective: To preserve and protect scientifically significant vertebrate fossils and paleontological locales.

Exception: An exception may be granted if the area has already been inventoried for paleontological resources.

Modification: None.

Waiver: None.

Resource: Recreation Sites – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of recreation sites.

Objective: To recognize and protect the public’s opportunity for quality recreation experiences at those sites developed for that purpose. Since BLM recreation sites are generally developed to support the use of the surrounding lands, the 1/4 provides protection for perpetuating those opportunities for which the site was developed, reduces the visual intrusion and noise, and protects capital investments at the site.

Exception: The authorized officer may grant an exception if a site is moved or eliminated.

Modification: The list of recreation sites may be modified if a site is removed, or if a site is developed in the future.

Waiver: A waiver may be granted if a site is moved or eliminated.

Resource: National Historic Trails – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of designated National Historic Trails. Designated National Historic Trails include the Lewis and Clark Trail and the Nez Perce Trail.

Objective: To preserve and protect designated National Historic Trails and the natural setting in which they occur.

Exception: The authorized officer may grant an exception if the operator submits a plan demonstrating that impacts to the area and its users can be adequately mitigated.

Modification: No modifications will be granted unless effects of the action will not be apparent to users along the trail.

Waiver: A waiver may be granted if impacts can be mitigated so that area values and user experiences are not negatively affected.

Resource: Residential Structures – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of incorporated city limits or residential structures.

Objective: To ensure a proper distance between development and human occupation for health and safety purposes.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the public’s health and safety.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the public’s health and safety.

Resource: Sensitive Soils – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited on sensitive soils, badlands, rock outcrop, or slopes susceptible to mass failure.

Objective: To maintain the chemical, physical, and biotic properties of sensitive soils and avoid landforms and areas that are the most difficult and costly to stabilize and successfully reclaim to standards... This includes maintaining soil productivity, soil structure, soil stability, and soil biotic communities. This would prevent excessive erosion and avoid areas with the potential for excessive reclamation problems.

Exception: The authorizing officer may grant an exception to this stipulation for pipelines if the operator submits a reclamation plan that clearly demonstrates effects from the proposed actions can be adequately mitigated. An exception may also be granted if an activity would occur on a previously disturbed area if the operator submits a reclamation plan that clearly demonstrates effects from the proposed actions can be adequately mitigated.

Modification: The area affected by this stipulation may be modified by the authorized officer if it is determined that portions of the area do not include sensitive soils, badlands, rock outcrop, or slopes susceptible to mass failure.

Waiver: This stipulation may be waived by the authorized officer if it is determined that none of the leasehold contains sensitive soils, badlands, rock outcrop, or slopes susceptible to mass failure.

Resource: Big Bend of the Milk River ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Big Bend of the Milk River ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Kevin Rim ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Kevin Rim ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Malta Geological ACEC – Controlled Surface Use

Stipulation: Prior to any surface-disturbing activity in the Malta Geological ACEC the lessee shall be required to conduct a paleontological inventory. The lessee must engage the services of a qualified paleontologist, acceptable to the surface management agency, to conduct the inventory. An acceptable inventory report is to be submitted to the BLM for review and approval at the time a surface-disturbing plan of operations is submitted.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the qualities of the ACEC.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the qualities of the ACEC.

Resource: Mountain Plover ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Mountain Plover ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the qualities of the ACEC.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the qualities of the ACEC.

Resource: Sweet Grass Hills ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Sweet Grass Hills ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Zortman/Landusky Mine Reclamation ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Zortman/Landusky Mine Reclamation ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the qualities of the ACEC.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the qualities of the ACEC.

Resource: Water, Riparian, and Wetlands – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within and 1/4 mile from lentic or lotic riparian areas.

Objective: To maintain riparian/wetland functions and water quality.

Exception: An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the riparian/wetland resource.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the riparian/wetland resource.

Resource: Colonial Waterbirds – Timing Limitation

Stipulation: Surface occupancy and use is prohibited within 1 mile of a waterbird nesting colony from April 1 through July 15.

Objective: To protect colonial waterbirds and to maintain colonial waterbird populations.

Exception: An exception to this stipulation may be granted if the authorized officer determines that portions of the area can be occupied without adversely affecting waterbird nesting colonies.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting waterbird nesting colonies. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer capable of supporting nesting waterbirds.

Resource: Endangered Species Act Section 7 Consultation

Stipulation: This 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 a BLM-approved activity that will contribute to a need to list such species or their habitat. The BLM may require modifications to or disapprove a 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 surface-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. §1531 *et seq.*, including completion of any required procedure for conference or consultation.

Objective: To protect threatened, endangered species, or special status species.

Exception: None.

Modification: None.

Waiver: None.

Resource: Mountain Plover – Timing Limitation

Stipulation: Surface occupancy and use is prohibited within 1/2 mile of mountain plover habitat from April 1 through July 31.

Objective: To protect mountain plover habitat and to maintain mountain plover populations.

Exception: The authorized officer may grant an exception if portions of the area can be occupied without adversely affecting mountain plover habitat.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting mountain plover habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer mountain plover habitat.

Resource: Raptors – Timing Limitation

Stipulation: Surface occupancy and use is prohibited within 1 mile of active raptor nest sites from March 1 through September 1.

Objective: To maintain the reproductive potential of raptor nest sites.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the production potential of raptor nest sites. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains a raptor nest or has a nest that has not been active in 7 years.

Resource: Sharp-tailed Grouse Nesting Habitat – Timing Limitation

Stipulation: Surface occupancy and use is prohibited within 1 mile of sharp-tailed grouse leks from March 15 through June 30.

Objective: To protect sharp-tailed grouse nesting habitat necessary for long-term maintenance of sharp-tailed grouse populations.

- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the sharp-tailed grouse populations. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains sharp-tailed grouse nesting habitat.
- Resource:** **Special Status Species – No Surface Occupancy**
- Stipulation:** Surface occupancy and use is prohibited within 1/4 mile of essential habitat of special status species unless other species-specific stipulations apply.
- Objective:** To protect special status species habitat and to maintain regional wildlife populations.
- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting special status species habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** The stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains special status species habitat.

Alternative C

Oil and Gas Lease Stipulations

Resource: **National Register of Historic Places (NRHP) Eligible Properties/Districts – No Surface Occupancy**

Stipulation: Occupancy and use is prohibited within the boundaries of cultural properties and archaeological/historic districts determined to be eligible or potentially eligible to the National Register of Historic Places. This includes cultural properties designated for conservation use, scientific use, traditional use, public use, and experimental use.

Objective: To protect significant cultural properties and archaeological districts and their settings, and to avoid disturbance or inadvertent impacts to these resources.

Exception: None.

Modification: None.

Waiver: None.

Resource: **Cultural Resource Survey**

Stipulation: An inventory of those portions of the leased lands subject to proposed disturbance may be required prior to any surface disturbance to determine if cultural resources are present and to identify needed mitigation measures. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or operator shall:

1. Engage the services of a cultural resource consultant acceptable to the Surface Management Agency (SMA) to conduct a cultural resource inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the standard ten-acre minimum to cover possible site relocation which may result from environmental or other considerations. An acceptable inventory report is to be submitted to the SMA for review and approval no later than that time when an otherwise complete application for approval of drilling or subsequent surface-disturbing operation is submitted.
2. Implement mitigation measures required by the SMA. Mitigation may include the relocation of proposed lease-related activities or other protective measures such as data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the SMA, surface occupancy on that area must be prohibited. The lessee or operator shall immediately bring to the attention of the SMA any cultural resources discovered as a result of approved operations under this lease, and shall not disturb such discoveries until directed to proceed by the SMA.

Objective: Compliance with Section 106 of the National Historic Preservation Act is required for all actions which may affect cultural properties eligible to the National Register of Historic Places. Section 6 of the Oil and Gas Lease Terms (Form 3100-11) requires that operations be conducted in a manner that minimizes adverse impacts to cultural and other resources.

Exception: None.

Modification: None.

Waiver: None.

Resource: Cultural Resources and Tribal Consultation

Stipulation: 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 surface-disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.

Objective: To protect significant historic properties and resources.

Exception: None.

Modification: None.

Waiver: None.

Resource: Paleontological Resources – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within designated paleontological sites/locales.

Objective: To preserve and protect significant vertebrate fossils and paleontological locales.

Exception: The authorized officer may grant an exception if the lessee or operator submits a plan which demonstrates that the adverse impacts to significant paleontological resources can be mitigated through recovery and extensive recordation. Where impacts to paleontological resources cannot be mitigated to the satisfaction of the surface management agency (SMA), surface occupancy on that area must be prohibited.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the designated paleontological site/locale can be occupied without adversely affecting the resource values.

Waiver: None.

Resource: Paleontological Resource Inventory

Stipulation: Prior to any surface-disturbing activity in areas known to have a high potential (Class 4 and 5) for containing significant paleontological resources, the lessee shall be required to conduct a paleontological inventory. The lessee must engage the services of a qualified paleontologist, acceptable to the surface management agency (SMA), to conduct the inventory. An acceptable inventory report is to be submitted to the SMA for review and approval at the time a surface-disturbing plan of operations is submitted.

Objective: To preserve and protect scientifically significant vertebrate fossils and paleontological locales.

Exception: An exception may be granted if the area has already been inventoried for paleontological resources.

Modification: None.

Waiver: None.

Resource: Recreation Sites – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within and 500 feet from recreation sites.

Objective: To recognize and protect the public’s opportunity for quality recreation experiences at those sites developed for recreation. Since BLM recreation sites are generally developed to support the use of the surrounding lands, the 500 feet provides protection for perpetuating those opportunities for which the site was developed, reduces the visual intrusion and noise, and protects capital investments at the site.

Exception: The authorized officer may grant an exception if a site is moved or eliminated.

Modification: The list of recreation sites may be modified if a site is removed, or if a site is developed in the future.

Waiver: A waiver may be granted if a site is moved or eliminated.

Resource: National Historic Trails – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of designated National Historic Trails. Designated National Historic Trails include the Lewis and Clark Trail and the Nez Perce Trail.

Objective: To preserve and protect designated National Historic Trails and the natural setting in which they occur.

Exception: The authorized officer may grant an exception if the operator submits a plan demonstrating that impacts to the area and its users can be adequately mitigated.

Modification: No modifications will be granted unless effects of the action will not be apparent to users along the trail.

Waiver: A waiver may be granted if impacts can be mitigated so that area values and user experiences are not negatively affected.

Resource: Residential Structures – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 500 feet of incorporated city limits or residential structures.

Objective: To ensure a proper distance between development and human occupation for health and safety purposes.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the public’s health and safety.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the public’s health and safety.

Resource: Sensitive Soils – Controlled Surface Use

Stipulation: Prior to any surface disturbance on sensitive soils a reclamation plan must be approved by the authorized officer. The plan must demonstrate that no other practicable alternatives exist for relocating

the activity. The plan must include a detailed description of how the activity would: (1) control wind and water erosion; (2) control surface runoff; (3) minimize sediment production; (4) maintain site productivity; and (5) complete reclamation. The plan will consider avoidance, size limitations, timing restrictions (e.g. limiting wet condition road usage), physical mitigation, and off-site mitigation. Sensitive soils are defined as those with severe erosion ratings (wind and water).

Objective: To maintain the chemical, physical, and biotic properties of sensitive soils. This includes maintaining soil productivity, soil structure, soil stability, and soil biotic communities. This would prevent excessive erosion and avoid areas with the potential for excessive reclamation problems.

Exception: The authorized officer may grant an exception to this stipulation if the operator can demonstrate that the activity would not contribute to degradation of the soil resource or down slope resource conditions.

Modification: The area affected by this stipulation may be modified by the authorized officer if it is determined that portions of the lease area do not contain sensitive soils.

Waiver: This stipulation may be waived by the authorized officer if it is determined that the entire lease area does not contain sensitive soils.

Resource: Badlands, Rock Outcrop, or Slopes Susceptible to Mass Failure – No Surface Occupancy

Stipulation: Surface use and occupancy is prohibited on badlands, rock outcrop, and slopes susceptible to mass failure.

Objective: To avoid landforms and areas that are the most difficult and costly to stabilize and successfully reclaim to standards.

Exception: The authorized officer may grant an exception to this stipulation if the operator submits a reclamation plan that clearly demonstrates effects from the proposed actions can be adequately mitigated. An exception may also be granted if an activity would occur on a previously disturbed area if the operator submits a reclamation plan that clearly demonstrates effects from the proposed actions can be adequately mitigated. The plan must demonstrate that no other practicable alternatives exist for relocating the activity. The plan must include a detailed description of how the activity would: (1) control wind and water erosion; (2) control surface runoff; (3) minimize sediment production; (4) maintain site productivity; and (5) complete reclamation. The plan will consider avoidance, size limitations, timing restrictions (e.g. limiting wet condition road usage), physical mitigation, and off-site mitigation.

Modification: The area affected by this stipulation may be modified by the authorized officer if it is determined that portions of area do not include badlands, rock outcrop, or slopes susceptible to mass failure.

Waiver: This stipulation may be waived by the authorized officer if it is determined that the entire lease area does not contain badlands, rock outcrop, or slopes susceptible to mass failure.

Resource: Big Bend of the Milk River ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Big Bend of the Milk River ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Frenchman Breaks ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Frenchman Breaks ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Kevin Rim ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Kevin Rim ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Malta Geological ACEC – Controlled Surface Use

Stipulation: Prior to any surface-disturbing activity in the Malta Geological ACEC the lessee shall be required to conduct a paleontological inventory. The lessee must engage the services of a qualified paleontologist, acceptable to the surface management agency, to conduct the inventory. An acceptable inventory report is to be submitted to the BLM for review and approval at the time a surface-disturbing plan of operations is submitted.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the qualities of the ACEC.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the qualities of the ACEC.

Resource: Mountain Plover ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Mountain Plover ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Sweet Grass Hills ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Sweet Grass Hills ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Woody Island ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Woody Island ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the qualities of the ACEC.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the qualities of the ACEC.

Resource: Zortman/Landusky Mine Reclamation ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Zortman/Landusky Mine Reclamation ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the qualities of the ACEC.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the qualities of the ACEC.

Resource: Water, Riparian, Wetland, and Floodplains – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within and 500 feet from lentic or lotic riparian areas.

Objective: To maintain riparian/wetland functions and water quality.

Exception: An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the riparian/wetland resource.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the riparian/wetland resource.

Resource: Prairie Grasslands – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Prairie Grasslands area with wilderness characteristics.

Objective: To protect wilderness characteristics as a priority over other multiple uses.

Exception: None.

Modification: None.

Waiver: None.

Resource: Bald Eagle – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of bald eagle nest sites that have been active within the last 7 years.

Objective: To protect bald eagle nesting sites and/or breeding habitat in accordance with the Montana Bald Eagle Management Plan.

Exception: The authorized officer may grant an exception if the operator submits a plan which demonstrates that the proposed action will not affect the bald eagle or its habitat. If the authorized officer determines that the action may have an adverse effect, the operator may submit a plan demonstrating that the impacts can be adequately mitigated. This plan must be approved by the BLM.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting bald eagle nest sites or nesting areas. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold is no longer capable of supporting bald eagle nest sites or nesting habitat.

Resource: Bighorn Sheep Lambing – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within bighorn sheep lambing areas.

Objective: To protect bighorn sheep lambing areas from disturbance and to facilitate long-term maintenance of bighorn sheep populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain lambing habitat for bighorn sheep.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains bighorn sheep lambing areas.

Resource: Bighorn Sheep Range – Controlled Surface Use

Stipulation: Surface-disturbing or disruptive activities within bighorn sheep range would require a plan to avoid or minimize habitat loss from direct and indirect impacts. The plan would need to be approved by the authorized officer.

Objective: To protect bighorn sheep from disturbance and to facilitate long-term maintenance of wildlife populations.

Exception: The authorized officer may grant an exception if an environmental review determines that the action, as proposed or conditioned, would not compromise the functionality of the habitat for bighorn sheep.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain viable habitat for bighorn sheep. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains bighorn sheep habitat.

Resource: Black-footed Ferret – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of black-footed ferret habitat.

Objective: To protect black-footed ferret habitat for long-term maintenance of black-footed ferret populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer, in consultation with the U.S. Fish and Wildlife Service (USFWS), determines that portions of the area can be occupied without adversely affecting black-footed ferret habitat. The authorized officer may also modify the

size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold is no longer considered black-footed ferret habitat.

Resource: Black-tailed Prairie Dog – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of black-tailed prairie dog habitat.

Objective: To protect prairie dog towns necessary for long-term maintenance of black-tailed prairie dog populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting prairie dog habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold is no longer considered prairie dog habitat.

Resource: Colonial Waterbirds – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/2 mile of a waterbird nesting colony.

Objective: To protect colonial waterbird nesting site and to maintain regional colonial waterbird populations.

Exception: The authorized officer may grant an exception if portions of the area can be occupied without adversely affecting waterbird nesting colonies.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting waterbird nesting colonies. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer capable of supporting nesting waterbirds.

Resource: Colonial Waterbirds – Timing Limitation

Stipulation: Surface occupancy and use is prohibited within 1 mile of a waterbird nesting colony from April 1 through July 15.

Objective: To protect colonial waterbirds and to maintain colonial waterbird populations.

Exception: An exception to this stipulation may be granted if the authorized officer determines that portions of the area can be occupied without adversely affecting waterbird nesting colonies.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting waterbird nesting colonies. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer capable of supporting nesting waterbirds.

Resource: Crucial Winter Range – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within crucial winter range.

Objective: To protect crucial winter range from disturbance and facilitate long-term maintenance of wildlife populations.

Exception: An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain viable crucial winter range.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains viable crucial winter range.

Resource: Endangered Species Act Section 7 Consultation

Stipulation: This 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 a BLM-approved activity that will contribute to a need to list such species or their habitat. The BLM may require modifications to or disapprove a 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 surface-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. §1531 *et seq.*, including completion of any required procedure for conference or consultation.

Objective: To protect threatened, endangered species, or special status species.

Exception: None.

Modification: None.

Waiver: None.

Resource: Grassland Bird/Greater Sage-Grouse Priority Areas – Controlled Surface Use

Stipulation: Prior to surface-disturbing or disruptive activities a plan to maintain functionality of grassland bird/Greater Sage-Grouse priority habitat will be prepared by the proponent and implemented upon approval by the authorized officer. Within the Priority Areas surface-disturbing or disruptive activities will be restricted or prohibited within 6/10 of a mile from any existing surface-disturbing or disruptive activity. The plan shall address how short-term and long-term direct and indirect effects to important

breeding (leks), nesting, brood-rearing, and wintering areas will be mitigated based on current science and research (Appendix E.5).

- Objective:** To protect and enhance the integrity of the grassland bird/Greater Sage-Grouse habitat to maintain or improve populations.
- Exception:** The authorized officer may grant an exception if an environmental review determines that the action as proposed or conditioned (such as exceeding the 6/10 of a mile surface-disturbing or disruptive activity restriction) would not compromise the functionality of the habitat for grassland bird/Greater Sage-Grouse and meet the objective for grassland bird/Greater Sage-Grouse habitat and populations.
- Modification:** The authorized officer may modify the area subject to the stipulation if an environmental analysis finds that a portion of the area is no longer grassland bird/Greater Sage-Grouse habitat and supports no grassland bird/Greater Sage-Grouse populations. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** This stipulation may be waived if it is determined that grassland bird/Greater Sage-Grouse populations no longer occupy significant portions of the Priority Areas and there is no reasonable likelihood of functional grassland bird/Greater Sage-Grouse habitat being restored.

Resource: Greater Sage-Grouse Leks (General Habitat Areas) – No Surface Occupancy

- Stipulation:** Surface occupancy and use is prohibited within 1 mile of Greater Sage-Grouse leks.
- Objective:** To protect Greater Sage-Grouse leks to maintain Greater Sage-Grouse populations.
- Exception:** An exception to this stipulation may be granted if the authorized officer, in consultation with Montana Fish, Wildlife and Parks (MFWP), determines that portions of the area can be occupied without adversely affecting Greater Sage-Grouse leks.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with MFWP, determines that portions of the area can be occupied without adversely affecting Greater Sage-Grouse leks. The authorized officer, in consultation with MFWP, may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** The stipulation may be waived if the authorized officer, in consultation with MFWP, determines that the entire leasehold is no longer capable of supporting Greater Sage-Grouse leks.

Resource: Greater Sage-Grouse Nesting Habitat (General Habitat Areas) – Controlled Surface Use

- Stipulation:** To minimize the impacts of surface-disturbing or disruptive activities and insure maintenance of habitat for sustainable populations of sage-grouse, surface-disturbing or disruptive activities are subject to the following requirements. This stipulation does not apply within the boundaries of the Greater Sage-Grouse Protection Priority Area.
- a. Surface-disturbing or disruptive activities will prevent or minimize disturbance to sage-grouse or their habitat. Except during emergency situations, activities will not compromise the functionality of the habitat.
 - b. Continuous noise (related to long-term operations and/or activities) would be no greater than 49 decibels at 1/4 mile from the perimeter of the lek.

- c. Temporary noise (related to installation, maintenance, one-time use, emergency operations, etc.) exceeding 49 decibels at 1/4 mile from the perimeter of a lek or surface-disturbing/disruptive activities may be allowed, but only from 10 a.m. to 4 p.m. between March 15 and May 15.
- d. Manage water developments to reduce the spread of West Nile virus within sage-grouse habitat areas.
- e. Site and/or minimize linear rights-of-way to reduce disturbance to sagebrush habitats.
- f. Maximize placement of new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.
- g. Power lines would be buried, eliminated, designed or sited in a manner which does not impact sage-grouse.
- h. Placement of other high profile structures, exceeding 10 feet in height, would be eliminated, designed or sited in a manner which does not impact sage-grouse.
- i. Remote monitoring of production facilities must be utilized and all permit applications must contain a plan to reduce the frequency of vehicle use.
- j. Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.
- k. Restore disturbed areas at final reclamation to pre-disturbance conditions or desired plant community.
- l. Permanent (longer than 2 months) structures which create movement must be designed or sited to minimize impacts to sage-grouse.
- m. Consider use of off-site mitigation, (e.g., creation of sagebrush habitat, purchase conservation easements, or buying down grazing) with proponent dollars to offset habitat losses.
- n. Consider creation of a “*Mitigation Trust Account*” when impacts cannot be avoided, minimized, or effectively mitigated through other means. If approved by the BLM, the proponent may contribute funding to maintain habitat function based on the estimated cost of habitat treatments or other mitigation needed to maintain the functions of impacted habitats. Off-site mitigation should only be considered when no feasible options are available to adequately mitigate within and immediately adjacent to the impacted site, or when the off-site location would provide more effective mitigation of the impact than can be achieved on-site.

Objective: Maintain the integrity of the habitat to support sustainable sage-grouse populations.

Exception: The authorized officer may grant an exception to specific requirements of this stipulation if the action, as proposed or conditioned would not compromise the functionality of the habitat for sage-grouse and meet the goals for sage-grouse habitat.

Modification: The authorized officer may modify the area subject to the stipulation if an environmental analysis finds a portion of the area is nonessential or no longer sage-grouse habitat.

Waiver: This stipulation may be waived if it is determined that Greater Sage-Grouse populations no longer occupy significant portions of the area and there is no reasonable likelihood of functional Greater Sage-Grouse habitat being restored.

Resource: Greater Sage-Grouse Protection Priority Area – Controlled Surface Use

Stipulation: Prior to surface-disturbing or disruptive activities a plan to maintain functionality of Greater Sage-Grouse protection priority habitat will be prepared by the proponent and implemented upon approval by the authorized officer. Within the Protection Priority Area surface-disturbing or disruptive activities will be restricted or prohibited within 6/10 of a mile from any existing surface-disturbing or disruptive activity. The plan shall address how short-term and long-term direct and indirect effects to important breeding (leks), nesting, brood-rearing, and wintering areas will be mitigated based on current science and research (Appendix E.5).

Objective: To protect the integrity of the habitat to maintain or improve Greater Sage-Grouse populations.

Exception: The authorized officer may grant an exception if an environmental review determines that the action as proposed or conditioned (such as exceeding the 6/10 of a mile surface-disturbing or disruptive activity restriction) would not compromise the functionality of the habitat for Greater Sage-Grouse and meet the objective for Greater Sage-Grouse habitat and populations.

Modification: The authorized officer may modify the area subject to the stipulation if an environmental analysis finds that a portion of the Protection Priority Area is no longer Greater Sage-Grouse habitat and supports no Greater Sage-Grouse populations.

Waiver: This stipulation may be waived, if it is determined that Greater Sage-Grouse populations no longer occupy significant portions of the Protection Priority Area and there is no reasonable likelihood of functional Greater Sage-Grouse habitat being restored.

Resource: Greater Sage-Grouse Winter Range – Timing Limitation

Stipulation: Surface occupancy and use is prohibited from December 1 through May 15 in Greater Sage-Grouse winter range.

Objective: To protect Greater Sage-Grouse winter range from disturbance during the winter season and to facilitate long-term maintenance of wildlife populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain viable winter range. The dates for the timing restriction may be modified if new wildlife use information indicates that the dates are not valid for the leasehold. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains viable winter range.

Resource: Interior Least Tern – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/2 mile of interior least tern occupied habitat.

Objective: To protect and maintain habitat needed to support regional interior least tern populations.

Exception: An exception to this stipulation may be granted if the authorized officer, in consultation with the U.S. Fish and Wildlife Service (USFWS), determines that portions of the area can be occupied without adversely affecting interior least tern occupied habitat.

Modification: The boundaries of the stipulated area may be modified if the authorized officer, in consultation with USFWS, determines that portions of the area can be occupied without adversely affecting interior least tern occupied habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold can be occupied without adversely affecting interior least tern occupied habitat.

Resource: Mountain Plover – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within mountain plover habitat.

Objective: To protect mountain plover habitat and to maintain mountain plover populations.

Exception: The authorized officer may grant an exception if portions of the area can be occupied without adversely affecting mountain plover habitat.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting mountain plover habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer mountain plover habitat.

Resource: Mountain Plover – Timing Limitation

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of mountain plover habitat from April 1 through July 31.

Objective: To protect mountain plover habitat and to maintain mountain plover populations.

Exception: The authorized officer may grant an exception if portions of the area can be occupied without adversely affecting mountain plover habitat.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting mountain plover habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer mountain plover habitat.

Resource: Peregrine Falcon – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of peregrine falcon nest sites that were active within the past 7 years.

- Objective:** To maintain the reproductive potential of peregrine falcon nest sites.
- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts to peregrine falcons from the proposed action can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the production potential of peregrine falcon nest sites. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains habitat for peregrine falcon nest sites.

Resource: Piping Plover – No Surface Occupancy

- Stipulation:** Surface occupancy and use is prohibited within 1/4 mile of piping plover habitat.
- Objective:** To protect piping plover habitat and to maintain regional piping plover populations.
- Exception:** An exception to this stipulation may be granted if the authorized officer, in consultation with the U.S. Fish and Wildlife Service (USFWS), determines that portions of the area can be occupied without adversely affecting piping plover habitat.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with USFWS, determines that portions of the area can be occupied without adversely affecting piping plover habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** The stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold is no longer piping plover habitat.

Resource: Raptors – No Surface Occupancy

- Stipulation:** Surface occupancy and use is prohibited within 1/4 mile of raptor nest sites that were active within the past 7 years.
- Objective:** To maintain the reproductive potential of raptor nest sites.
- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts to raptors from the proposed action can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the production potential of raptor nest sites. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains habitat for raptor nest sites.

Resource: Raptors – Timing Limitation

Stipulation: Surface occupancy and use is prohibited within 1/2 mile of active raptor nest sites from March 1 through July 31.

Objective: To maintain the reproductive potential of raptor nest sites.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the production potential of raptor nest sites. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains a raptor nest or has a nest that has not been active in 7 years.

Resource: Sharp-tailed Grouse Leks – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of sharp-tailed grouse leks.

Objective: To protect sharp-tailed grouse leks to maintain sharp-tailed grouse populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting sharp-tailed grouse leks. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains sharp-tailed grouse leks.

Resource: Sharp-tailed Grouse Nesting Habitat – Timing Limitation

Stipulation: Surface occupancy and use is prohibited within 1/2 mile of sharp-tailed grouse leks from March 15 through June 30.

Objective: To protect sharp-tailed grouse nesting habitat necessary for long-term maintenance of sharp-tailed grouse populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the sharp-tailed grouse populations. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains sharp-tailed grouse nesting habitat.

Resource: Special Status Species – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of essential habitat of special status species unless other species-specific stipulations apply.

Objective: To protect special status species habitat and to maintain regional wildlife populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting special status species habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer special status species habitat.

Resource: Winter Range – Timing Limitation

Stipulation: Surface occupancy and use is prohibited from December 1 through May 15 in big game and Greater Sage-Grouse winter range.

Objective: To protect big game and Greater Sage-Grouse winter range from disturbance during the winter season and facilitate long-term maintenance of wildlife populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain viable winter range. The dates for the timing restriction may be modified if new wildlife use information indicates that the dates are not valid for the leasehold. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains viable winter range.

Alternative D

Oil and Gas Lease Stipulations

Resource: **National Register of Historic Places (NRHP) Eligible Properties/Districts – No Surface Occupancy**

Stipulation: Surface occupancy and use is prohibited within the boundaries of cultural properties and archaeological/historic districts determined to be eligible or potentially eligible to the National Register of Historic Places. This includes cultural properties designated for conservation use, scientific use, traditional use, public use, and experimental use.

Objective: To protect significant cultural properties and archaeological districts and their settings, and to avoid disturbance or inadvertent impacts to these resources.

Exception: None.

Modification: None.

Waiver: None.

Resource: **Cultural Resource Survey**

Stipulation: An inventory of those portions of the leased lands subject to proposed disturbance may be required prior to any surface disturbance to determine if cultural resources are present and to identify needed mitigation measures. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or operator shall:

1. The lessee or operator shall engage the services of a cultural resource consultant acceptable to the Surface Management Agency (SMA) to conduct a cultural resource inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the standard ten-acre minimum to cover possible site relocation which may result from environmental or other considerations. An acceptable inventory report is to be submitted to the SMA for review and approval no later than that time when an otherwise complete application for approval of drilling or subsequent surface-disturbing operation is submitted.
2. Implement mitigation measures required by the SMA. Mitigation may include the relocation of proposed lease-related activities or other protective measures such as data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the SMA, surface occupancy on that area must be prohibited. The lessee or operator shall immediately bring to the attention of the SMA any cultural resources discovered as a result of approved operations under this lease, and shall not disturb such discoveries until directed to proceed by the SMA.

Objective: Compliance with Section 106 of the National Historic Preservation Act is required for all actions which may affect cultural properties eligible to the National Register of Historic Places. Section 6 of the Oil and Gas Lease Terms (Form 3100-11) requires that operations be conducted in a manner that minimizes adverse impacts to cultural and other resources.

Exception: None.

Modification: None.

Waiver: None.

Resource: Cultural Resources and Tribal Consultation

Stipulation: 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 surface-disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.

Objective: To protect significant historic properties and resources.

Exception: None.

Modification: None.

Waiver: None.

Resource: National Park Service Bear Paw Battlefield – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited in the parcel adjacent to the Bear Paw Battlefield identified as T30N, R19E, Sec. 12, SW1/4NE1/4.

Objective: To avoid disturbance and to protect archaeological properties of the Bear Paw Battlefield.

Exception: None.

Modification: None.

Waiver: None.

Resource: Paleontological Resources – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within designated paleontological sites/locales.

Objective: To preserve and protect significant vertebrate fossils and paleontological locales.

Exception: The authorized officer may grant an exception if the lessee or operator submits a plan which demonstrates that the adverse impacts to significant paleontological resources can be mitigated through recovery and extensive recordation. Where impacts to paleontological resources cannot be mitigated to the satisfaction of the surface management agency (SMA), surface occupancy on that area must be prohibited.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the designated paleontological site/locale can be occupied without adversely affecting the resource values.

Waiver: None.

Resource: Paleontological Resource Inventory

Stipulation: Prior to any surface-disturbing activity in areas known to have a high potential (Class 4 and 5) for containing significant paleontological resources, the lessee shall be required to conduct a

paleontological inventory. The lessee must engage the services of a qualified paleontologist, acceptable to the surface management agency (SMA), to conduct the inventory. An acceptable inventory report is to be submitted to the SMA for review and approval at the time a surface-disturbing plan of operations is submitted.

Objective: To preserve and protect scientifically significant vertebrate fossils and paleontological locales.

Exception: An exception may be granted if the area has already been inventoried for paleontological resources.

Modification: None.

Waiver: None.

Resource: Recreation Sites – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 300 feet of recreation sites.

Objective: To recognize and protect the public's opportunity for quality recreation experiences at those sites developed for that purpose. Since BLM recreation sites are generally developed to support the use of the surrounding lands, the 300 feet provides protection for perpetuating those opportunities for which the site was developed, reduces the visual intrusion and noise, and protects capital investments at the site.

Exception: The authorized officer may grant an exception if a site is moved or eliminated.

Modification: The list of recreation sites may be modified if a site is removed, or if a site is developed in the future.

Waiver: A waiver may be granted if a site is moved or eliminated.

Resource: National Historic Trails – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 300 feet of designated National Historic Trails. Designated National Historic Trails include the Lewis and Clark Trail and the Nez Perce Trail.

Objective: To preserve and protect designated National Historic Trails and the natural setting in which they occur.

Exception: The authorized officer may grant an exception if the operator submits a plan demonstrating that impacts to the area and its users can be adequately mitigated.

Modification: No modifications will be granted unless effects of the action will not be apparent to users along the trail.

Waiver: A waiver may be granted if impacts can be mitigated so that area values and user experiences are not negatively affected.

Resource: Residential Structures – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 300 feet of residential structures.

Objective: To ensure a proper distance between development and human occupation for health and safety purposes.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the public's health and safety.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the public's health and safety.

Resource: Big Bend of the Milk River ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Big Bend of the Milk River ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Frenchman Breaks ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Frenchman Breaks ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Kevin Rim ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Kevin Rim ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Little Rocky Mountains ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Little Rocky Mountains ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Malta Geological ACEC – Controlled Surface Use

Stipulation: Prior to any surface-disturbing activity in the Malta Geological ACEC the lessee shall be required to conduct a paleontological inventory. The lessee must engage the services of a qualified paleontologist, acceptable to the surface management agency, to conduct the inventory. An acceptable inventory report is to be submitted to the BLM for review and approval at the time a surface-disturbing plan of operations is submitted.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the qualities of the ACEC.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the qualities of the ACEC.

Resource: Mountain Plover ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Mountain Plover ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Sweet Grass Hills ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Sweet Grass Hills ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Woody Island ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Woody Island ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the qualities of the ACEC.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the qualities of the ACEC.

Resource: Water, Riparian, Wetland, and Floodplains – Controlled Surface Use

Stipulation: Surface occupancy and use may be controlled or excluded within and 300 feet from lentic or lotic riparian areas.

Objective: To maintain riparian/wetland functions and water quality.

Exception: An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the riparian/wetland resource.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the riparian/wetland resource.

Resource: Bald Eagle – Timing Limitation

Stipulation: Surface occupancy and use is prohibited within 1/2 mile of bald eagle nest sites, active within the last 7 years, from January 1 through August 31.

Objective: To protect bald eagle nesting sites and/or breeding habitat in accordance with the Montana Bald Eagle Management Plan.

Exception: The authorized officer may grant an exception if the operator submits a plan which demonstrates that the proposed action will not affect the bald eagle or its habitat. If the authorized officer determines that the action may have an adverse effect, the operator may submit a plan demonstrating that the impacts can be adequately mitigated. This plan must be approved by the BLM.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting bald eagle nest sites or nesting areas. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold is no longer capable of supporting bald eagle nest sites or nesting habitat.

Resource: Bighorn Sheep Lambing – Timing Limitation

Stipulation: Surface occupancy and use is prohibited within bighorn sheep lambing areas from May 1 through June 30.

Objective: To protect bighorn sheep lambing areas from disturbance and facilitate long-term maintenance of wildlife populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain lambing habitat for bighorn sheep.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains bighorn sheep lambing areas.

Resource: Black-footed Ferret – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within black-footed ferret habitat.

Objective: To protect black-footed ferret habitat for long-term maintenance of regional black-footed ferret populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer, in consultation with the U.S. Fish and Wildlife Service (USFWS), determines that portions of the area can be occupied without adversely affecting black-footed ferret habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold is no longer considered black-footed ferret habitat.

Resource: Black-tailed Prairie Dog – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within black-tailed prairie dog habitat.

Objective: To protect prairie dog towns necessary for long-term maintenance of black-tailed prairie dog populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting prairie dog habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold is no longer considered prairie dog habitat.

Resource: Colonial Waterbirds – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of a waterbird nesting colony.

Objective: To protect colonial waterbird nesting sites and to maintain regional colonial waterbird populations.

Exception: The authorized officer may grant an exception if portions of the area can be occupied without adversely affecting waterbird nesting colonies.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting waterbird nesting colonies. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer capable of supporting nesting waterbirds.

Resource: Colonial Waterbirds – Timing Limitation

Stipulation: Surface occupancy and use is prohibited within 1/2 mile of a waterbird nesting colony from April 1 through July 15.

Objective: To protect colonial waterbirds and to maintain colonial waterbird populations.

Exception: An exception to this stipulation may be granted if the authorized officer determines that portions of the area can be occupied without adversely affecting waterbird nesting colonies.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting waterbird nesting colonies. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer capable of supporting nesting waterbirds.

Resource: Crucial Winter Range – Controlled Surface Use

Stipulation: Surface-disturbing or disruptive activities within crucial big game and Greater Sage-Grouse winter range would require a plan to maintain functionality of habitat and avoid or minimize habitat loss. This plan would limit the number of disturbed areas (well pads) within crucial winter range to less than 2 well disturbances per 640 acres of crucial winter range. The plan would need to be approved by the authorized officer.

Objective: To protect big game and Greater Sage-Grouse crucial winter range from disturbance and facilitate long-term maintenance of those wildlife populations utilizing crucial winter ranges.

Exception: An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain viable crucial winter range.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains viable crucial winter range.

Resource: Endangered Species Act Section 7 Consultation

Stipulation: This 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 a BLM-approved activity that will contribute to a need to list such species or their habitat. The BLM may require modifications to or disapprove a 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 surface-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. §1531 *et seq.*, including completion of any required procedure for conference or consultation.

Objective: To protect threatened, endangered species, or special status species.

Exception: None.

Modification: None.

Waiver: None.

Resource: Greater Sage-Grouse Leks (General Habitat Areas) – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 6/10 of a mile from Greater Sage-Grouse leks.

Objective: To protect Greater Sage-Grouse leks to maintain Greater Sage-Grouse populations.

Exception: The authorized officer, in consultation with MFWP, may grant an exception if portions of the area can be occupied without adversely affecting Greater Sage-Grouse leks.

Modification: The boundaries of the stipulated area may be modified if the authorized officer, in consultation with MFWP, determines that portions of the area can be occupied without adversely affecting Greater Sage-Grouse leks. The authorized officer, in consultation with MFWP, may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer, in consultation with MFWP, determines that the entire leasehold is no longer capable of supporting Greater Sage-Grouse leks.

Resource: Greater Sage-Grouse Nesting Habitat (General Habitat Areas) – Timing Limitation

Stipulation: Surface occupancy and use is prohibited within 1 mile of Greater Sage-Grouse nesting habitat from March 1 through June 15.

Objective: To protect Greater Sage-Grouse nesting habitat necessary for long-term maintenance of regional Greater Sage-Grouse populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the Greater Sage-Grouse populations.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer capable of supporting Greater Sage-Grouse habitat/populations.

Resource: Greater Sage-Grouse Winter Range – Timing Limitation

Stipulation: Surface occupancy and use is prohibited from December 1 through March 31 in Greater Sage-Grouse winter range.

Objective: To protect Greater Sage-Grouse winter range from disturbance during the winter season and to facilitate long-term maintenance of wildlife populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain viable winter range. The dates for the timing restriction may be modified if new wildlife use information indicates that the dates are not valid for the leasehold. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains viable winter range.

Resource: Interior Least Tern – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of interior least tern occupied habitat.

Objective: To protect and maintain habitat needed to support regional interior least tern populations.

Exception: An exception to this stipulation may be granted if the authorized officer, in consultation with the U.S. Fish and Wildlife Service (USFWS), determines that portions of the area can be occupied without adversely affecting interior least tern occupied habitat.

Modification: The boundaries of the stipulated area may be modified if the authorized officer, in consultation with USFWS, determines that portions of the area can be occupied without adversely affecting interior least tern occupied habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold can be occupied without adversely affecting interior least tern occupied habitat.

Resource: Mountain Plover – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within mountain plover habitat.

Objective: To protect mountain plover habitat and to maintain mountain plover populations.

Exception: The authorized officer may grant an exception if portions of the area can be occupied without adversely affecting mountain plover habitat.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting mountain plover habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer mountain plover habitat.

Resource: Peregrine Falcon – Controlled Surface Use

Stipulation: Surface-disturbing or disruptive activities within 1/4 mile of peregrine falcon nests active within the past 7 years would require a plan to maintain the functionality of the nest, avoid or minimize habitat loss, and minimize disturbances to raptors. The plan would need to be approved by the authorized officer.

Objective: To maintain the reproductive potential of peregrine falcon nest sites.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the production potential of raptor nest sites. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains a peregrine falcon nest or has a nest that has not been active in 7 years.

Resource: Piping Plover – Timing Limitation

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of piping plover habitat from May 15 through July 31.

Objective: To protect piping plover habitat and to maintain regional piping plover populations.

Exception: An exception to this stipulation may be granted if the authorized officer, in consultation with the U.S. Fish and Wildlife Service (USFWS), determines that portions of the area can be occupied without adversely affecting piping plover habitat.

Modification: The boundaries of the stipulated area may be modified if the authorized officer, in consultation with USFWS, determines that portions of the area can be occupied without adversely affecting piping plover habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold is no longer piping plover habitat.

Resource: Raptors – Controlled Surface Use

Stipulation: Surface-disturbing or disruptive activities within 1/4 mile of raptor nests active within the past 7 years would require a plan to maintain the functionality of the nest, avoid or minimize habitat loss, and minimize disturbances to raptors. The plan would need to be approved by the authorized officer.

- Objective:** To maintain the reproductive potential of raptor nest sites.
- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the production potential of raptor nest sites. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains a raptor nest or has a nest that has not been active in 7 years.

Resource: Raptors – Timing Limitation

- Stipulation:** Surface occupancy and use is prohibited within 1/4 mile of active raptor nest sites from March 1 through July 31.
- Objective:** To maintain the reproductive potential of raptor nest sites.
- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the production potential of raptor nest sites. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains a raptor nest or has a nest that has not been active in 7 years.

Resource: Sharp-tailed Grouse Leks – Controlled Surface Use

- Stipulation:** Surface-disturbing or disruptive activities within 1/4 mile of sharp-tailed grouse leks would require a plan to maintain the functionality of the lek, avoid or minimize habitat loss, and minimize disturbances to sharp-tailed grouse. The plan would need to be approved by the authorized officer.
- Objective:** To protect sharp-tailed grouse leks to maintain regional sharp-tailed grouse populations.
- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting sharp-tailed grouse leks. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** The stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains sharp-tailed grouse leks.

Resource: Sharp-tailed Grouse Nesting Habitat – Timing Limitation

- Stipulation:** Surface occupancy and use is prohibited within 1/4 mile of sharp-tailed grouse leks from March 15 through June 30.

- Objective:** To protect sharp-tailed grouse nesting habitat necessary for long-term maintenance of sharp-tailed grouse populations.
- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the sharp-tailed grouse populations. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains sharp-tailed grouse nesting habitat.
- Resource:** **Special Status Species – No Surface Occupancy**
- Stipulation:** Surface occupancy and use is prohibited within 1/4 mile of essential habitat of special status species unless other species-specific stipulations apply.
- Objective:** To protect special status species habitat and to maintain regional wildlife populations.
- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting special status species habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer special status species habitat.
- Resource:** **Winter Range – Timing Limitation**
- Stipulation:** Surface occupancy and use is prohibited from December 1 through March 31 in big game and Greater Sage-Grouse winter range.
- Objective:** To protect big game and Greater Sage-Grouse winter range from disturbance during the winter season and facilitate long-term maintenance of wildlife populations.
- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain viable winter range. The dates for the timing restriction may be modified if new wildlife use information indicates that the dates are not valid for the leasehold. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains viable winter range.

Alternative E (Preferred Alternative)

Oil and Gas Lease Stipulations

Resource: Air Resource Protection – Controlled Surface Use

Stipulation: Surface occupancy or use is subject to the following special operating constraint:

Ensure that each diesel-fueled nonroad engine with greater than 200 horsepower (hp) design rating to be used during drilling or completion activities meets one of the following two criteria: (1) the engine was manufactured to meet U.S. Environmental Protection Agency (EPA) nitrogen oxides (NO_x) emission standards for Tier 4 nonroad diesel engines, or (2) the engine emits NO_x at rates less than or equal to EPA emission standards for Tier 4 nonroad diesel engines.

Objective: To protect air resources and ensure compliance with the 1-hour nitrogen dioxide (NO₂) National Ambient Air Quality Standard (NAAQS).

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.

Exception: An exception may be granted by the authorized officer if air quality modeling, air quality monitoring, or other information demonstrates compliance with the 1-hour NO₂ NAAQS.

Modification: This stipulation may be modified if the EPA or the Montana Department of Environmental Quality (MDEQ) adds, deletes, or revises NO_x emission standards for drill rig, completion rig, or nonroad engines.

Waiver: The stipulation may be waived if air quality modeling, air quality monitoring, or other information demonstrates that all drilling and completion activity within the lease area will meet the 1-hour NO₂ NAAQS. The stipulation may also be waived if the 1-hour NO₂ NAAQS is revoked or otherwise rendered inapplicable to drilling/completion operations.

Resource: National Register of Historic Places (NRHP) Eligible Properties/Districts – No Surface Occupancy

Stipulation: Occupancy and use is prohibited within the boundaries of cultural properties and archaeological/historic districts determined to be eligible or potentially eligible to the National Register of Historic Places.

Objective: To protect significant cultural properties and archaeological districts and their settings, and to avoid disturbance or inadvertent impacts to these resources.

Exception: None.

Modification: None.

Waiver: None.

Resource: Cultural Resource Survey

Stipulation: An inventory of those portions of the leased lands subject to proposed disturbance may be required prior to any surface disturbance to determine if cultural resources are present and to identify needed

mitigation measures. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or operator shall:

1. Engage the services of a cultural resource consultant acceptable to the Surface Management Agency (SMA) to conduct a cultural resource inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the standard ten-acre minimum to cover possible site relocation which may result from environmental or other considerations. An acceptable inventory report is to be submitted to the SMA for review and approval no later than that time when an otherwise complete application for approval of drilling or subsequent surface-disturbing operation is submitted.
2. Implement mitigation measures required by the SMA. Mitigation may include the relocation of proposed lease-related activities or other protective measures such as data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the SMA, surface occupancy on that area must be prohibited. The lessee or operator shall immediately bring to the attention of the SMA any cultural resources discovered as a result of approved operations under this lease, and shall not disturb such discoveries until directed to proceed by the SMA.

Objective: Compliance with Section 106 of the National Historic Preservation Act is required for all actions which may affect cultural properties eligible to the National Register of Historic Places. Section 6 of the Oil and Gas Lease Terms (Form 3100-11) requires that operations be conducted in a manner that minimizes adverse impacts to cultural and other resources.

Exception: None.

Modification: None.

Waiver: None.

Resource: Cultural Resources and Tribal Consultation

Stipulation: 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 surface-disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.

Objective: To protect significant historic properties and resources.

Exception: None.

Modification: None.

Waiver: None.

Resource: National Park Service Bear Paw Battlefield – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited in the parcel adjacent to the Bear Paw Battlefield identified as T30N, R19E, Sec. 12, SW1/4NE1/4.

Objective: To avoid disturbance and to protect archaeological properties of the Bear Paw Battlefield.

Exception: None.

Modification: None.

Waiver: None.

Resource: Paleontological Resources – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within designated paleontological sites/locales.

Objective: To preserve and protect significant vertebrate fossils and paleontological locales.

Exception: The authorized officer may grant an exception if the lessee or operator submits a plan which demonstrates that the adverse impacts to significant paleontological resources can be mitigated through recovery and extensive recordation. Where impacts to paleontological resources cannot be mitigated to the satisfaction of the surface management agency (SMA), surface occupancy on that area must be prohibited.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the designated paleontological site/locale can be occupied without adversely affecting the resource values.

Waiver: None.

Resource: Paleontological Resource Inventory

Stipulation: Prior to any surface-disturbing activity in areas known to have a high potential (Class 4 and 5) for containing significant paleontological resources, the lessee shall be required to conduct a paleontological inventory. The lessee must engage the services of a qualified paleontologist, acceptable to the surface management agency (SMA), to conduct the inventory. An acceptable inventory report is to be submitted to the SMA for review and approval at the time a surface-disturbing plan of operations is submitted.

Objective: To preserve and protect scientifically significant vertebrate fossils and paleontological locales.

Exception: The authorized officer may grant an exception if the area has already been inventoried for paleontological resources.

Modification: None.

Waiver: None.

Resource: Recreation Sites – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within and 500 feet from recreation sites.

Objective: To recognize and protect the public's opportunity for quality recreation experiences at those sites developed for recreation. Since BLM recreation sites are generally developed to support the use of the surrounding lands, 500 feet provides protection for perpetuating those opportunities for which the site was developed, reduces the visual intrusion and noise, and protects capital investments at the site.

Exception: The authorized officer may grant an exception if a site is moved or eliminated.

Modification: The list of recreation sites may be modified if a site is removed, or if a site is developed in the future.

Waiver: A waiver may be granted if a site is moved or eliminated.

Resource: National Historic Trails – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the National Trail Management Corridor of designated National Historic Trails. Designated National Historic Trails include the Lewis and Clark Trail and the Nez Perce Trail.

Objective: To protect the nature and purposes; trail resources, qualities, values and associated settings; and primary use or uses of the historic trail, in accordance with the National Trails System Act.

Exception: The authorized officer may grant an exception when the operator submits a comprehensive trail inventory, as outlined in Manual 6280, and presents a proposal which demonstrates resource values are not affected or that adverse impacts can be adequately mitigated to prevent impacts to:

- the nature and purposes of the National Trail,
- National Trail resources, qualities, values, and associated settings.
- National Trail primary use or uses.
- the National Trail from the cumulative or trailwide perspective.

Modification: None.

Waiver: None.

Resource: Residential Structures – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within and 500 feet of incorporated city limits or occupied dwellings.

Objective: To ensure a proper distance between development and human occupation for health and safety purposes; 500 feet provides for reduced visual intrusion, noise, traffic, and dust.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the public's health and safety.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the public's health and safety.

Resource: Soils – Sensitive Soils – Controlled Surface Use

Stipulation: Surface occupancy and use will be controlled on sensitive soils. Sensitive soils are determined using a combination of slope and soil erodibility. Prior to surface disturbance on sensitive soils, a reclamation plan must be approved by the administrative officer. The plan must demonstrate the following: (1) no other practicable alternatives exist for relocating the activity, (2) the activity will be located to reduce impacts to soil and water resources, (3) site productivity will be maintained or restored, (4) surface runoff and sedimentation will be adequately controlled, (5) on- and off-site areas will be protected

from accelerated erosion, (6) that no areas susceptible to mass wasting would be disturbed and (7) surface-disturbing activities will be prohibited during extended wet periods.

- Objective:** To maintain the chemical, physical, and biotic properties of soils, this includes maintaining soil productivity, soil stability, and soil biotic properties. This will prevent excessive erosion, potential mass wasting, and improve the likelihood of successful reclamation.
- Exception:** The administrative officer may grant an exception to this stipulation if the operator can demonstrate that the proposed action will not contribute to degradation of the soil resource (e.g., excessive soil erosion, mass wasting, and/or lost productivity) or downslope resource conditions (e.g., reduced water quality due to sedimentation).
- Modification:** The administrative officer may modify the area affected by this stipulation if it is determined that portions of the leasehold do not contain sensitive soils.
- Waiver:** The administrative officer may waive this stipulation if it is determined that the entire leasehold does not contain sensitive soils.

Resource: Soils – Badlands, Rock Outcrop – No Surface Occupancy

- Stipulation:** Surface occupancy and use is prohibited on badlands and rock outcrop.
- Objective:** To prevent excessive soil erosion and to avoid disturbing areas subject to potential reclamation problems.
- Exception:** The authorized officer may not grant exceptions to this stipulation.
- Modification:** The authorized officer may modify the area affected by this stipulation if it is determined that portions of the leasehold do not include these types of areas.
- Waiver:** The authorized officer may waive this stipulation if it is determined that the entire leasehold does not include these types of areas.

Resource: Big Bend of the Milk River ACEC – No Surface Occupancy

- Stipulation:** Surface occupancy and use is prohibited within the Big Bend of the Milk River ACEC.
- Objective:** To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.
- Exception:** None.
- Modification:** None.
- Waiver:** None.

Resource: Frenchman Breaks ACEC – No Surface Occupancy

- Stipulation:** Surface occupancy and use is prohibited within the Frenchman Breaks ACEC.
- Objective:** To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Kevin Rim ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Kevin Rim ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: None.

Modification: None.

Waiver: None.

Resource: Malta Geological ACEC – Controlled Surface Use

Stipulation: Prior to any surface-disturbing activity in the Malta Geological ACEC the lessee shall be required to conduct a paleontological inventory. The lessee must engage the services of a qualified paleontologist, acceptable to the surface management agency (SMA), to conduct the inventory. An acceptable inventory report is to be submitted to the SMA for review and approval at the time a surface-disturbing plan of operations is submitted.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the qualities of the ACEC.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the qualities of the ACEC.

Resource: Woody Island ACEC – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within the Woody Island ACEC.

Objective: To provide the protection needed in order to preserve the qualities that prompted the BLM to designate this area as an ACEC.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the qualities of the ACEC.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the qualities of the ACEC.

Resource: Visual Resources – Controlled Surface Use

Stipulation: 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 so that activities should not attract attention to the casual observer within 2 years from initiation of construction. This stipulation does not apply to the operation and maintenance activities.

Objective: To protect visual resource values while allowing energy development and related activities to occur that have been mitigated to retain the character of the existing area.

Exception: None.

Modification: None.

Waiver: None.

Resource: Water, Riparian, Wetland, and Floodplains – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within perennial or intermittent streams, lakes, ponds, reservoirs, 100-year floodplains, wetlands, and riparian areas.

Objective: To protect the unique biological and hydrological features associated with perennial or intermittent streams, lakes, ponds, reservoirs, floodplains, wetlands, and riparian areas.

Exception: No exceptions would be allowed in streams, natural lakes, or wetlands. An exception may be granted by the authorized officer for riparian areas, floodplains, and artificial ponds or reservoirs if the operator can demonstrate that: (1) there are no practicable alternatives to locating facilities in these areas, (2) the proposed actions would maintain or enhance resource functions, and (3) all reclamation goals and objectives would be met.

Modification: The authorized officer may modify the boundaries of the stipulated area if it is determined that portions of the leasehold do not include these types of areas.

Waiver: The authorized officer may waive this stipulation if it is determined that the entire leasehold does not include these types of areas.

Resource: Source Water Protection Areas – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within State-designated Source Water Protection Areas.

Objective: To protect human health by minimizing the potential contamination of public water systems. Source water is untreated water from streams, rivers, lakes, or aquifers used to supply public water systems. Ensuring that source water is protected from contamination can reduce the costs of treatment and risks to public health. This stipulation would protect the State-designated Source Water Protection Areas that protect public water systems from potential contamination.

Exception: The authorized officer may not grant exceptions to this stipulation.

Modification: The authorized officer may modify the boundaries of the stipulated area if it is determined that portions of the leasehold do not include Source Water Protection Areas.

Waiver: The authorized officer may waive this stipulation if it is determined that the entire leasehold does not include Source Water Protection Areas.

Resource: Water, Riparian, and Wetlands – Controlled Surface Use

Stipulation: Surface occupancy and use would be controlled within 300 feet of riparian and/or wetland areas. Surface-disturbing activities would require a plan with design features that demonstrate how all actions would maintain and/or improve the functionality of riparian/wetland areas. The plan will address: (a) potential impacts to riparian and wetland resources, (b) mitigation to reduce impacts to acceptable levels (including timing restrictions), (c) post project restoration, and (d) monitoring (the operator must conduct monitoring capable of detecting early signs of changing riparian and/or wetland conditions).

Objective: To protect the unique biological and hydrological features associated with wetland and riparian areas. Disturbances adjacent to wetland and/or riparian areas (including road use) can adversely impact these sensitive areas. This stipulation would protect these features from indirect effects produced within the adjacent ground. This would also encompass the floodplain along most first to third order streams.

Exception: The authorized officer may grant an exception to this stipulation if the operator can demonstrate that the proposed action would not adversely impact wetland or riparian function or associated water quality.

Modification: The area affected by this stipulation can be modified by the authorized officer if it is determined that portions of the lease area do not contain wetlands or riparian areas.

Waiver: This stipulation can be waived by the authorized officer if it is determined that the entire lease area does not contain wetlands or riparian areas.

Resource: Eastern Breaks and Badlands – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within areas that are managed to protect wilderness characteristics.

Objective: To protect wilderness characteristics as a priority over other multiple uses.

Exception: None.

Modification: None.

Waiver: None.

Resource: Bald Eagle – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/2 mile of bald eagle nest sites that were active within the preceding 5 breeding seasons.

Objective: To protect bald eagle nesting sites and/or breeding habitat in accordance with the Montana Bald Eagle Management Plan.

Exception: The authorized officer may grant an exception if the operator submits a plan which demonstrates that the proposed action will not affect the bald eagle or its habitat. If the authorized officer determines that the action may have an adverse effect, the operator may submit a plan demonstrating that the impacts can be adequately mitigated. This plan must be approved by the BLM.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting bald eagle nest sites or nesting areas. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold is no longer capable of supporting bald eagle nest sites or nesting habitat.

Resource: Bighorn Sheep Lambing – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within bighorn sheep lambing areas.

Objective: To protect bighorn sheep lambing areas from disturbance and to facilitate long-term maintenance of bighorn sheep populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain lambing habitat for bighorn sheep.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains bighorn sheep lambing areas.

Resource: Bighorn Sheep Range – Controlled Surface Use

Stipulation: Prior to surface-disturbing or disruptive activities a plan to maintain bighorn sheep habitat will be prepared by the proponent and implemented upon approval by the authorized officer. This plan shall address how short-term and long-term direct and indirect effects to bighorn sheep range will be mitigated based on current science and research (Appendix E.5).

Objective: To protect bighorn sheep habitat and populations from disturbance and to facilitate long-term maintenance of bighorn sheep populations.

Exception: The authorized officer may grant an exception if an environmental review determines that the action, as proposed or conditioned, would not compromise the functionality of the habitat for bighorn sheep.

Modification: The authorized officer may modify the area subject to the stipulation if an environmental analysis finds that a portion of the area is no longer bighorn sheep habitat and supports no bighorn sheep populations. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived, if it is determined that bighorn sheep populations no longer occupy significant portions of the area and there is no reasonable likelihood of functional bighorn sheep habitat being restored.

Resource: Black-footed Ferret – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of black-footed ferret habitat.

Objective: To protect black-footed ferret habitat for long-term maintenance of black-footed ferret populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer, in consultation with the U.S. Fish and Wildlife Service (USFWS), determines that portions of the area can be occupied without adversely affecting black-footed ferret habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold is no longer considered black-footed ferret habitat.

Resource: Black-tailed Prairie Dog – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of black-tailed prairie dog habitat.

Objective: To protect prairie dog towns necessary for long-term maintenance of black-tailed prairie dog populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting prairie dog habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold is no longer considered prairie dog habitat.

Resource: Colonial Waterbirds – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of a waterbird nesting colony.

Objective: To protect colonial waterbird nesting sites and to maintain regional colonial waterbird populations.

Exception: The authorized officer may grant an exception if portions of the area can be occupied without adversely affecting waterbird nesting colonies.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting waterbird nesting colonies. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer capable of supporting nesting waterbirds.

Resource: Colonial Waterbirds – Timing Limitation

Stipulation: Surface occupancy and use is prohibited within 1/2 mile of a waterbird nesting colony from April 1 through July 15.

Objective: To protect colonial waterbirds and to maintain colonial waterbird populations.

Exception: An exception to this stipulation may be granted if the authorized officer determines that portions of the area can be occupied without adversely affecting waterbird nesting colonies.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting waterbird nesting colonies. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer capable of supporting nesting waterbirds.

Resource: Crucial Winter Range – Controlled Surface Use

Stipulation: Prior to surface-disturbing or disruptive activities a plan to maintain functionality of crucial winter range for big game and/or Greater Sage-Grouse will be prepared by the proponent and implemented upon approval by the authorized officer. Within crucial winter range surface-disturbing or disruptive activities will be restricted or prohibited within 6/10 of a mile from any existing surface-disturbing or disruptive activity. The plan shall address how short-term and long-term direct and indirect effects to crucial winter range will be mitigated based on current science and research (Appendix E.5).

Objective: To protect big game and Greater Sage-Grouse crucial winter range from loss and degradation, and to facilitate long-term sustainability of those wildlife populations utilizing crucial winter ranges by minimizing mortality of animals through disturbance and disruption.

Exception: The authorized officer may grant an exception if an environmental review determines that the action as proposed or conditioned (such as exceeding the 6/10 of a mile surface-disturbing or disruptive activity restriction) would not compromise the functionality of the crucial winter range.

Modification: The authorized officer may modify the area subject to the stipulation if an environmental analysis finds that a portion of the area no longer contains crucial winter range and populations of wintering animals no longer occupy the area. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived, if it is determined that wintering animals no longer occupy significant portions of the area and there is no reasonable likelihood of future use as crucial winter range.

Resource: Endangered Species Act Section 7 Consultation

Stipulation: This 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 a BLM-approved activity that will contribute to a need to list such species or their habitat. The BLM may require modifications to or disapprove a 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 surface-disturbing activity that may affect any such species or critical habitat until it completes its

obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. §1531 *et seq.*, including completion of any required procedure for conference or consultation.

Objective: To protect threatened, endangered species, or special status species.

Exception: None.

Modification: None.

Waiver: None.

Resource: Grassland Bird/Greater Sage-Grouse Priority Habitat Management Area – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within Grassland Bird/Greater Sage-Grouse Priority Habitat Management Area.

Objective: To protect and maintain regional grassland bird populations.

Exception: The Authorized Officer may grant an exception to a fluid mineral lease NSO stipulation only where the proposed action:

- (i) would not have direct, indirect, or cumulative effects on Greater Sage-Grouse or its habitat; or,
- (ii) is proposed to be undertaken as an alternative to a similar action occurring on a nearby parcel, and would provide a clear conservation gain to Greater Sage-Grouse.

Exceptions based on conservation gain (ii) may only be considered in (a) PHMAs of mixed ownership where federal minerals underlie less than fifty percent of the total surface, or (b) areas of the public lands where the proposed exception is an alternative to an action occurring on a nearby parcel subject to a valid Federal fluid mineral lease existing as of the date of this RMP revision. Exceptions based on conservation gain must also include measures, such as enforceable institutional controls and buffers, sufficient to allow the BLM to conclude that such benefits will endure for the duration of the proposed action's impacts.

Any exceptions to this lease stipulation may be approved by the Authorized Officer only with the concurrence of the State Director. The Authorized Officer may not grant an exception unless the applicable state wildlife agency, the USFWS, and the BLM unanimously find that the proposed action satisfies (i) or (ii). Such finding shall initially be made by a team of one field biologist or other Greater Sage-Grouse expert from each respective agency. In the event the initial finding is not unanimous, the finding may be elevated to the appropriate BLM State Director, USFWS State Ecological Services Director, and state wildlife agency head for final resolution. In the event their finding is not unanimous, the exception will not be granted. Approved exceptions will be made publically available at least quarterly.

Modification: None.

Waiver: None.

Resource: Greater Sage-Grouse Leks (General Habitat Areas) – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within 0.6 miles of Greater Sage-Grouse leks. This stipulation does not apply within the boundaries of the Greater Sage-Grouse Priority Habitat Management Area.

Objective: To protect Greater Sage-Grouse leks to maintain Greater Sage-Grouse populations.

- Exception:** The authorized officer, in consultation with Montana Fish, Wildlife and Parks (MFWP), may grant an exception if portions of the area can be occupied without adversely affecting Greater Sage-Grouse leks.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with MFWP, determines that portions of the area can be occupied without adversely affecting Greater Sage-Grouse leks. The authorized officer, in consultation with MFWP, may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** The stipulation may be waived if the authorized officer, in consultation with MFWP, determines that the entire leasehold is no longer capable of supporting Greater Sage-Grouse leks.
- Resource:** **Greater Sage-Grouse Nesting Habitat (General Habitat Areas) – Controlled Surface Use**
- Stipulation:** Within Greater Sage-Grouse general habitat surface-disturbing or disruptive activities may be restricted or prohibited within 2 miles of Greater Sage-Grouse leks. Prior to surface-disturbing or disruptive activities a plan to maintain functionality of Greater Sage-Grouse habitat will be prepared by the proponent and implemented upon approval by the authorized officer. This plan shall address how short-term and long-term direct and indirect effects to nesting and brood-rearing areas will be mitigated based on current science and research (Appendix E.5).
- Objective:** To protect the integrity of the habitat to maintain or improve Greater Sage-Grouse populations.
- Exception:** The authorized officer may grant an exception if an environmental review determines that the action, as proposed or conditioned, would not compromise the functionality of the habitat for Greater Sage-Grouse and would meet the objective for Greater Sage-Grouse habitat and populations.
- Modification:** The authorized officer may modify the area subject to the stipulation if an environmental analysis finds that a portion of the area is no longer Greater Sage-Grouse habitat and supports no Greater Sage-Grouse populations.
- Waiver:** This stipulation may be waived if it is that Greater Sage-Grouse populations no longer occupy significant portions of the area and there is no reasonable likelihood of functional Greater Sage-Grouse habitat being restored.
- Resource:** **Greater Sage-Grouse Priority Habitat Management Area – No Surface Occupancy**
- Stipulation:** Surface occupancy and use is prohibited within Greater Sage-Grouse Priority Habitat Management Area.
- Objective:** To protect the integrity of the habitat to maintain or improve Greater Sage-Grouse populations.
- Exception:** The Authorized Officer may grant an exception to a fluid mineral lease NSO stipulation only where the proposed action:
- (i) would not have direct, indirect, or cumulative effects on Greater Sage-Grouse or its habitat; or,
 - (ii) is proposed to be undertaken as an alternative to a similar action occurring on a nearby parcel, and would provide a clear conservation gain to Greater Sage-Grouse.
- Exceptions based on conservation gain (ii) may only be considered in (a) PHMAs of mixed ownership where federal minerals underlie less than fifty percent of the total surface, or (b) areas of the public lands where the proposed exception is an alternative to an action occurring on a nearby parcel subject to a valid Federal fluid mineral lease existing as of the date of this RMP revision. Exceptions based on conservation gain must also include measures, such as enforceable institutional controls and buffers,

sufficient to allow the BLM to conclude that such benefits will endure for the duration of the proposed action's impacts.

Any exceptions to this lease stipulation may be approved by the Authorized Officer only with the concurrence of the State Director. The Authorized Officer may not grant an exception unless the applicable state wildlife agency, the USFWS, and the BLM unanimously find that the proposed action satisfies (i) or (ii). Such finding shall initially be made by a team of one field biologist or other Greater Sage-Grouse expert from each respective agency. In the event the initial finding is not unanimous, the finding may be elevated to the appropriate BLM State Director, USFWS State Ecological Services Director, and state wildlife agency head for final resolution. In the event their finding is not unanimous, the exception will not be granted. Approved exceptions will be made publically available at least quarterly.

Modification: None.

Waiver: None.

Resource: **Greater Sage-Grouse Winter Range – Timing Limitation**

Stipulation: Surface occupancy and use is prohibited from December 1 through March 31 in Greater Sage-Grouse winter range.

Objective: To protect Greater Sage-Grouse winter range from disturbance during the winter season and to facilitate long-term maintenance of wildlife populations.

Exception: The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain viable winter range. The dates for the timing restriction may be modified if new wildlife use information indicates that the dates are not valid for the leasehold. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains viable winter range.

Resource: **Interior Least Tern – No Surface Occupancy**

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of interior least tern occupied habitat.

Objective: To protect and maintain habitat needed to support regional interior least tern populations.

Exception: An exception to this stipulation may be granted if the authorized officer, in consultation with the U.S. Fish and Wildlife Service (USFWS), determines that portions of the area can be occupied without adversely affecting interior least tern occupied habitat.

Modification: The boundaries of the stipulated area may be modified if the authorized officer, in consultation with USFWS, determines that portions of the area can be occupied without adversely affecting interior least tern occupied habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold can be occupied without adversely affecting interior least tern occupied habitat.

Resource: Mountain Plover – No Surface Occupancy

Stipulation: Surface occupancy and use is prohibited within mountain plover habitat.

Objective: To protect mountain plover habitat and to maintain mountain plover populations.

Exception: The authorized officer may grant an exception if portions of the area can be occupied without adversely affecting mountain plover habitat.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting mountain plover habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer mountain plover habitat.

Resource: Mountain Plover – Timing Limitation

Stipulation: Surface occupancy and use is prohibited within 1/4 mile of mountain plover habitat from April 1 through July 15.

Objective: To protect mountain plover habitat and to maintain mountain plover populations.

Exception: The authorized officer may grant an exception if portions of the area can be occupied without adversely affecting mountain plover habitat.

Modification: The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting mountain plover habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.

Waiver: The stipulation may be waived if the authorized officer determines that the entire leasehold is no longer mountain plover habitat.

Resource: Pallid Sturgeon – Controlled Surface Use

Stipulation: Prior to surface-disturbing or disruptive activities occurring in or within 1/2 mile of river or stream shorelines identified as pallid sturgeon habitat, a plan to maintain pallid sturgeon habitat would be prepared by the proponent and implemented upon approval by the authorized officer.

Objective: To protect and maintain habitat needed to support pallid sturgeon populations.

Exception: An exception to this stipulation may be granted if the authorized officer, in consultation with the U.S. Fish and Wildlife Service (USFWS), determines that portions of the area can be occupied without adversely affecting pallid sturgeon habitat.

- Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with USFWS, determines that portions of the area can be occupied without adversely affecting pallid sturgeon habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** The stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold can be occupied without adversely affecting pallid sturgeon habitat.
- Resource: Peregrine Falcon – No Surface Occupancy**
- Stipulation:** Surface occupancy and use is prohibited within 1 mile of peregrine falcon nest sites active within the preceding 7 breeding seasons.
- Objective:** To maintain the reproductive potential of raptor nest sites.
- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts to raptors from the proposed action can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the production potential of raptor nest sites. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains habitat for raptor nest sites.
- Resource: Piping Plover – No Surface Occupancy**
- Stipulation:** Surface occupancy and use is prohibited within 1/4 mile of piping plover habitat.
- Objective:** To protect piping plover habitat and to maintain regional piping plover populations.
- Exception:** An exception to this stipulation may be granted if the authorized officer, in consultation with the U.S. Fish and Wildlife Service (USFWS), determines that portions of the area can be occupied without adversely affecting piping plover habitat.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with USFWS, determines that portions of the area can be occupied without adversely affecting piping plover habitat. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** The stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold is no longer piping plover habitat.
- Resource: Raptors – No Surface Occupancy**
- Stipulation:** Surface occupancy and use is prohibited within 1/4 mile of raptor nest sites that were active within the past 7 years.
- Objective:** To maintain the reproductive potential of raptor nest sites.

- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts to raptors from the proposed action can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the production potential of raptor nest sites. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains habitat for raptor nest sites.

Resource: Raptors – Timing Limitation

- Stipulation:** Surface occupancy and use is prohibited within 1/2 mile of active raptor nest sites from March 1 through July 31.
- Objective:** To maintain the reproductive potential of raptor nest sites.
- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the production potential of raptor nest sites. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains a raptor nest or has a nest that has not been active in 7 years.

Resource: Sharp-tailed Grouse Leks – No Surface Occupancy

- Stipulation:** Surface occupancy and use is prohibited within 1/4 mile of sharp-tailed grouse leks.
- Objective:** To protect sharp-tailed grouse leks and to maintain sharp-tailed grouse populations.
- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting sharp-tailed grouse leks. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** The stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains sharp-tailed grouse leks.

Resource: Sharp-tailed Grouse Nesting Habitat – Timing Limitation

- Stipulation:** Surface occupancy and use is prohibited within 1/2 mile of sharp-tailed grouse leks from March 15 through June 30.

- Objective:** To protect sharp-tailed grouse nesting habitat necessary for long-term maintenance of sharp-tailed grouse populations.
- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the sharp-tailed grouse populations. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains sharp-tailed grouse nesting habitat.
- Resource:** **Sprague’s Pipit – Timing Limitation**
- Stipulation:** Surface occupancy and use is prohibited from April 15 through July 15 in Sprague’s pipit habitat.
- Objective:** To protect Sprague’s pipit habitat necessary for long-term maintenance of Sprague’s pipit populations.
- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain Sprague’s pipit habitat. The dates for the timing restriction may be modified if new wildlife use information indicates that the dates are not valid for the leasehold. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains Sprague’s pipit habitat.
- Resource:** **Winter Range – Timing Limitation**
- Stipulation:** Surface occupancy and use is prohibited from December 1 through May 15 in big game winter range.
- Objective:** To protect big game and Greater Sage-Grouse winter range from disturbance during the winter season and to facilitate long-term maintenance of wildlife populations.
- Exception:** The authorized officer may grant an exception if the operator submits a plan that demonstrates the impacts from the proposed action are acceptable or can be adequately mitigated.
- Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain viable winter range. The dates for the timing restriction may be modified if new wildlife use information indicates that the dates are not valid for the leasehold. The authorized officer may also modify the size and shape of the area based on studies documenting actual habitat suitability and/or local periods of actual use.
- Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains viable winter range.

Appendix E

Fluid Minerals

E.5: Requirements and/or Guidelines for Wildlife Controlled Surface Use Stipulations

Plans that are required by controlled surface use (CSU) stipulations for bighorn sheep range, crucial winter range, and Greater Sage-Grouse habitat will be subject to guidance presented in Appendices C and M and the following requirements and/or guidelines. These requirements and guidelines may be modified based on the best available science and research, and best management practices.

The plan shall address:

- Mitigation or methods that would be used to abate continuous noise (related to long-term operations and/or activities) or temporary noise (related to installation, maintenance, one-time use, emergency operations, etc.) to minimize disruption to wildlife.
- The management of water developments to reduce the spread of West Nile virus within Greater Sage-Grouse habitat areas.
- The placement of linear rights-of-way to reduce disturbance to wildlife.
- The placement of new utility developments (powerlines, pipelines, etc.) and transportation routes in a manner that does not impact wildlife such as through eliminating the need for powerlines or burying powerlines.
- The design and placement of high profile structures exceeding 10 feet in height in a manner that does not impact wildlife.
- The reduction of the frequency of human visitation at wells sites such as through remote monitoring of production facilities.
- Interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes to maximize the habitat restoration.
- Restoration of disturbed areas at final reclamation to pre-disturbance conditions or desired plant community.
- Placement of permanent (longer than 2 months) structures which create movement to minimize impacts to wildlife.
- A monitoring protocol.

The plan shall consider:

- The use of off-site mitigation, (e.g., creation of sagebrush habitat or conservation easements) with proponent dollars to offset habitat losses.
- The creation of a “*Mitigation Trust Account*” when impacts cannot be avoided, minimized, or effectively mitigated through other means. If approved by the BLM, the proponent may contribute funding to maintain habitat function based on the estimated cost of habitat treatments or other mitigation needed to maintain the functions of impacted habitats. Off-site mitigation should only be considered when no feasible options are available to adequately mitigate within and immediately adjacent to the impacted site, or when the off-site location would provide more effective mitigation of the impact than can be achieved on-site.

